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–:<u>કાર્યવાહી</u>:–

એકેડેમિકકાઉન્સિલની સભા શુક્રવાર,તા.૨૫/૦૬/૨૦૨૧નાં રોજ બપોરે ૧:૦૦ કલાકે મળેલ જે એડજોર્ન (Adjourn) સભા શનિવાર, તા.૨૬/૦૬/૨૦૨૧ ના રોજ બપોરે ૨.૦૦ કલાકે Social Distancing નું પાલન થાય તે રીતે ઓફલાઈન/ઓનલાઈન યુનિવર્સિટી કાર્યાલયના સેનેટ હોલમાં મળી હતી, જેમાં સભ્યોની હાજરી નીચે મુજબ હતી.

ક્રમ નં.	સભ્યશ્રીઓના નામ	તા. ૨૫/૦૬/૨૦૨૧	તા. ૨૬/૦૬/૨૦૨૧
(૧)	ડૉ. કિશોરકુમાર એન. ચાવડા**(માનનીય કુલપતિશ્રી)**	હાજર	હાજર
(૨)	ડૉ. હેમાલીબેન એ. દેસાઈ	હાજર	હાજર
(૩)	ડૉ. ભાવિનકુમાર રમણલાલ નાયક	હાજર	હાજર
(૪)	ડૉ. જયદીપ ચૌધરી	હાજર	હાજર
(૫)	ડૉ. અજય નટવરલાલ પટેલ	હાજર	હાજર
(૬)	ડૉ. વિજયકુમાર જોષી	હાજર	હાજર
(૭)	ડૉ. સ્નેહલ કે. જોષી	હાજર	હાજર
(૮)	ડૉ. દિલીપ એલ. વરસાણી	હાજર	હાજર

(૧) એકેડેમિકકાઉન્સિલની **તા.૧૨/૦૬/૨૦૨૧**ની સભાની કાર્યવાહીની નોંધને બહાલી આપવા બાબત.

:: **આથી ઠરાવવામાં આવે છે કે, એકેડેમિક કાઉન્સિલની તા.૧૨/૦૬/૨૦૨૧ની સભાની કાર્યવાહીની નોંધને બહાલી આપવામાંઆવી હતી, ત્યારબાદ અધ્યક્ષશ્રીએ તેના પર સહી કરી હતી.**

(૨) એમ.એસ.ડબલ્યુ.(સ્વનિર્ભર) અભ્યાસક્રમના વિષયનો Ph.D ઓર્ડિનન્સમાં સમાવેશ કરવા તથા સોસિયલ વર્કની RAC ની રચના કરવા અંગે ચર્ચા કરતા MSW વિષયની નિયૂકત એડહોક સમિતિની તા.૦૬/૭/૨૦૧૯ ની સભાનાં ઠરાવ ક્રમાંકઃ ૫ અન્વયે નીચે મુજબ કરેલ ભલામણ જે વિનયન વિદ્યાશાખાની સભાનાં ઠરાવ ક્રમાંકઃ૧૧ અન્વયે બી.યુ.ટી. ને ભલામણ કરેલ જે અંગે અનુસ્નાતક શિક્ષણ મંડળ (બી.યુ.ટી) એ તેની તા.૧૦/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક :૩ અન્વયે કરેલી નીચેની ભલામણ પર વિચારણા કરવા બાબત.

<u>MSW વિષયની નિયૂકત એડહોક સમિતિની તા.૦૬/૦૭/૨૦૧૯ ની સભાની ભલામણ ક્રમાંકઃ ૫</u>

:: આથી ઠરાવવામાં આવે છે કે,કમ્પરેટીવ લીટરેચરની નિયૂકત (એડહોક) બોર્ડની જેમ એમ.એસ.ડબલ્યુ.ની પણ RAC બનાવવા માટે તથા Ph.D ઓર્ડિનન્સમાં સમાવેશ કરવા ઘટતુ કરવા ભલામણ કરવામાં આવે છે. આમકરવા પાછળનો હેતુ એવો છે કે હાલમાં એમ.એસ.ડબલ્યુ. વિષયમાં જે વિદ્યાર્થીઓ Ph.D કરે છે તેમને યુનિવર્સિટી તરફથી Ph.Din Social work પ્રમાણે ડિગ્રી એનાયત કરવાને બદલે Ph.D in Sociology ડિગ્રી એનાયત કરવામાં આવે છે જે યોગ્ય ન હોવાની તે સુધારો કરવા એમ.એસ.ડબલ્યુની સ્વતંત્ર RAC

બનાવાની જરૂરીયાત છે ત્યારબાદ Ph.D ઓર્ડિનન્સમાં સુધારો કરવા સમિતિ વિનયન વિદ્યાશાખાને ભલામણ કરે છે.

વિનયન વિદ્યાશાખાની તા.૮/૨/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંકઃ ૧૧

:: આથી ઠરાવવામાં આવે છે કે, પ્રસ્તુત બાબત અંગે બી.યુ.ટી. ને ભલામણ કરવામાં આવે છે.

અનુસ્નાતક શિક્ષણ મંડળ (બી.યુ.ટી) ની તા.૧૦/૦૬/૨૦૨૧ ની સભાની ભલામણ ક્રમાંક :૩

: : વિનયન વિદ્યાશાખાની તા.૦૮/૨/૨૦૨૧ ના ઠરાવ ક્રમાંકઃ ૧૧થી SOCIAL WORK વિષયનીRAC નું ગઠન કરવા તથા Ph.D ઓર્ડીનન્સમાં આમેજ કરવા એકેડેમિક કાઉન્સીલને ભલામણ કરવાનું ઠરાવવામાં આવે છે.

(એકેડેમિક વિભાગ)

:: આથી ઠરાવવામાં આવે છે કે, અનુસ્નાતક શિક્ષણ મંડળ (બી.યુ.ટી.) ની તા. ૧૦/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૩ અન્વયે કરેલ ભલામણ યથાવત્ સ્વીકારી આગળની કાર્યવાહી માટે સિન્ડિકેટને ભલામણકરવામાં આવે છે.

(૩) ગ્રામ અભ્યાસ વિષયના બોર્ડ દ્વારા નિમાયેલ પેટાસમિતિઓએ તૈયાર કરેલ M.R.S.(SD) નાસેમેસ્ટર–૩ અને ૪ ના વિવિધ વિષયનો અભ્યાસક્રમ ગ્રામઅભ્યાસ વિષયની અભ્યાસસમિતિ તથા ગ્રામઅભ્યાસ વિદ્યાશાખાની સંયૂકત સભાની તા. ૧૮–૦૩–૨૦૨૧નાં ઠરાવ ક્રમાંકઃ ૨ અન્વયે નીચે મુજબ બી.યુ.ટી. ને ભલામણ કરેલ, જે અંગે અનુસ્નાતક શિક્ષણ મંડળ (બી.યુ.ટી) એ તેની તા.૧૦/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક :૯ અન્વયે કરેલી નીચેની ભલામણ પર વિચારણા કરવા બાબત.

ગ્રામઅભ્યાસ વિષયની અભ્યાસસમિતિ તથા ગ્રામઅભ્યાસ વિદ્યાશાખાની સંયૂકત સભાની તા. ૧૮–૦૩–૨૦૨૧નાં ઠરાવ ક્રમાંકઃ ૨

:: આથી ઠરાવવામાં આવે છે કે,M.R.S.(SD) સેમેસ્ટર–૩ અને સેમેસ્ટર–૪ નું નવું માળખું અને વિવિધવિષયોનાઅભ્યાસક્રમો મંજુર કરવામાં આવ્યા અને તે મંજુર કરવા બી.યુ.ટી. ને ભલામણ કરવામાં આવે છે.

અનુસ્નાતક શિક્ષણ મંડળ તા. ૧૦– ૬– ૨૦૨૧ ઠરાવ ક્રમાંક (૯)

:: આથી ઠરાવવામાં આવે છે કે, ગ્રામ અભ્યાસ વિષયની અભ્યાસ સમિતિ તથા ગ્રામ અભ્યાસ વિદ્યાશાખાની સંયૂકત સભાની તા.૧૮–૩–૨૦૨૧ના ઠરાવ ક્રમાંકઃ(૨) થી કરેલ ભલામણ મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે

(એકેડેમિક વિભાગ)
(પરિશિષ્ટ : ૧)

:: આથી ઠરાવવામાં આવે છે કે, ગ્રામઅભ્યાસ વિષયની અભ્યાસસમિતિ તથા ગ્રામઅભ્યાસ વિદ્યાશાખાની સંયુકત સભાની તા. ૧૮/૦૩/૨૦૨૧ ની સભાની ભલામણ ક્રમાંક : ૨ અને અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦/૦૬/૨૦૨૧ ની સભાની ભલામણ ક્રમાંક : ૯ અન્વયે સ્વીકારેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર M.R.S.(SD) સેમેસ્ટર–૩ અને સેમેસ્ટર–૪ નું નવું માળખું અને વિવિધ વિષયોના અભ્યાસક્રમો મંજૂર કરવામાં આવે છે.

(૪) M.R.S. ના સેમે. ૧ થી ૪ નો અભ્યાસક્રમઅંગે ચર્ચા કરતા બોર્ડ દ્વારા નિમાયેલ પેટાસમિતિએ તૈયાર કરેલ નવું માળખું અને વિવિધવિષયોના નવા / સુધારેલા અભ્યાસક્રમોગ્રામઅભ્યાસ વિષયની અભ્યાસસમિતિ તથા ગ્રામઅભ્યાસ વિદ્યાશાખાની સંયૂકત સભાની તા.૧૮–૦૩–૨૦૨૧નાં ઠરાવ ક્રમાંકઃ ૩ અન્વયે નીચે મુજબ બી.યુ.ટી.ને ભલામણ કરેલ, જે અંગે અનુસ્નાતક શિક્ષણ મંડળ (બી.યુ.ટી)

એ તેની તા.૧૦/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક :૧૦ અન્વયે કરેલી નીચેની ભલામણ પર વિચારણા કરવા બાબત.

ગ્રામઅભ્યાસ વિષયની અભ્યાસસમિતિ તથા ગ્રામઅભ્યાસ વિદ્યાશાખાની સંયુકત સભાની તા. ૧૮–૦૩–૨૦૨૧નાં ઠરાવ ક્રમાંકઃ ૩

: : આથી ઠરાવવામાં આવે છે કે, M.R.S. નવું ક્રેડિટ માળખું અને તેમાં સામેલ જુદા – જુદા વિષયોના અભ્યાસક્રમો સર્વાનુમતે મંજૂર કરવા બી.યુ.ટી. ને ભલામણ કરવામાં આવે છે. પ્રસ્તુત અભ્યાસક્રમો શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી લાગુ કરવા.

અનુસ્નાતક શિક્ષણ મંડળ તા. ૧૦–૬–૨૦૨૧ ઠરાવ ક્રમાંક (૧૦)

:: આથી ઠરાવવામાં આવે છે કે, ગ્રામ અભ્યાસ વિષયની અભ્યાસ સમિતિ તથા ગ્રામ અભ્યાસ વિદ્યાશાખાની સંયૂકત સભાની તા.૧૮–૩–૨૦૨૧ના ઠરાવ ક્રમાંકઃ(૩) થી કરેલ ભલામણ મંજૂર કરીએકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે

(એકેડેમિક વિભાગ)
(પરિશિષ્ટ : ૨)

:: આથી ઠરાવવામાં આવે છે કે, ગ્રામઅભ્યાસ વિષયની અભ્યાસસમિતિ તથા ગ્રામઅભ્યાસ વિદ્યાશાખાની સંયુકત સભાની તા. ૧૮/૦૩/૨૦૨૧ ની સભાની ભલામણ ક્રમાંક : ૩ અને અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦/૦૬/૨૦૨૧ ની સભાની ભલામણ ક્રમાંક : ૧૦ અન્વયે સ્વીકારેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર જુદા જુદા વિષયોના અભ્યાસક્રમો મંજૂર કરવામાં આવે છે તેમજ M.R.S. નાનવા અમલમાં આવનાર અભ્યાસક્રમના ક્રેડિટ માળખાનો સૈધ્ધાંતિક સ્વીકાર કરી આગળની કાર્યવાહી માટે સિન્ડિકેટને ભલામણ કરવામાં આવે છે.

(૫) બાયોઈન્ફોર્મેટીકસ વિષય (કોમપ્યુટર સાયન્સ એન્ડ ઈનફરમેશન ટેકનોલોજી વિદ્યાશાખા)માં પીએચ.ડી. સંશાધન અભ્યાસ સફળતા પૂર્વક પાસ કરનાર સંશોધનાર્થી મુર્તાઝા હજૂરી ધ્વારા તા.૧૭/૧૨/૨૦૨૦ની અરજીથી પીએચ.ડી. સંશોધન અભ્યાસની ડીગ્રી બાયોસાયન્સ વિષય તરીકે આપવા વિનંતી કરેલ છે. અરજીકર્તાને પીએચ.ડી. સંશોધન અભ્યાસ બાયોસાયન્સ વિષયની રીસર્ચ એડવાઈઝરી સમિતિની ભલામણને અનુસ્નાતક શિક્ષણ મંડળની સભાએ આપેલ મંજૂરી મુજબ સંશોધન અભ્યાસ બાયોઈન્ફોર્મેટીકસ વિષયમાં પ્રવેશ ફાળવણી થયેલ હતી. સંશોધનાર્થી ધ્વારા તા.૨૪/૦૬/૨૦૧૬ના રોજ સિનોપ્સીસ જમા કરાવ્યા બાદ થીસીસ જમા કરાવેલ છે. થીસીસના મુલ્યાંકન બાદ મુજબ સંશોધન અભ્યાસ તા.૧૬, એપ્રિલ ૨૦૧૯ના રોજ સફળતા પૂર્વક પાસ કરેલ છે. સંશોધનાર્થી ધ્વારા થીસીસ તા.૨૭/૧૨/૨૦૧૬ના રોજ મૂલ્યાંકન માટે જમા કરાવ્યા બાદ તા.૨૧/૦૨/૨૦૧૭ ના રોજ માર્ગદર્શક શિક્ષકની નોંધ સાથે બાયોઈન્ફોર્મેટીકસ વિષયના સ્થાને બાયોસાયન્સ વિષયમાં વિજ્ઞાન વિદ્યાશાખા હેઠળ સંશોધન અભ્યાસની મંજૂરી આપવા વિનંતી કરેલ હતી. સંશોધનાર્થીની વિનંતી બાબતે બાયોસાયન્સ વિષયની રીસર્ચ એડવાઈઝરી સમિતિના કો–ચેરમેન ની ભલામણ અને ચેરમેનશ્રીની ભલામણ ધ્યાને લઈ માન.કુલપતિશ્રીના ધ્વારા સંશોધનાર્થી વિનંતી BUT સમક્ષ રજૂ કરતા BUT ધ્વારા નીચે મુજબ ઠરાવ સાથે વિનંતી સ્વીકારેલ ન હોય અરજીકર્તા ધ્વારા પીએચ.ડી. સંશોધન અભ્યાસના બાયોઈન્ફોર્મેટીકસનો વિષય બદલી બાયોસાયન્સ વિષય વિજ્ઞાન વિદ્યાશાખા અંતર્ગત પીએચ.ડી. નોટીફીકેશન (ડીગ્રી) જાહેર કરવા ફરીથી અરજી કરેલ છે. જે વિનંતી અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦–૦૬–૨૦૨૧ની સભાએ તેના ઠરાવ ક્રમાંક (૪) અન્વયે અરજીકર્તાને(૧) હજુરી મુર્તઝ અબ્બાસભાઈ અને (૨) રચ મૌલિક હર્ષદભાઈનેબાયોઈન્ફોમેટીકસ (કોમ્પ્યુટર સાયન્સ અને ઈન્ફોરમેશન ટેકનોલોજી)નુ નોટીફીકેશન તથા પદવીમાં સુધારો કરી વિજ્ઞાન વિદ્યાશાખાના બાયોસાયન્સ વિષયમાં નોટીફીકેશન તથા પદવી આપવા એકેડેમિક કાઉન્સીલને ભલામણ કરેલ છે, જે ભલામણ પર વિચારણા કરવા બાબત.

<u>બાયોસાયન્સ વિષયની રીસર્ચ એડવાઈઝરી સમિતિની પ્રવેશ ભલામણ</u>

સંશોધનાર્થીના પ્રવેશના વિષય અને વિદ્યાશાખા બાબતે બાયોસાયન્સ વિષયની રીસર્ચ એડવાઈઝરી સમિતિ ધ્વારા બાયોઈનફરમેટીક વિષય હોવાથી અનુસ્નાતક શિક્ષણ મંડળની સભા સમક્ષ રજૂ કરવા ભલામણ કરેલ છે.

અનુસ્નાતક શિક્ષણ મંડળની તા.૦૯/૦૫/૨૦૧૨ ના ઠરાવ ક્રમાંક (૪૪)

: :આથી ઠરાવવામાં આવે છે કે, બાયોસાયન્સ વિષયની ડી.આર.એસ.સી.ની ભલામણનો સ્વીકાર કરવો તથા ઉપરોકત વિદ્યાર્થીના પીએચ.ડી.નું રજીસ્ટ્રેશન નવનિયુકત કોમ્પ્યુટર સાયન્સ વિદ્યાશાખામાં કરવુ.

અનુસ્નાતક શિક્ષણ મંડળની તા.૧૩/૦૩/૨૦૧૮ ના ઠરાવ ક્રમાંક (૧૮)

: :આથી ઠરાવવામાં આવે છે કે, પીએચ.ડી. સંશોધનન અભ્યાસમાં કોમપ્યુટર સાયન્સ એન્ડ ઈનફરમેશન ટેકનોલોજી વિદ્યાશાખાના બાયેઈનફમેટીકસ વિષયમાં પીએચ.ડી. સંશોધન અભ્યાસમાં નોંધણી કરાવેલ સંશોધનાર્થી (૧) હજુરી મુર્તઝ અબ્બાસભાઈ અને (૨) રચ મૌલિક હર્ષદભાઈ ધ્વારા તેમની સિનોપ્સીસ અને થીસીસ મુલ્યાંકન માટે જમા કરાવ્યા બાદ સંશોધનાર્થી ધ્વારા તેમના માર્ગદર્શકશ્રીની ભલામણ સાથે સંશોધન અભ્યાસ વિજ્ઞાન વિદ્યાશાખાના બાયોસાયન્સ વિષયમાં કરવાની વિનંતી કરેલ હોય જે વિનંતી ગ્રાહય રાખવી નહી.

અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦–૦૬–૨૦૨૧ની સભાનો ઠરાવ ક્રમાંક (૪)

:: આથી ઠરાવવામાં આવે છે કે, (૧) હજુરી મુર્તઝ અબ્બાસભાઈ અને (૨) રચ મૌલિક હર્ષદભાઈ ની તા. ૧૭/૧૨/૨૦૨૦ ની અરજી અવલોકને લઈ તેઓને આપવામાં આવેલ બાયોઈન્ફોમેટીકસ (કોમ્પ્યુટર સાયન્સ અને ઈન્ફોરમેશન ટેકનોલોજી)નુ નોટીફીકેશન તથા પદવીમાં સુધારો કરી વિજ્ઞાન વિદ્યાશાખાના બાયોસાયન્સ વિષયમાં નોટીફીકેશન તથા પદવી આપવા એકેડેમિક કાઉન્સીલને ભલામણ કરવામાં આવે છે.

(અનુસ્નાતક વિભાગ)

:: આથી ઠરાવવામાં આવે છે કે, અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૪ નો યથાવત્ સ્વીકાર કરી તે અંગે સિન્ડિકેટને ભલામણ કરવામાં આવે છે.

(૬) **ડો. ભાવેશ મહેન્દ્રભાઈ મોદી, આસિ. પ્રોફેસર, શિક્ષણ વિભાગ, વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી, સુરત દ્વારા એજયુકેશન ફેકલ્ટીનાં એજયુકેશન વિષયમાં પીએચ.ડી.ના માર્ગદર્શક શિક્ષકની માન્યતાની અરજી સાથે નીચેની વિગત અવલોકને લઈ BUTની તા.૨૦–૧૦–૨૦ ના ઠરાવ ક્રમાંક (૧૪)થી AC કરેલ ભલામણ એકેડેમિક કાઉન્સિલનીતા.૯/૩/૨૦૨૦ ના ઠરાવ ક્રમાંક (૧૫) થી માન.કુલપતિશ્રીને સતા આપેલ હોય જે અન્વયે સિન્ડિકેટ ની તા.૧૮/૫/૨૦૨૧ ની સભાએ અન્ય યુનિવર્સિટીમાં પીએચ.ડી.ના માર્ગદર્શક શિક્ષકની માન્યતા મળેલ હોય તેવા અધ્યાપકોને યુનિવર્સિટી / યુનિવર્સિટી સંલગ્ન કોલેજોમાં જોડાઈ તે બાબતે ધારાધોરણ નિયત કરવા અનુસ્નાતક શિક્ષણ મંડળમાં પુનઃવિચારણા કરવા ઠરાવેલ છે જે મુજબ અન્ય યુનિવર્સિટી પીએચ.ડી.સુપરવાઈઝીંગ ટીચર માન્યતાઓર્ડીનન્સ–૧૦૮ મુજબની જોગવાઈ અનુસાર કાર્યવાહી કરી અરજીકર્તા અધ્યાપકને પીએચ.ડી. માર્ગદર્શક શિક્ષકની માન્યતા આપવામાં આવે તેવી એકેડેમિક કાઉન્સીલને ભલામણ કરેલ છે જે ભલામણ પર વિચારણા કરવા બાબત.**

(૧) વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટીના પત્ર ક્રમાંકઃ

GAD/GIA/Estt/T/Appoint/11710/2017, **તા.૩૦–૦૬–૨૦૧૭ થી આસિ. પ્રોફેસર તરીકે નિમણૂંક કરેલ છે.**

(૨) ડો. ભાવેશ મહેન્દ્રભાઈ મોદી ગુજરાત યુનિવર્સિટીમા પીએચ.ડી. ગાઈડ તરીકેની માન્યતા વર્ષ ૨૦૧૩ થી ધરાવતા હતા.

(૩) તેમના માર્ગદર્શન હેઠળ ૪ (ચાર) સંશોધનાર્થીઓએ પીએચ.ડી. સંશોધન અભ્યાસ પૂર્ણ કરેલ છે.અરજી માં જણાવ્યા મુજબ હાલમાં તેમના માર્ગદર્શન હેઠળ કોઈપણ સંશોધનાર્થી કાર્યરત નથી.

BUT **ની તા.૨૦–૧૦–૨૦ ના ઠરાવ ક્રમાંક (૧૪)**

આથી ઠરાવવામાં આવે છે કે, ડો.વિશ્વનાથ પટેલ,શેઠ પી.ટી.મહિલા કોલેજ ઓફ આર્ટસ , સુરત ના ગુજરાતી વિષયમાં પીએચ.ડી. સુપરવાઈઝીંગ ટીચરની માન્યતાની અરજી તેમના માર્ગદર્શન હેઠળ ભાવનગર યુનિવર્સિટીના સંશોધનાર્થીઓને યુ. .સી. અને રાજય સરકારની માર્ગદર્શીકા મુજબ સંશોભન અભ્યાસના ગાઈડ તરીકે માર્ગદર્શન આપવામાંથી મુકત કર્યાના બાહેધરી પત્ર રજુ કર્યેથી ગુજરાતી વિષયમાં પીએચ.ડી. સંશોધન અભ્યાસમાં માર્ગદર્શક શિક્ષક તરીકે માન્યતા આપવાની કાર્યવાહી કરવા એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

<u>એકેડેમિક કાઉન્સિલના તા.૯/૩/૨૦૨૦ ના ઠરાવ ક્રમાંક (૧૫)</u>
આથી ઠરાવવામાં આવે છે કે, પ્રસ્તુત બાબત અંગે માનનીય ઈ.ચા.કુલપતિશ્રીને સત્તા આપવામાં આવે છે.

<u>સિન્ડિકેટ ની તા.૧૮/૫/૨૦૨૧ ના ઠરાવ ક્રમાંક (૧૨)</u>
આથી ઠરાવવામાં આવે છે કે, એકેડેમિક કાઉન્સિલના તા.૯/૩/૨૦૨૦ ના ઠરાવ ક્રમાંક (૧૫) થી કરેલ ઉપરોકત ભલામણ અંતર્ગત આવા પ્રકારના પ્રશ્નોનું ધારા ધોરણ નકકી કરવા માટેપુનઃ વિચારણા કરવા માટે બી.યુ.ટી. માં રજુ કરવી.

<u>અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦–૬–૨૦૨૧ની સભાનો ઠરાવ ક્રમાંક (૬)</u>

:: પી.એચ.ડી ના માર્ગદર્શક શિક્ષક તરીકેની લાયકાત / માન્યતાના ધોરણો યુ.જી.સી દ્વારા નિર્ધારીત કરવામાં આવેલ હોય અન્ય યુનિવર્સિટીમાં પી. એચ. ડી સુપરવાઈઝીંગ ટીચરની માન્યતા ધરાવતા અધ્યાપક આપણી યુનિવર્સિટી કે યુનિવર્સિટી સંલગ્ન કોલેજમાં નોકરીમાં જોડાય તેવા કિસ્સામાં પીએચ. ડી માર્ગદર્શક શિક્ષક તરીકે જે તે યુનિવર્સિટીની માન્યતા ધ્યાને લઈ ઓર્ડીનન્સ–૧૦૮ મુજબની જોગવાઈ અનુસાર કાર્યવાહી કરી અરજીકર્તા અધ્યાપકને પીએચ.ડી. માર્ગદર્શક શિક્ષકની માન્યતા આપવામાં આવે તેવી એકેડેમિક કાઉન્સીલને ભલામણ કરવામાં આવે છે.

(અનુસ્નાતક વિભાગ)

:: આથી ઠરાવવામાં આવે છે કે,અન્ય સ્ટેટ યુનિવર્સિટીમાંથી આપણી યુનિવર્સિટીમાં જોડાયેલ શિક્ષકો જોપીએચ.ડી.ની માર્ગદર્શક શિક્ષકની માન્યતા ધરાવતા હોય અને તેઓ પીએચ.ડી. માર્ગદર્શક શિક્ષકની માન્યતા માટે આપણી યુનિવર્સિટીમાં અરજી કરે તેવા કિસ્સામાંઓર્ડિનન્સ ૧૦૮ મુજબની જોગવાઈ અનુસાર કાર્યવાહી ન કરતા યુનિવર્સિટી કક્ષાએ આદરણીય કુલપતિશ્રી દ્વારા સમિતિ નિયુકત કરવામાં આવે. આ સમિતિ દ્વારા ઓર્ડિનન્સ ૧૦૮ મુજબના ધારાધોરણોની પરિપૂર્ણતા ચકાસણી કર્યા બાદ ભલામણને એકેડેમિક કાઉન્સિલમાં આગળની કાર્યવાહી અર્થે રજૂ કરવામાં આવે.

વધુમાં સ્ટેટ યુનિવર્સિટી સિવાયની અન્ય તમામ યુનિવર્સિટીના કિસ્સામાં ઓર્ડિનન્સ ૧૦૮ મુજબની કાર્યવાહી કરવી.

(૭) યુનિવર્સિટી શિક્ષણ વિભાગના વડાશ્રીના તા.૨૪/૦૩/૨૦૨૧ના પત્રાંકઃશિક્ષણ/એમ.એડ્. સ્વનિર્ભર/૧૮૮૭/૨૦૨૧થી શિક્ષણ વિભાગ ખાતે એમ.એડ્. સેલ્ફ ફાયનાન્સ અભ્યાસમાં શૈક્ષણિક વર્ષ ૨૦૨૦–૨૧ માટે કોઈ પ્રવેશ થયેલ ન હોય તેમજ છેલ્લા પાંચ વર્ષથી એક પણ વિદ્યાર્થીનો પ્રવેશ થયેલ ન હોય જે અંગે યોગ્ય નિર્ણય લેવા માટેની રજૂઆત સંદર્ભમાં માન.ઈ.ચા. કુલપતિશ્રી નિયુકત સમિતિની તા.૦૭/૦૪/૨૦૨૧ના રોજના આ સાથેની વિગતે સંયુકત અભિપ્રાય અનુસાર હાલના સંજોગોને તેમજ વર્તમાન પરિસ્થિતિને પણ ધ્યાનમાં લઈ એમ.એડ્. સેલ્ફ ફાયનાન્સ પ્રોગ્રામ બંધ કરવા અને બંધ કરવાની કાર્યવાહી માટેની ભલામણનો સ્વીકાર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે, જે ભલામણ પર વિચારણા કરવા બાબત.

<u>અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦–૬–૨૦૨૧ની સભાનો ઠરાવ ક્રમાંક (૭)</u>

:: શિક્ષણ વિભાગખાતેના એમ.એડ્. સેલ્ફ ફાયનાન્સ અભ્યાસક્રમ બંધ કરવા અંગેનીકુલપતિશ્રી નિયુકત સમિતિની ભલામણનો સ્વીકાર કરી સમીતીની ભલામણ રજુઆત કરવા એકેડેમિક કાઉન્સીલને ભલામણ કરવાનું ઠરાવવામાં આવે છે.

(અનુસ્નાતક વિભાગ)

:: આથી ઠરાવવામાં આવે છે કે,શિક્ષણ વિભાગ ખાતેના એમ.એડ્. સેલ્ફ ફાયનાન્સ અભ્યાસક્રમમાં વિદ્યાર્થીઓને અભ્યાસની વધુ તક મળી રહે તે હેતુથી આ વર્ષે પ્રવેશપ્રક્રિયામાં સામેલ કરવું.

(૮) પીએચ.ડી. સુપરવાઈઝીંગ ટીચરની માન્યતાની સેન્ટર ફોર સોશ્યલ સ્ટડીઝના ડાયરેકટશ્રીના તા.૨૮–૫–૨૦૨૧ના પત્ર ક્રમાંક : CSS/VNSGU/27/2021થી Approved ઈન્સ્ટિટયૂટ તરીકે માન્યતા આપેલ છે. સેન્ટર ફોર સોશ્યલ સ્ટડીઝ યુનિવર્સિટીની માન્યતા ધરાવતી હોય, તે ધ્યાને લઈ નીચેના ફેકલ્ટી સભ્યોને પીએચ.ડી. ગાઈડ તરીકે માન્યતા આપવાની વિનંતી કરેલ છે. માર્ગદર્શક શિક્ષકની માન્યતા વિષયક દરખાસ્ત ધ્યાને લઈ ઓર્ડિ (૧૦૮) ની જોગવાઈનું પરિપાલન થતુ હોય તો નીચેના અધ્યાપકોનેઓર્ડીનન્સ–૧૦૮ મુજબની જોગવાઈ અનુસાર કાર્યવાહી કરી અરજીકર્તા અધ્યાપકને પીએચ.ડી. માર્ગદર્શક શિક્ષકની માન્યતા આપવામાં આવે તેવી એકેડેમિક કાઉન્સીલને ભલામણ કરેલ છે જે ભલામણ પર વિચારણા કરવા બાબત.

૧	Dr. Satyakam Joshi	Professor	**સમાજશાસ્ત્ર / સમાજકાર્ય**
૨	Dr. Kiran Desai	Professor	**સમાજશાસ્ત્ર / ગ્રામીણ અભ્યાસ**
૩	Dr. Gagan bihari Sahu	Associate Professor	**અર્થશાસ્ત્ર**
૪	Dr. Sadan Zha	Associate Professor	**ઈતિહાસ**

૧: ઓર્ડિનન્સ ૧૦૮ મુજબ ફૂલ ટાઈમ, રેગ્યુલર ટીચર(પોઝીસન સાથે કન્ફર્મ) બાબતે આધાર રજૂ કરેલ છે.

૨: ઓર્ડિનન્સ ૧૦૮ મુજબ યુનિવર્સિટી માન્યતા ધરાવતા ફૂલ ટાઈમ પ્રોફેસર દ્વારા પીએચ. ડી. સંશોધન અભ્યાસ બાદ (૫) પાંચ પબ્લીકેશન રીફર્ડ જર્નલમાં પ્રકાશિત થયેલ હોવા જોઈએ.

૩: ઓર્ડિનન્સ ૧૦૮ મુજબ યુનિવર્સિટી માન્યતા ધરાવતા ફૂલ ટાઈમ એસોસિએટ પ્રોફેસર દ્વારા (૨) બે પબ્લીકેશન રીફર્ડ જર્નલમાં પ્રકાશિત થયેલ હોવા જોઈએ.

નોંધ :

૧: યુનિવર્સિટી દ્વારા તેના તા. ૫–૨–૨૦૧૫ના પત્રથી સેન્ટર ફોર સોશ્યલ સ્ટડીઝને રસ્ટોર (પુનઃસ્થાપિત) કર્યાની જાણ કરેલ છે.

૨: પત્રની વિગત મુજબ અધ્યાપકોના માર્ગદર્શન હેઠળ પીએચ. ડી. સંશોધનાર્થી કાર્યરત ન હોવાની જાણ સાથે માર્ગદર્શન મેળવતા સંશોધનાર્થીઓ પૈકી ઓછામાં ઓછા(૪) સંશોધનાર્થીઓને ICSSR દ્વારા ફેલોશિપ મળી શકે તેમ હોય તેની (આ સાથેના પત્રથી) જાણ કરેલ છે.

<u>અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦–૬–૨૦૨૧ની સભાનો ઠરાવ ક્રમાંક (૧૨)</u>

:: આથી ઠરાવવામાં આવે છે કે, સેન્ટર ફોર સોસીયલ સ્ટડીઝના નીચે મુજબના અધ્યાપકોને ઓર્ડીનન્સ–૧૦૮ મુજબની જોગવાઈ અનુસાર કાર્યવાહી કરી અરજીકર્તા અધ્યાપકોને પીએચ.ડી. માર્ગદર્શક શિક્ષકની માન્યતા આપવામાં આવે તેવી એકેડેમિક કાઉન્સીલને ભલામણ કરવામાં આવે છે.

૧	Dr. Satyakam Joshi	Professor	**સમાજશાસ્ત્ર / સમાજકાર્ય**
૨	Dr. Kiran Desai	Professor	**સમાજશાસ્ત્ર / ગ્રામીણ અભ્યાસ**
૩	Dr. Gagan bihari Sahu	Associate Professor	**અર્થશાસ્ત્ર**
૪	Dr. Sadan Zha	Associate Professor	**ઈતિહાસ**

(અનુસ્નાતક વિભાગ)

:: આથી ઠરાવવામાં આવે છે કે,સેન્ટર ફોર સોસીયલ સ્ટડીઝના નીચે મુજબના અધ્યાપકોને ઓર્ડીનન્સ–૧૦૮ મુજબની જોગવાઈ અનુસાર કાર્યવાહી કરી અરજીકર્તા અધ્યાપકોને પીએચ.ડી. માર્ગદર્શક શિક્ષકની માન્યતા આપવાઅનુસ્નાતક શિક્ષણ મંડળ (બી.યુ.ટી.) એ તેની

તા. ૧૦/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૧૨ અન્વયે કરેલ ભલામણ સ્વીકારી તે અંગે સિન્ડિકેટને ભલામણ કરવામાં આવે છે.

૧	Dr. Satyakam Joshi	Professor	**સમાજશાસ્ત્ર / સમાજકાર્ય**
૨	Dr. Kiran Desai	Professor	**સમાજશાસ્ત્ર / ગ્રામીણ અભ્યાસ**
૩	Dr. Gagan bihari Sahu	Associate Professor	**અર્થશાસ્ત્ર**
૪	Dr. Sadan Zha	Associate Professor	**ઈતિહાસ**

(૯) એકેડેમિક કાઉન્સિલની **તા.૧૯/૦૬/૨૦૨૧**ની સભાની કાર્યવાહીની નોંધને બહાલી આપવા બાબત.

:: **આથી ઠરાવવામાં આવે છે કે, એકેડેમિકકાઉન્સિલની તા.૧૯/૦૬/૨૦૨૧ની સભાની કાર્યવાહીની નોંધને બહાલી આપવામાંઆવી હતી, ત્યારબાદ અધ્યક્ષશ્રીએ તેના પર સહી કરી હતી.**

(૧૦) આરોગ્ય તબીબી સેવાઓ અને તબીબી શિક્ષણના તા. ૧૬/૦૬/૨૦૨૧ ના પત્રક્રમાંક : એમસીજી / ઓફલાઈન / શિક્ષણ / શરૂકરવા / આઈ / ૨૧ ના પત્રમાં જણાવ્યા મુજબ મેડીકલ / ડેન્ટલ / ફીઝીયોથેરાપી / નર્સિંગ / ઓપ્ટોમેટ્રીના અભ્યાસક્રમના મોટાભાગના વિદ્યાર્થીઓ વેકસીનેટ થઈ ગયા હોય ટીચીંગની ગુણવત્તા જળવાઈ રહે તે હેતુસર Covid appropriate Behavior (CAB) અને Infection Control & Prevention ની તકેદારી સાથે મેડીકલ/ડેન્ટલ/ફીઝીયોથેરાપી/નર્સીંગ/ ઓપ્ટોમેટ્રીના યુ.જી. તથા પી.જી. વિદ્યાર્થીઓને ઓફલાઈન શિક્ષણ શરૂ કરવા અંગે ચર્ચા વિચારણા કરવા બાબત.

(પરિશિષ્ટ : ૩)
(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, આરોગ્ય તબીબી સેવાઓ અને તબીબી શિક્ષણના તા. ૧૬/૦૬/૨૦૨૧ ના પત્રક્રમાંક : એમસીજી / ઓફલાઈન / શિક્ષણ / શરૂકરવા / આઈ / ૨૧ નો પત્ર સ્વીકારી તે મુજબ Covid appropriate Behavior (CAB) અને Infection Control & Prevention ની તકેદારી સાથે મેડીકલ/ડેન્ટલ/ફીઝીયોથેરાપી/નર્સીંગ/ ઓપ્ટોમેટ્રીના યુ.જી. તથા પી.જી. વિદ્યાર્થીઓને ઓફલાઈન શિક્ષણ શરૂ કરવું.**

(૧૧) આયુષ, ગુજરાત રાજય, ગાંધીનગરનો પત્રક્રમાંક : યનવ–૧/૧૩૧૭૪–૨૧૪/૨૦૨૧/ગ, તા. ૦૬/૦૬/૨૦૨૧ ના પત્રમાં જણાવ્યા પ્રમાણે હોમિયોપેથી/આયુર્વેદ યુ.જી. તથા પી.જી વિદ્યાર્થીઓને ઓફલાઈન શિક્ષણ શરૂ કરવા અંગે ચર્ચા વિચારણા કરવા બાબત.

(પરિશિષ્ટ : ૪)
(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, આયુષ, ગુજરાત રાજય, ગાંધીનગરનો પત્રક્રમાંક : યનવ–૧/૧૩૧૭૪–૨૧૪/૨૦૨૧/ગ, તા. ૦૬/૦૬/૨૦૨૧ નો પત્ર સ્વીકારી તે મુજબ Covid appropriate Behavior (CAB) અને Infection Control & Prevention ની તકેદારી સાથેહોમિયોપેથીના વિદ્યાર્થીઓને ઓફલાઈન શિક્ષણ શરૂ કરવું.**

(૧૨) એજયુકેશન ડિપાર્ટમેન્ટના પ્રિન્સીપાલ સેક્રેટરીના તા. ૦૨/૦૬/૨૦૨૧ ના પત્રક્રમાંક : D.O.No. NEP/1221/Edu Policy (P.F) /KH પર ચર્ચા વિચારણા કરવા બાબત.

(પરિશિષ્ટ : ૫)
(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,એજયુકેશન ડિપાર્ટમેન્ટના પ્રિન્સીપાલ સેક્રેટરીના તા. ૦૨/૦૬/૨૦૨૧ ના પત્રક્રમાંક : D.O.No. NEP/1221/Edu Policy (P.F) /KH નો સૈધ્ધાંતિક રીતે સ્વીકાર કરવામાં આવે છે અને વધુ વિચારણા અને અમલ માટે તમામ ફેકલ્ટીને ભલામણ કરવામાં આવે છે.**

વધુમાં આ સંદર્ભે તમામ ફેકલ્ટીઓના ડીનશ્રીઓએ તા.૧૦/૦૭/૨૦૨૧ પહેલાં પોતાનો રીપોર્ટ યુનિવર્સિટીના એકેડેમિક વિભાગમાં જમા કરાવવો.

(૧૩) તબીબી અધિક્ષકશ્રી, નવી સિવીલ હોસ્પિટલ સુરતના તા. ૪–૬–૨૦૨૧ના પત્ર ક્રમાંક : નસિહોસુ / કોવિડ–૧૯ / ૧૮૯૦૧ / ૨૦૨૧ ના પત્રથી હાલમાં Fellowship in Fetal Medicine અને Fellowship in Basic Fetal Medicine & Advanced Obstetric Ultrasonography કોર્ષ ચાલુ હોય ઓબ્સ એન્ડ ગાયનેકોલોજી વિભાગમાંથી જેમણે ડીગ્રી અથવા ડિપ્લોમાંની પદવી એનાયત થયેલ હોય તે વિધાથીઓને Fetal Medicine માં પીએચ. ડી. સંશોધન અભ્યાસની તક મળે તે હેતુથી શરૂ કરવાની દરખાસ્ત સંબધકર્તા વિભાગના વડાશ્રી અને બોર્ડ ઓફ સ્ટડીઝના ચેરમેનશ્રીની ભલામણ સાથે મળેલ છે. જે ભલામણ સંદર્ભમાં માન. કુલપતિશ્રીના આદેશ મુજબ તબીબી વિધાશાખાના સિનિયર સભ્યશ્રીનો અભિપ્રાય મેળવતા તેમના દ્વારા નીચે મુજબની ભલામણ કરેલ છે. અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦–૬–૨૦૨૧ની સભાએ તેના ઠરાવ ક્રમાંક (૧૯) અન્વયે તબીબી વિધાશાખા અંતર્ગત Fetal Medicineમાં પીએચ.ડી. સંશોધન અભ્યાસ શરૂ કરવાની ભલામણનો સ્વીકાર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે, જે ભલામણ પર વિચારણા કરવા બાબત.

<u>વિધાશાખાના સિનિયર સભ્ય ડા. કે. એન. ભટ્ટનો અભિપ્રાય :</u>

Fetal Medicineમાં પીએચ. ડી. સંશોધન અભ્યાસમાં ઓબ્સ. એન્ડ ગાયનેક અથવા રેડીયોલોજી અનુસ્નાતક અભ્યાસ અને Fetal Medicine fellowship અથવાFetal Medicine certificate course કરનારને પ્રાધાન્ય આપવા સાથે Ph. D.સંશોધન અભ્યાસ શરૂ કરવા ભલામણ છે.

<u>અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦–૬–૨૦૨૧, ઠરાવ ક્રમાંક (૧૯)</u>

:: આથી ઠરાવવામાં આવે છે કે, તબીબી વિદ્યાશાખામાંFetal Medicineમાં પીએચ.ડી. સંશોધન અભ્યાસ શરૂ કરવાની દરખાસ્ત સ્વીકારી એકેડેમિક કાઉન્સિલને ભલામણ કરવી.

(અનુસ્નાતક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, અનુસ્નાતક શિક્ષણ મંડળ (બી.યુ.ટી.) એ તેની તા. ૧૦/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૧૯ અન્વયે ભલામણ કરેલ તબીબી વિદ્યાશાખામાંFetal Medicineમાં પીએચ.ડી. સંશોધન અભ્યાસ શરૂ કરવાની દરખાસ્ત સ્વીકારી તે અંગે સિન્ડિકેટને ભલામણ કરવામાં આવે છે.**

(૧૪)યુનિવર્સિટી દ્વારા લેવામાં આવતી વિવિધ પરીક્ષાઓની ઉત્તરવહીઓના મૂલ્યાંકન માટે હાલમાં સ્નાતકના પ્રથમ વર્ષ અને દ્વિતિય વર્ષ તેમજ અનુસ્નાતકના સેમેસ્ટર–૧ અને ૨ નું મૂલ્યાંકન માટે ઉત્તરવહીઓ કોલેજોને મોકલવામાં આવે છે. જ્યારે સ્નાતકના ટી.વાય.અને અનુસ્નાતકના સેમેસ્ટર–૩ અને ૪ નું યુનિવર્સિટી ખાતે કેન્દ્રસ્થ મૂલ્યાંકન કરાવવામાં આવે છે. હવે પછીના સમય દરમ્યાન લેવાનાર યુનિવર્સિટીની તમામ પરીક્ષાઓની ઉત્તરવહીઓનું મૂલ્યાંકન ઓનલાઈન કરાવવા માટે માન.કુલપતિશ્રી દ્વારા સૂચન કરેલ છે. જે પર વિચારણા કરવા બાબત.

(પરીક્ષા/એ.સી.ડી.સી. વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,યુનિવર્સિટીની અનુસ્નાતક કક્ષાની તમામ ફેકલ્ટીની પરીક્ષાઓ, સ્નાતક કક્ષાએ કોમ્પ્યુટર વિદ્યાશાખાના તમામ વર્ષના અભ્યાસક્રમો, કોમર્સ ફેકલ્ટીના બી.બી.એ. અભ્યાસક્રમ, શિક્ષણ વિદ્યાશાખાના તમામ વર્ષના અભ્યાસક્રમો તેમજ તમામ ફેકલ્ટીની પુનઃમૂલ્યાંકનઅને પુનઃચકાસણીની કામગીરી પ્રાયોગિક ધોરણે ઓનલાઈન પધ્ધતિથી ઉત્તરવાહીનું સ્કેનીંગ કરી નિયત સોફ્ટવેરથી ચકાસણી કરાવવા સિન્ડિકેટને ભલામણ કરવામાં આવે છે.**

(૧૫) શૈક્ષણિક વર્ષ : ૨૦૨૧–૨૨ થી અમલમાં આવનાર S.Y.B.Sc. Sem-III, & IV, Mathematics વિષયનો અભ્યાસક્રમ અંગે ગણિતશાસ્ત્ર વિષયની અભ્યાસસમિતિની તા.૧૪/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૨ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૧૯ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>ગણિતશાસ્ત્ર વિષયની અભ્યાસસમિતિની તા.૧૪/૦૬/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ૨</u>

:: આથી ઠરાવવામાં આવે છે કે, શૈક્ષણિક વર્ષ : ૨૦૨૧–૨૨ થી અમલમાં આવનાર S.Y.B.Sc. Sem-III & IV ગણિતશાસ્ત્ર વિષયનો અભ્યાસક્રમ જે પેટાસમિતિએ બનાવ્યો હતો તે સર્વાનુમતે મંજૂર કરવામાં આવ્યો, જે મંજૂર કરવા વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

<u>વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૧૯</u>

:: આથી ઠરાવવામાં આવે છે કે, ગણિતશાસ્ત્ર વિષયની અભ્યાસસમિતિની તા.૧૪/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૨અન્વયે મંજૂર કરેલ શૈક્ષણિક વર્ષ : ૨૦૨૧–૨૨ થી અમલમાં આવનાર S.Y.B.Sc. Sem-III, &IV, Mathematics વિષયનો અભ્યાસક્રમ મંજુર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(પરિશિષ્ટઃ ૬)
(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, ગણિતશાસ્ત્ર વિષયની અભ્યાસસમિતિએ તેની તા.૧૪/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૨ અન્વયે ભલામણ કરેલ અને વિજ્ઞાન**

વિદ્યાશાખાએ તેની તા. ૧૭/૦૬/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંક : ૧૯ અન્વયે સ્વીકારેલશૈક્ષણિક વર્ષ : ૨૦૨૧–૨૨ થી અમલમાં આવનાર S.Y.B.Sc. Sem-III &IV Mathematics વિષયનો અભ્યાસક્રમ મંજુર કરવામાં આવે છે.

(૧૬) એમ.એસસી. સેમ–૪ ની ડેઝર્ટેશનની પરીક્ષા લેવા બાબતે ચર્ચા કરતા વનસ્પતિશાસ્ત્ર (બોટની) વિષયની અભ્યાસસમિતિની તા.૧૪/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૩ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૧૮ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>વનસ્પતિશાસ્ત્ર (બોટની) વિષયની અભ્યાસસમિતિની તા.૧૪/૦૬/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ ૩</u>

:: આથી ઠરાવવામાં આવે છે કે,એમ.એસસી. સેમ–૪ ની ડેઝર્ટેશનની પરીક્ષા ગત વર્ષ કોરોના કાળને કારણે ઓનલાઈન વાઈવા લેવામાં આવ્યા હતા તે જ મુજબ આ વર્ષે પણ ઓનલાઈન વાઈવા દ્વારા જ લેવાની વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

<u>વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૧૮</u>

:: આથી ઠરાવવામાં આવે છે કે,વનસ્પતિશાસ્ત્ર (બોટની) વિષયની અભ્યાસસમિતિની તા.૧૪/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૩ અન્વયે મંજૂર કરેલએમ.એસસી. સેમ–૪ ની ડેઝર્ટેશનની પરીક્ષા ઓનલાઈન વાઈવા લેવા મંજુર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, વનસ્પતિશાસ્ત્ર વિષયની અભ્યાસસમિતિએ તેની તા.૧૪/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૩ અન્વયે ભલામણ કરેલ અને વિજ્ઞાન વિદ્યાશાખાએ તેની તા. ૧૭/૦૬/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંક : ૧૮ અન્વયે સ્વીકારેલ એમ.એસસી. સેમ–૪ ની ડેઝર્ટેશનની પરીક્ષા ઓનલાઈન વાઈવા દ્વારા લેવામંજુર કરવામાં આવે છે.**

(૧૭) ટી.વાય.બીએસ.સી. રસાયણશાસ્ત્ર સેમેસ્ટર–૫ ના અભ્યાસક્રમ અંગે ચર્ચા કરતા રસાયણશાસ્ત્ર વિષયની અભ્યાસસમિતિની તા.૧૧/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૨ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૧૭ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>રસાયણશાસ્ત્ર વિષયની અભ્યાસસમિતિની તા.૧૧/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૨</u>

:: આથી ઠરાવવામાં આવે છે કે, જુન–૨૦૨૧–૨૨ થી અમલમાં આવનાર ટી.વાય. બી.એસસી. રસાયણશાસ્ત્ર સેમેસ્ટર–૫ નાં અભ્યાસક્રમને સર્વાનુમતે મંજુર કરી તે મંજુર કરવા વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

<u>વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૧૭</u>

:: આથી ઠરાવવામાં આવે છે કે, રસાયણશાસ્ત્ર વિષયની અભ્યાસસમિતિની તા.૧૧/૦૬/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંકઃ૨ અન્વયે મંજૂર કરેલ જુન–૨૦૨૧–૨૨ થી અમલમાં આવનાર ટી.વાય. બી.એસસી. રસાયણશાસ્ત્ર સેમેસ્ટર–૫ નાં અભ્યાસક્રમ મંજુર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(પરિશિષ્ટ : ૭)
(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,રસાયણશાસ્ત્ર વિષયની અભ્યાસસમિતિએ તેની તા.૧૧/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૨ અન્વયે ભલામણ કરેલ અને વિજ્ઞાન વિદ્યાશાખાએ તેની તા. ૧૭/૦૬/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંક : ૧૭ અન્વયે સ્વીકારેલ જૂન૨૦૨૧–૨૨ થી અમલમાં આવનાર ટી.વાય. બી.એસસી. રસાયણશાસ્ત્ર સેમેસ્ટર–૫ નો અભ્યાસક્રમમંજુર કરવામાં આવે છે.**

(૧૮) T.Y. B.Sc. Health Science Sem-V &VI, Generic elective-086 નો અભ્યાસક્રમ અંગે ચર્ચા કરતા બાયોસાયન્સ વિષયની અભ્યાસસમિતિની તા.૦૯/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૩ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૧૪ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>બાયોસાયન્સ વિષયની અભ્યાસસમિતિની તા.૦૯/૦૬/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ૩</u>

:: આથી ઠરાવવામાં આવે છે કે, શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર T.Y. B.Sc. Health Science Sem-V &VI, Generic elective-086 નો અભ્યાસક્રમ મંજૂર કરી તે મંજૂર કરવા વિજ્ઞાન ભલામણ કરવામાં આવે છે.

<u>વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૧૪</u>

:: આથી ઠરાવવામાં આવે છે કે, બાયોસાયન્સ વિષયની અભ્યાસસમિતિની તા.૦૯/૦૬/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ૩ અન્વયે મંજૂર કરેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર T.Y. B.Sc.Health Science Sem-V &VI, Generic elective-086 નો અભ્યાસક્રમ મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(પરિશિષ્ટ : ૮)
(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,બાયોસાયન્સ વિષયની અભ્યાસસમિતિએ તેની તા.૦૯/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૩ અન્વયે ભલામણ કરેલ અને વિજ્ઞાન વિદ્યાશાખાએ તેની તા. ૧૭/૦૬/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંક : ૧૪ અન્વયે સ્વીકારેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર T.Y. B.Sc.Health Science Sem-V &VI, Generic elective-086 નોઅભ્યાસક્રમમંજુર કરવામાં આવે છે.**

(૧૯) T.Y. B.Sc. Bio-Science Sem-V & VI નો અભ્યાસક્રમ બાબતે ચર્ચા કરતા બાયોસાયન્સ વિષયની અભ્યાસસમિતિની તા.૦૯/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૨ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૧૩ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>બાયોસાયન્સ વિષયની અભ્યાસસમિતિની તા.૦૯/૦૬/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ૨</u>

:: આથી ઠરાવવામાં આવે છે કે, શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર T.Y. B.Sc. Bio-Science Sem-V & VI નો અભ્યાસક્રમ મંજૂર કરી તે મંજૂર કરવા વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૧૩

:: આથી ઠરાવવામાં આવે છે કે, બાયોસાયન્સ વિષયની અભ્યાસસમિતિની તા.૦૯/૦૬/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ૨ અન્વયે મંજૂર કરેલશૈક્ષણિકવર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર T.Y. B.Sc. Bio-Science Sem-V &VI નો અભ્યાસક્રમ મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(પરિશિષ્ટ : ૯)
(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, બાયોસાયન્સ વિષયની અભ્યાસસમિતિએ તેની તા.૦૯/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૨ અન્વયે ભલામણ કરેલ અને વિજ્ઞાન વિદ્યાશાખાએ તેની તા. ૧૭/૦૬/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંક : ૧૩ અન્વયે સ્વીકારેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર T.Y. B.Sc. Bio-Science Sem-V &VI નોઅભ્યાસક્રમમંજુર કરવામાં આવે છે.**

(૨૦) શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર T.Y.B.Sc.(Zoology)ના સિલેબસ બનાવવા બાબતે ઝૂઓલોજી વિષયની અભ્યાસસમિતિની તા.૨૨/૦૩/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૩ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

ઝૂઓલોજી વિષયની અભ્યાસસમિતિની તા.૨૨/૦૩/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ ૨

:: આથી સર્વાનુમતે ઠરાવવામાં આવે છે કે, શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર T.Y.B.Sc. Sem-5 & 6 નો પ્રાણીશાસ્ત્ર વિષયનો અભ્યાસક્રમ મંજૂર કરી તે મંજૂર કરવા વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૩

:: આથી ઠરાવવામાં આવે છે કે, ઝૂઓલોજી વિષયની અભ્યાસસમિતિતા.૨૨/૩/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨ અન્વયે મંજૂર કરેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર T.Y.B.Sc. Sem-5 & 6 નો પ્રાણીશાસ્ત્ર વિષયનો અભ્યાસક્રમ સ્વીકારી મંજૂર કરવામાં આવે છે. અને તે મંજૂર કરવા એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(પરિશિષ્ટ : ૧૦)
(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,પ્રાણીશાસ્ત્ર વિષયની અભ્યાસસમિતિએ તેની તા.૨૨/૦૩/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૨ અન્વયે ભલામણ કરેલ અને વિજ્ઞાન વિદ્યાશાખાએ તેની તા. ૧૭/૦૬/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંક : ૩ અન્વયે સ્વીકારેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર T.Y.B.Sc. Sem-5 & 6 નો પ્રાણીશાસ્ત્ર વિષયનો અભ્યાસક્રમ સ્વીકારી મંજૂરકરવામાં આવે છે.**

(૨૧) F.Y.B.Sc. Sem-1 & 2 તથા S.Y.B.Sc. Sem-3 & 4 ના અભ્યાસક્રમ અંગે ચર્ચા કરતા ઝૂઓલોજી વિષયની અભ્યાસસમિતિની તા.૨૨/૦૩/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૩ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૪ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

ઝૂઓલોજી વિષયની અભ્યાસસમિતિની તા.૨૨/૦૩/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ ૩

:: આથી સર્વાનુમતે ઠરાવવામાં આવે છે કે, F.Y.B.Sc. Sem-1 & 2 તથા S.Y.B.Sc. Sem-3 & 4 માં ચર્ચાને અંતે આંશિક સુધારા કરવામાં આવ્યા છે.જે શૈક્ષિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવે તે રીતે મંજૂર કરવા વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૪

:: આથી ઠરાવવામાં આવે છે કે, ઝૂઓલોજી વિષયની અભ્યાસસમિતિની તા.૨૨/૦૩/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૩ અન્વયે મંજૂર કરેલF.Y.B.Sc.Sem-1 & 2 તથા S.Y.B.Sc. Sem-3 & 4 નો અભ્યાસક્રમ આંશિક સુધારા સહિત મંજૂર કરી શૈક્ષિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવે તે રીતે મંજૂર કરવા એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવેલ છે.

(પરિશિષ્ટ : ૧૧)
(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, પ્રાણીશાસ્ત્ર વિષયની અભ્યાસસમિતિએ તેની તા.૨૨/૦૩/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૩ અન્વયે ભલામણ કરેલ અને વિજ્ઞાન વિદ્યાશાખાએ તેની તા. ૧૭/૦૬/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંક : ૪ અન્વયે સ્વીકારેલ F.Y.B.Sc.Sem-1 & 2 તથા S.Y.B.Sc.Sem-3 & 4 નો અભ્યાસક્રમ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવે તે રીતે મંજૂરકરવામાં આવે છે.**

(૨૨) M.Sc.Biotechnology 5 Year Integrated માં સેમેસ્ટર ૧૦ માં BT-4003 Review of Research Publication માટે ૧૦ પેપર નકકી કરવા અંગે બી.એસસી. એન્ડ એમ.એસસી. બાયોટેકનોલોજી વિષયની નિયૂકત એડહોક બોર્ડની તા.૨૬/૦૩/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૫ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

બી.એસસી. એન્ડ એમ.એસસી. બાયોટેકનોલોજી વિષયની નિયૂકત એડહોક બોર્ડની તા.૨૬/૩/૨૦૨૧નીસભાનાં ભલામણ ક્રમાંકઃ ૨

:: આથી ઠરાવવામાં આવે છે કે, સેમેસ્ટર ૧૦ માં BT-4003 Review of Research Publication માટે ૧૦ પેપર મંજૂર કરવામાં આવ્યા અને તે મંજૂર કરવા વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૫

:: આથી ઠરાવવામાં આવે છે કે, બી.એસસી. એન્ડ એમ.એસસી. બાયોટેકનોલોજી વિષયની નિયૂકત એડહોક બોર્ડની તા.૨૬/૩/૨૦૨૧નીસભાનાં ઠરાવ ક્રમાંકઃ ૨ અન્વયે કરેલ ભલામણ સ્વીકારી એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(પરિશિષ્ટ :૧૨)
(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, બી.એસસી. એન્ડ એમ.એસસી. બાયોટેકનોલોજી વિષયની નિયૂકત (એડહોક) સમિતિએ તેની તા.૨૬/૦૩/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૨ અન્વયે ભલામણ કરેલ અને વિજ્ઞાન વિદ્યાશાખાએ તેની તા.૧૭/૦૬/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંક : ૫ અન્વયે સ્વીકારેલ સેમેસ્ટર ૧૦ માં**

BT-4003 Review of Research Publication માટે ૧૦ પેપર મંજૂરકરવામાં આવે છે.

(૨૩) PG DMLT નો રિવાઈઝડ અભ્યાસક્રમ અને પેપર નામમાં સુધારા અંગે ચર્ચા કરતા મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૫/૧૧/૨૦૨૦ ની સભાનાં ઠરાવ ક્રમાંકઃ ૫ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૧૧ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૫/૧૧/૨૦૨૦ ની સભાનાં ભલામણ ક્રમાંકઃ ૫</u>

:: આથી ઠરાવવામાં આવે છે કે, શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર PG DMLT નો રિવાઈઝડ અભ્યાસક્રમ અને પેપર નામમાં સુધારા મંજૂર કરી વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

<u>વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૧૧</u>

:: આથી ઠરાવવામાં આવે છે કે, મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૫/૧૧/૨૦૨૦ ની સભાનાં ઠરાવ ક્રમાંકઃ ૫ અન્વયે મંજૂર કરેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર PG DMLT નો રિવાઈઝડ અભ્યાસક્રમ અને પેપર નામમાં સુધારા મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(પરિશિષ્ટ : ૧૩)
(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિએ તેની તા.૦૫/૧૧/૨૦૨૦ ની સભાના ઠરાવ ક્રમાંક : ૫ અન્વયે ભલામણ કરેલ અને વિજ્ઞાન વિદ્યાશાખાએ તેની તા.૧૭/૦૬/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંક : ૧૧ અન્વયે સ્વીકારેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર PG DMLT નો રિવાઈઝડ અભ્યાસક્રમ અને પેપર નામમાં સુધારામંજૂરકરવામાં આવે છે.**

(૨૪) PG DMLT Course માં B.Sc. Environmental Science વિષયની એલીજીબીલટી અંગે ચર્ચા કરતા મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૫/૧૧/૨૦૨૦ ની સભાનાં ઠરાવ ક્રમાંકઃ ૪ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૧૦ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૫/૧૧/૨૦૨૦ ની સભાનાં ભલામણ ક્રમાંકઃ ૪</u>

:: આથી ઠરાવવામાં આવે છે કે, PG DMLT Course માં B.Sc. Environmental Science વિષયની એલીજીબીલટી શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર નીચે મુજબ છે. જે સર્વાનુમતે મંજૂર કરી વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

<u>Eligibility:-</u>

Candidate should have a B.Sc. degree of Veer Narmad South Gujarat University, Surat with (A) or (B) or equivalent qualification of other recognized University.

(A) Microbiology, Chemistry (Biology at F.Y. B.Sc. level), Botany, Zoology, Medical Technology, MLT, Environment , Biochemistry, Biosciences, Life sciences or Biotechnology as the principal subjects.

OR

(B) M.B.B.S, BDS,BAMS, BHMS, B.Sc. Nursing, B.Sc. Optometry,B.Pharmacy, B.Physiotherapy.

<u>વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૧૦</u>

:: આથી ઠરાવવામાં આવે છે કે, મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૫/૧૧/૨૦૨૦ ની સભાનાં ઠરાવ ક્રમાંકઃ ૪ અન્વયે મંજૂર કરેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનારPG DMLT Course માં B.Sc. Environmental Science વિષયની ઉપર મુજબની એલીજીબીલટી મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(એકેડેમિક વિભાગ)

:: આથી ઠરાવવામાં આવે છે કે, મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિએ તેની તા.૦૫/૧૧/૨૦૨૦ ની સભાના ઠરાવ ક્રમાંક : ૪ અન્વયે ભલામણ કરેલ અને વિજ્ઞાન વિદ્યાશાખાએ તેની તા.૧૭/૦૬/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંક : ૧૦ અન્વયે સ્વીકારેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર PG DMLT Course માં B.Sc. Environmental Science વિષયની ઉપર મુજબની એલીજીબીલીટી સ્વીકારી તે અંગે સિન્ડિકેટને ભલામણકરવામાં આવે છે.

(૨૫) શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ અમલમાં આવનાર બી.એસસી.સેમેસ્ટર–૩ અને ૪ તથા એમ.એસસી.સેમેસ્ટર–૩ અને ૪ (માઈક્રોબાયોલોજી) વિષયનાં અભ્યાસક્રમ અંગે ચર્ચા કરતા માઈક્રોબાયોલોજી વિષયની અભ્યાસસમિતિની તા.૧૫/૦૩/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંકઃ ૨ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૬ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>માઈક્રોબાયોલોજી વિષયની અભ્યાસસમિતિની તા.૧૫/૦૩/૨૦૨૧ ની સભાનાં ભલામણ ક્રમાંકઃ૨</u>

:: આથી ઠરાવવામાં આવે છે કે, શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ અમલમાં આવનાર બી.એસસી. એન્ડ એમ.એસસી. (માઈક્રોબાયોલોજી) સેમેસ્ટર–૩ અને ૪ નાં અભ્યાસક્રમ સર્વાનુમતે મંજૂર કરી તે મંજુર કરવા વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

<u>વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૬</u>

:: આથી ઠરાવવામાં આવે છે કે, માઈક્રોબાયોલોજી વિષયની અભ્યાસસમિતિની તા.૧૫/૦૩/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંકઃ૨ અન્વયે મંજૂર કરેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ અમલમાં આવનાર બી.એસસી. & એમ.એસસી.માઈક્રોબાયોલોજી સેમેસ્ટર–૩ અને ૪ નાં અભ્યાસક્રમ મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(પરિશિષ્ટ : ૧૪)
(એકેડેમિક વિભાગ)

:: આથી ઠરાવવામાં આવે છે કે, માઈક્રોબાયોલોજી વિષયની અભ્યાસસમિતિએ તેની તા.૧૫/૦૩/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૨ અન્વયે ભલામણ કરેલ અને વિજ્ઞાન વિદ્યાશાખાએ તેની તા.૧૭/૦૬/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંક : ૬ અન્વયે સ્વીકારેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર બી.એસસી. &

એમ.એસસી.માઈક્રોબાયોલોજી સેમેસ્ટર–૩ અને ૪ નાં અભ્યાસક્રમ મંજૂર કરવામાં આવે છે.

(૨૬) બી.એસસી.મેડીકલ ટેકનોલોજીની માર્કિંગ સ્કીમ અંગે ચર્ચા કરતા મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૫/૧૧/૨૦૨૦ ની સભાનાં ઠરાવ ક્રમાંકઃ ૨ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૯ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૫/૧૧/૨૦૨૦ ની સભાનાં ભલામણ ક્રમાંકઃ ૨</u>

:: આથી ઠરાવવામાં આવે છે કે, શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર બી.એસસી. મેડીકલ ટેકનોલોજીની માર્કિંગ સ્કીમ સર્વાનુમતે મંજૂર કરી વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

<u>વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૯</u>

:: આથી ઠરાવવામાં આવે છે કે, મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિ તા.૦૫/૧૧/૨૦૨૦ ની સભાનાં ઠરાવ ક્રમાંકઃ ૨ અન્વયે મંજૂર કરેલશૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર બી.એસસી.મેડીકલ ટેકનોલોજીની માર્કિંગ સ્કીમ મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(પરિશિષ્ટ : ૧૫)
(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિએ તેની તા.૦૫/૧૧/૨૦૨૦ ની સભાના ઠરાવ ક્રમાંક : ૨ અન્વયે ભલામણ કરેલ અને વિજ્ઞાન વિદ્યાશાખાએ તેની તા.૧૭/૦૬/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંક : ૯ અન્વયે સ્વીકારેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર બી.એસસી.મેડીકલ ટેકનોલોજીની માર્કિંગ સ્કીમ મંજૂર કરવામાં આવે છે.**

(૨૭) વિજ્ઞાન વિદ્યાશાખાની તા.૦૨/૦૫/૨૦૧૯ રોજ મળેલ સભાનાં ઠરાવ ક્રમાંકઃ૧૫ અને ૩૬ અન્વયે પ્રાણીશાસ્ત્ર અલગ RAC બનાવવાની રજૂઆત કરવામાં આવી હતી. પ્રસ્તૃત બાબતનાં અનુસંધાનમાં RAC ભેગી કરવા માટે તથા દરેક વિષયની અલગ અલગ ડીગ્રી મળી શકે તે માટે સાત સભ્યોની પેટાસમિતિ બનાવવામાં આવી હતી જે પેટાસમિતિની સભા તા.૦૧/૦૮/૨૦૧૯ ના રોજ મળી હતી જેને વિજ્ઞાન વિદ્યાશાખામાં રજૂ કરવા જણાવેલ હોય જે અંગે વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૮ અન્વયે નીચે મુજબ ભલામણ કરેલ છે જે અંગે વિચારણા કરવા બાબત.

<u>વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૮</u>

:: આથી સર્વાનુમતે ઠરાવવામાં આવે છે કે, ઝુઓલોજી, બોટની અને માઈક્રોબાયોલોજીની RAC અલગ અલગ રાખવા એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,ઝુઓલોજી, બોટની અને માઈક્રોબાયોલોજીની**

RAC અલગ અલગ રાખવા અંગે વિજ્ઞાન વિદ્યાશાખાએ તેની તા.૧૭/૦૬/૨૦૨૧ ની સભાનાં ઠરાવ ક્રમાંક : ૮ અન્વયે કરેલ ભલામણ સ્વીકારી તે અંગે સિન્ડિકેટને ભલામણ કરવામાં આવે છે.

(૨૮) શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ અમલમાં આવનાર T.Y.B.Sc. (Physics)Sem-5 & Sem-6 ના અભ્યાસક્રમ અંગે ચર્ચા કરતા ભૌતિકશાસ્ત્ર વિષયની અભ્યાસસમિતિની તા.૧૦/૦૫/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૭ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>ભૌતિકશાસ્ત્ર વિષયની અભ્યાસસ્મતિની તા.૧૦/૦૫/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨</u>

:: આથી ઠરાવવામાં આવે છે કે, શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨, જૂન–૨૦૨૧ થી અમલમાં આવનાર T.Y.B.Sc. (Physics) Sem-5 & Sem-6 નો પેટાસમિતિએ તૈયાર કરેલ અભ્યાસક્રમ સર્વાનુમતે મંજૂર કરી વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

<u>વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૭</u>

:: આથી ઠરાવવામાં આવે છે કે, ભૌતિકશાસ્ત્ર વિષયની અભ્યાસસમતિની તા.૧૦/૦૫/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨ અન્વયે મંજૂર કરેલશૈક્ષણિક વર્ષ ૨૦૨૧–૨૨, જૂન–૨૦૨૧ થીઅમલ માં આવનાર T.Y.B.Sc. (Physics) Sem-5 & Sem-6 નો પેટાસમિતિએ તૈયાર કરેલ અભ્યાસક્રમ મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(પરિશિષ્ટ : ૧૬)
(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,ભૌતિકશાસ્ત્ર વિષયની અભ્યાસસમતિએ તેની તા.૧૦/૦૫/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨ અન્વયે અનેવિજ્ઞાન વિદ્યાશાખાએ તેની તા. ૧૭/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૭ અન્વયે ભલામણ કરેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨, જૂન–૨૦૨૧ થી અમલમાં આવનાર T.Y.B.Sc. (Physics) Sem-5 & Sem-6 નો અભ્યાસક્રમ મંજૂર કરવામાં આવે છે.**

(૨૯) વિજ્ઞાન વિદ્યાશાખાનાં ડીનશ્રીનાં તા.૧૭/૦૬/૨૦૨૧નાં પત્રમાં જણાવ્યા મુજબ ગાઈડશીપ આપવા બાબતે વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૨૫ અન્વયે નીચે મુજબ એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૨૫</u>

:: આથી ઠરાવવામાં આવે છે કે, વનસ્પતિશાસ્ત્ર, પ્રાણીશાસ્ત્ર, મેડીકલ ટેકનોલોજી, બાયોટેકનોલોજી, માઈક્રોબાયોલોજીના ગાઈડને બાયોસાયન્સમાં ગાઈડશીપ આપવી તથા બાયોસાયન્સ વિષયના ગાઈડશ્રીઓને તેમના જે તે વિષયમાં પણ ગાઈડશીપ આપવા એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૮ મુજબ જો ઝુઓલોજી અને બોટનીની નવી RAC બનાવવામાં આવે ત્યારબાદ વનસ્પતિશાસ્ત્ર, પ્રાણીશાસ્ત્ર, મેડીકલ ટેકનોલોજી, બાયોટેકનોલોજી,**

માઈક્રોબાયોલોજીનાગાઈડને બાયોસાયન્સમાં ગાઈડશીપ આપવી તથા બાયોસાયન્સ વિષયના ગાઈડશ્રીઓને તેમના જે તે વિષયમાં પણ ગાઈડશીપ આપવા અંગે આગળની કાર્યવાહી કરવી.

(૩૦) B.Sc. Medical Technology ના બદલે નામ બદલીને B.Sc. Medical Laboratory Technology કરવા બાબતે ચર્ચા કરતા મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૯/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૪ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨૨ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૯/૦૬/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ૪</u>

:: આથી ઠરાવવામાં આવે છે કે, B.Sc. Medical Technology એ પેથોલોજી લેબોરેટરીનો કોર્ષ છે પરંતુ પેથોલોજી લેબોરેટરીમાં જયારે સરકારી ભરતીની જાહેરાત આવે છે ત્યારે આ કોર્ષને લાયકાતમાં ગણતા નથી તદ્ઉપરાંત M.Sc. પણ Medical Laboratory Technology હોઈ B.Sc. તથા M.Sc. ના વિષયમાં સંગતતા જળવાઈ રહે તેથી B.Sc. Medical Technology કોર્ષનું નામ બદલીને B.Sc. Medical Laboratory Technology કરવા વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

<u>વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨૨</u>

:: આથી ઠરાવવામાં આવે છે કે, મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૯/૦૬/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ૪ અન્વયે કરેલ ભલામણ સ્વીકારી તે મંજૂર કરવા એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(એકેડેમિક વિભાગ)

:: **ઉપરોકત બાબત અન્ય ફેકલ્ટીના વિવિધ અભ્યાસક્રમોમાં પણ લાગુ પડતી હોય પુખ્ત વિચારણા કરવા માટે આગામી તા. ૦૫/૦૭/૨૦૨૧ ની એકેડેમિક કાઉન્સિલમાં પુનઃ રજૂ કરવું.**

(૩૧) B.Sc. Medical Technology થયેલ વિદ્યાર્થીની માર્કશીટમાં પેપર નંબરના બદલે પેપરનું નામ આવે તે અંગે મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૯/૦૬/૨૦૨૧ની સભાનાંઠરાવ ક્રમાંકઃ૩ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨૧ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૯/૦૬/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ૩</u>

:: આથી ઠરાવવામાં આવે છે કે, B.Sc. Medical Technology થયેલ વિદ્યાર્થી વિદેશમાં, બીજા રાજયો કે યુનિવર્સિટીમાં આગળ સ્ટડી માટે જાય છે તો તેઓની માર્કશીટમાં વિષયના નામો ના બદલે વિષયનાં નંબર આવે છે જેનાથી ખુબ અગવડતા અનુભવે છે જેથી માર્કશીટમાં વિષયોના નામો આવે એ માટે વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

<u>વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨૧</u>

:: આથી ઠરાવવામાં આવે છે કે,મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની

તા.૦૯/૦૬/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ૩ અન્વયે કરેલ ભલામણ સ્વીકારી તે મંજૂર કરવા એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા. ૦૯/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૩ અને વિજ્ઞાન વિદ્યાશાખાની તા. ૧૭/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૨૧ અન્વયે કરેલ ભલામણ મંજૂર કરવામાં આવે છે.**

(૩૨) B.Sc.-Medical Technology અને M.Sc.-Medical Technology તેમજ PGDMLT માં પ્રેકટીકલ પરીક્ષાનાં Cost of Material અંગે ચર્ચા કરતા મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૯/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૨ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨૦ અન્વયે મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૯/૦૬/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ૨</u>

:: આથી ઠરાવવામાં આવે છે કે, B. Sc-Medical Technology અને M. Sc-Medical Technology તેમજ PGDMLT માં પ્રેકટીકલ પરીક્ષામાં વિદ્યાર્થી દીઠ જે Cost of Material અપાય છે. એ ઘણુ ઓછું છે. જે રિવાઈઝડ કરવા વિનંતી.

Cost of Material to be claimed for Practical Examination-Medical Technology

F.Y. B. Sc	-	50/- Per Student
S.Y. B. Sc	-	100/- Per Student
T.Y. B. Sc	-	150/- Per Student
PGDMLT	-	100/- Student / Paper (100/Per Student for each four papers)
M. Sc	-	200/- Per Student

<u>વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨૦</u>

:: આથી ઠરાવવામાં આવે છે કે, મેડીકલ ટેકનોલોજી વિષયની અભ્યાસસમિતિની તા.૦૯/૦૬/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ૨ અન્વયે કરેલ ભલામણ સ્વીકારી તે મંજૂર કરવા એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,સદર બાબતે ગઠિત સમિતિને રીફર કરીએ.**

(૩૩) બાયોસાયન્સ અભ્યાસસમિતિનાં ચેરમેનશ્રીની તા.૧૭/૦૬/૨૦૨૧નાં રોજ પત્રમાં જણાવ્યા મુજબ બી.એસસી. બાયોસાયન્સની ડીગ્રીના બદલે B.Sc. Bio-Science (Microbiology) ની ડીગ્રી

આપવા અંગે વિચારણા કરતા વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨૪ અન્વયે નીચે મુજબ એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨૪</u>

:: આથી ઠરાવવામાં આવે છે કે, બી.એસસી. બાયોસાયન્સની ડીગ્રી આપવામાં આવે છે તેની જગ્યાએ નીચેનાં મુદાઓ ધ્યાનમાં લઈ B.Sc. Bio-Science (Microbiology) ની ડીગ્રી આપવા એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

૧. ઓગસ્ટ–૨૦૧૯ની પ્રાણીશાસ્ત્ર વિષયની અલગRACતથા અન્ય મુદાઓ માટેની પેટાસમિતિ દ્વારા ભલામણ કરવામાં આવેલ છે જ.

૨. UGC ના Specification of Degree ના માર્ચ–૨૦૧૪ માં પ્રકાશિત થયેલ ભારત સરકારના ગેઝેટ મુજબની સ્પષ્ટ જોગવાઈ કરવામાં આવેલ છે
Guiding Principles (Page No.2993)
General Instruction (Page No.2993) માં નં.૪ અને નં. ૫

૩. B.Sc.-Bio-Science ના નવા અભ્યાસક્રમના પેપરો અને કોર્ષ–કન્ટેન્ટને આધારે.

૪. UG/PG માં એકસરખી ડિગ્રી આપવા બાબત Higher Education Dept. ગુજરાત સરકારના સૂચનો/ભલામણો પ્રમાણે.

૫. BOS ની Bio-Science ની તા.૦૯/૦૬/૨૦૨૧ની મિટિંગની મિનિટનાં ઠરાવ નં.૫ (બ) પ્રમાણે.

(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,વિજ્ઞાન વિદ્યાશાખાની તા.૧૭/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ ૨૪ અન્વયે કરેલ ભલામણસ્વીકારી બી.એસસી. બાયોસાયન્સની ડીગ્રી આપવામાં આવે છે તેની જગ્યાએ ઉપરોકત મુદાઓ ધ્યાનમાં લઈ B.Sc. Bio-Science (Microbiology) ની ડીગ્રી આપવા સિન્ડિકેટને ભલામણ કરવામાં આવે છે.**

(૩૪) સંસ્કૃત વિષયમાં બી.એ.સેમ–૧ થી એમ.એ.સેમ–૪ માં અંગ્રેજી મિડીયમ દૂર કરવા બાબતે સંસ્કૃત વિષયની અભ્યાસસમિતિની તા.૧૪/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૩ અન્વયે નીચે મુજબ કરેલ ભલામણ વિનયન વિદ્યાશાખાની મંજૂરીને અપેક્ષાએ વિનયન વિદ્યાશાખાવતી વિનયન વિદ્યાશાખાનાં અધ્યક્ષશ્રીએ મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>સંસ્કૃત વિષયની અભ્યાસસમિતિની તા.૧૪/૦૬/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ૩</u>

:: આથી ઠરાવવામાં આવે છે કે, સંસ્કૃત વિષયમાં બી.એ.સેમ–૧ થી એમ.એ.સેમ–૪ ના સંસ્કૃત વિષયના દરેક પ્રશ્નપત્રમાં જયાં અંગ્રેજી મિડીયમમાં ઉત્તર આપનારા વિદ્યાર્થી ન હોય ત્યાં દરેક પ્રશ્નપત્રમાં અંગ્રેજી વર્ઝન દુર કરવા માટે સંસ્કૃત બોર્ડના સભ્યો ફેકલ્ટીને વિનંતી કરે છે. એમ.એ. સેમ–૨ પેપર–૬ માં શૈક્ષણિક વર્ષ : ૨૦૨૧ પૂરતું ઉત્તરામચરિતનોઅભ્યાસ ચલાવવાનો બોર્ડમાં સર્વાનુમતે નકકી કરવામાં આવે છે.

(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,સંસ્કૃત વિષયની અભ્યાસસમિતિએ તેની તા.૧૪/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૩ અન્વયે કરેલ ભલામણ સ્વીકારવામાં આવે છે તેમજ એમ.એ. સેમ–૨ ના પેપર–૬માં શૈક્ષણિક વર્ષ : ૨૦૨૧ પૂરતું ઉત્તરામચરિતનોઅભ્યાસ ચલાવવાનું સ્વીકાર કરવામાં આવે છે.**

(૩૫) અર્થશાસ્ત્ર વિષયની અભ્યાસસમિતિનાં ચેરમેનશ્રીએ તા.૧૭/૦૬/૨૦૨૧નાં પત્રથી 'જ્ઞાન સંગમ' ન્યૂસિલેબસ ફોર ન્યૂ ઈન્ડિયા અંતર્ગત અર્થશાસ્ત્ર વિષયની અભ્યાસક્રમ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર અર્થશાસ્ત્ર વિષયનાં બી.એ.સેમે.૧ અને ૨ ના અભ્યાસક્રમ અંગે યુનિવર્સિટી કાર્યાલયનાં પરિપત્ર ક્રમાંક : એકે./પરિપત્ર/૫૭૯૩/૨૦૨૦, તા. ૧૫–૦૭–૨૦૨૦ થી પરિપત્રિત કરવામાં આવેલ જે અભ્યાસક્રમ હાલમાં કોવિડ–૧૯ કોરોના મહામારીના બીજા વેવમાં ઉપસ્થિત થયેલ પરિસ્થિતિ જોતાં વિદ્યાર્થીઓના હિતને કેન્દ્રમાં રાખી આ વર્ષ ૨૦૨૧–૨૨ માટે આ નવો અભ્યાસક્રમ મુલતવી રાખીને જૂનો અભ્યાસક્રમ યથાવત રાખવા બોર્ડનાં ચેરમેનશ્રીએ ભલામણ કરેલ જે ભલામણ વિનયન વિદ્યાશાખાની મંજૂરીને અપેક્ષાએ વિનયન વિદ્યાશાખાવતી વિનયન વિદ્યાશાખાનાં અધ્યક્ષશ્રીએ મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે જે ભલામણ પર વિચારણા કરવા બાબત.

(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,અર્થશાસ્ત્ર વિષયનાં બી.એ.સેમે.૧ અને ૨ ના અભ્યાસક્રમ અંગે યુનિવર્સિટી કાર્યાલયનાં પરિપત્ર ક્રમાંક : એકે./પરિપત્ર/૫૭૯૩/૨૦૨૦, તા. ૧૫–૦૭–૨૦૨૦ થી પરિપત્રિત કરવામાં આવેલ નવો અભ્યાસક્રમ આ વર્ષ ૨૦૨૧–૨૨ માટે મુલતવી રાખીને જૂનો અભ્યાસક્રમ યથાવત રાખવા અર્થશાસ્ત્ર વિષયની અભ્યાસસમિતિના ચેરમેનશ્રીએ કરેલ ભલામણ વિનયન વિદ્યાશાખાના અધ્યક્ષશ્રીએ વિનયન વિદ્યાશાખાની મંજૂરીની અપેક્ષાએ સ્વીકારેલ, જે મંજૂર કરવામાં આવે છે.**

(૩૬) શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર એસ.વાય.બી.એ.સેમ–૩ અને ૪ સંસ્કૃતના પ્રવર્તમાન અભ્યાસક્રમમાં સુધારા વધારા કરવા બાબતે સંસ્કૃત વિષયની અભ્યાસસમિતિની તા.૧૪/૦૬/૨૦૨૧ની સભાનાં ઠરાવ ક્રમાંકઃ૨ અન્વયે નીચે મુજબ કરેલ ભલામણ વિનયન વિદ્યાશાખાની મંજૂરીને અપેક્ષાએ વિનયન વિદ્યાશાખાવતી વિનયન વિદ્યાશાખાનાં અધ્યક્ષશ્રીએ મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

<u>સંસ્કૃત વિષયની અભ્યાસસમિતિની તા.૧૪/૦૬/૨૦૨૧ની સભાનાં ભલામણ ક્રમાંકઃ૨</u>

:: આથી ઠરાવવામાં આવે છે કે, શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર '' જ્ઞાન સંગમ ''ન્યુ સિલેબસ ફોર ન્યુ ઈન્ડિયા'' અંતર્ગત સંસ્કૃત વિષયના એસ.વાય.બી.એ.સેમ–૩ અને ૪ નો અભ્યાસક્રમ તથા પ્રશ્નપત્રનું પ્રારૂપ સર્વાનુમતે મંજુર કરવામાં આવ્યું અને તે મંજુર કરવા વિનયન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

(પરિશિષ્ટ : ૧૭)
(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,બોર્ડના ચેરમેનશ્રી દ્વારા તા. ૨૫/૦૬/૨૦૨૧ ના રોજ લખાયેલ પત્રનો સ્વીકાર કરવો અર્થાત પેપર ૫ (બી) 'અભિશપ્તપુષ્પમ' અને પેપર –૮ (બી) 'યુગાવતાર' પુસ્તકોનો અભ્યાસક્રમમાં સ્વીકાર કરવો અને તેનો અમલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી કરવો.**

(૩૭) (માનનીય કુલપતિશ્રીનાં પગલાંની નોંધની બાબત)

યુનિવર્સિટી સંલગ્ન કોલેજોમાં શૈક્ષણિક કર્મચારીઓની ભરતી માટે પસંદગી સમિતિ પર માનનીય કુલપતિશ્રી દ્વારા વિષય નિષ્ણાંતોની નિયુકતી કરવામાં આવે છે. જે સંદર્ભે વિવિધ વિદ્યાશાખાઓના ડીનશ્રીઓ અને વિભાગીય વડાશ્રીઓ પાસેથી પ્રાપ્ત થયેલ તજજ્ઞોની

યાદી માનનીય કુલપતિશ્રી દ્વારા ગ્રાહ્ય રાખી પસંદગી સમિતિ માટે વિષય નિષ્ણાંતોની યાદીમાં સમાવેશ કરવા અંગેના માનનીય કુલપતિશ્રીના પગલાંની નોંધ લેવા બાબત.

(સિન્ડિકેટ વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, માનનીય કુલપતિશ્રીએ લીધેલ ઉપરોકત પગલાંની નોંધ લેવામાં આવે છે.**

(૩૮) શ્રીમતી કુસુમબેન કડકીયા આર્ટસ એન્ડ કોમર્સ કોલેજના ઈ.ચા.આચાર્યશ્રીએ તેના તા.૦૪–૦૫–૨૦૨૧ના પત્ર ક્રમાંક :૭૭૩૧/૨૧ થી તેમની કોલેજમાં ચાલતા નીચે મુજબના અનુસ્નાતક કેન્દ્રોના વર્ગો લેવાતા ન હોય, બહારથી અન્ય કોલેજમાંથી પણ કોઈ પણ અધ્યાપકો તેમની કોલેજમાં ભણાવવા આવતા ન હોય, તથા કોલેજના સંચાલક મંડળ દ્વારા કોલેજ બંધ કરવા માટેની યુનિવર્સિટી અને સરકારશ્રીને રજૂઆત પણ કરવામાં આવેલ છે. જેથી કોલેજમાં ચાલતા નીચે મુજબના અનુસ્નાતક કેન્દ્રોના વિવિધ વિષયોના શૈક્ષણિક કાર્ય, વર્ગો, પરિક્ષા કાર્ય તથા વહીવટી કાર્યોની કે અન્ય કોઈપણ જવાબદારી આ સંસ્થા / કોલેજ કે અત્રેના સંચાલક મંડળની રહેશે નહી જેની નોંધ લેવા સાથે સમયસર વિદ્યાર્થીઓને જાણ થાય તેમજ વિદ્યાથીઓની શૈક્ષણિક કારકિર્દી પર માઠી અસર ના થાય કે અન્યાય ન થાય તે ધ્યાનમાં લઈ કોલેજના ઈ.ચા.આચાર્યશ્રીએ ઉપરોકત પત્રથી તાત્કાલિક અસરથી નીચે મુજબના અનુસ્નાતક કેન્દ્રોને બંધ કરવા પુન : જાણ કરવા અંગેના પત્ર પર વિચારણા કરવા બાબત....

No.	Name of P.G. Centre	Name of Programme
1	**Smt. Kusumben Kadadia Arts Commerce College, Ankleshwar**	MASTER OF ARTS (ECONOMICS)
2		MASTER OF ARTS (ENGLISH)
3		MASTER OF ARTS (GUJARATI)
4		M.COM (FINANCIAL & MANAGEMENT)

(સેનેટ/સિન્ડિકેટ વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,સંચાલક મંડળ દ્વારા લખાયેલ પત્રની ભાષા સંદર્ભે એકેડેમિક કાઉન્સિલ ગંભીરતાથી નોંધ લે છે અને તે સંદર્ભેકાર્યવાહી કરવા આદરણીય કુલપતિશ્રીને વિનંતી છે.વધુમાં વિદ્યાર્થીઓના વિશાળ હીતને ધ્યાને લેતાં સત્વરે સેમેસ્ટર–૩ માં વિદ્યાર્થીઓની પસંદગી અનુસાર પ્રવેશ તબદીલ કરવા આદરણીય કુલપતિશ્રીને અધિકૃત કરવામાં આવે છે તેમજ પ્રથમ સેમેસ્ટરમાં આ કેન્દ્રમાં પ્રવેશ ફાળવવામાં આવશે નહીં.**

(૩૯)પી.એચ.ડીનીજાહેરાતઆપ્યાથીલઈફોર્મનીસ્ક્રુટીની,પ્રવેશપરીક્ષાઅનેત્યારબાદપ્રોઝન્ટેશનઆમસમગ્રપ્ર ક્રિયાદરમ્યાનનાસમયગાળામાકેટલાકનવાપી.એચ.ડીસુપરવાઇઝિંગટીચરોનેમંજૂરીમળતીહોયછેતેમજ કેટલાકસુપરવાઇઝિંગટીચરોનાવિદ્યાર્થીઓનુંસંશોધનકાર્યપૂર્ણથતાંઆવાસુપરવાઇઝિંગટીચરોપાસેપ ણવિદ્યાર્થીઓનીજગ્યાઓખાલીથતીહોય .સદરબાબતનધ્યાનલઇવધુમાંવધુવિદ્યાર્થીઓનેપ્રવેશમળ શકેતેહેતુથીપી.એચ.ડીપ્રવેશમાટેપ્રપોઝલપ્રેઝન્ટેશનગોઠવાયતનાઆગળનાદિવસસુધીમાન્યતામળના રસુપરવાઇઝિંગટીચરતથાકેટલાકસુપરવાઇઝિંગટીચરનાવિદ્યાર્થીઓનુંસંશોધનકાર્યપૂર્ણથતાંખાલીપડ તીજગ્યાઓધ્યાનલઇજેતેવિષયમાટેપ્રપોઝલપ્રેઝન્ટેશનગોઠવાયતનાઆગળનાદિવસસુધીઉપલબ્ધથ તાંબેઠકોપરપ્રવેશફાળવ બાબતે **અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦–૬–૨૦૨૧ની સભાએ તેના ઠરાવ ક્રમાંક (૮) અન્વયે નીચે મુજબ ઠરાવેલ છે. જે ઠરાવ અવલોકને લઈ માર્ગદર્શન માટે**

પ્રપોઝલ પ્રેઝન્ટેશનના આગળના દિવસ સુધી ઉપલબ્ધ થતી બેઠકો પર પ્રવેશ ફાળવવા વિચારણા કરવા બાબત.

નોંધ :

1. UGCનાંગાઇડલાઇનઅનુસારજ્યારેજાહેરાતઆપવાનાંથાયત્યારે the number of seats for admission, subject/discipline-wise distribution of available seatsદર્શાવવાનાંથાયછે.
2. પ્રવર્તમાનસમયમાઅનુસરવામાઆવતાપદ્ધતિઅનુસારજેતપ્રવેશસાયકલદરમ્યાનત મામાવિષયોનાંબેઠકોમળીનથતાકુલબેઠકોનયુનિટગણીનેરોસ્ટરક્રમાકઅનુસારઅનામતબેઠ કોનીફાળવણીકરવામાંઆવેછે.

<u>અનુસ્નાતક શિક્ષણ મંડળ તા. ૧૦–૬–૨૦૨૧ ઠરાવ ક્રમાંક (૮)</u>

:: આથી ઠરાવવામાં આવે છે કે, પીએચડી. સંશોધન અભ્યાસની પ્રવેશ બેઠકો જાહેર કરવાની પ્રવર્તમાન પ્રથા યથાવત રાખી પ્રવેશ કાર્યવાહી કરવી.

(અનુસ્નાતક વિભાગ)

:: આથી ઠરાવવામાં આવે છે કે, અનુસ્નાતક શિક્ષણ મંડળે તેની તા. ૧૦/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૮ અન્વયે કરેલ ભલામણ યથાવત્ સ્વીકારીપીએચડી. સંશોધન અભ્યાસની પ્રવેશ બેઠકો જાહેર કરવાની પ્રવર્તમાન પ્રથા યથાવત રાખી પ્રવેશ કાર્યવાહી કરવી અને વધુમાં RAC (વિષય) પ્રમાણેનું યુનિટ ગણીનેરોસ્ટર (હાલમાં પ્રવર્તમાન ૨૦૦ પોઈન્ટ) મુજબ પીએચ.ડી. સંશોધન અભ્યાસની પ્રવેશની બેઠકો ફાળવવી.

(૪૦) પીએચ. ડી. સંશોધન અભ્યાસની પ્રવેશ કાર્યવાહીના ભાગરૂપ પ્રવેશ પરિક્ષાનું ફોર્મ ભરનાર અરજીકર્તા ઉમેદવાર ગત વર્ષ દરમ્યાન પ્રવેશ પરિક્ષા કવોલિફાઈડ થયેલ છે. હાલની પ્રવેશ પરીક્ષામાં કવોલીફાઈડ થયેલ નથી અથવા કવોલિફાઈડ માર્કસ ગત પ્રવેશ પરિક્ષા કરતા ઓછા આવે છે, તે ઉમેદવારની ગત વર્ષના કવોલિફાઈડ માર્કસ ચાલુ પ્રવેશ કાર્યવાહી માટે સ્વીકારવા વિનંતી કરે તો તેવી વિનંતી સ્વીકારવી કે કેમ ? તે પર વિચારણા કરવા બાબતે અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦–૬–૨૦૨૧ની સભાએ તેના ઠરાવ ક્રમાંક (૧૩) અન્વયે નિચે મુજબ ઠરાવેલ છે. જે ઠરાવ અવલોકને લઈ હાલની પ્રવેશ પરીક્ષામાં કવોલીફાઈડ થયેલ નથી અથવા કવોલિફાઈડ માર્કસ ગત પ્રવેશ પરિક્ષા કરતા ઓછા આવે છે, તે ઉમેદવારના ગત વર્ષના કવોલિફાઈડ માર્કસ ચાલુ પ્રવેશ કાર્યવાહી માટે સ્વીકારવા વિનંતી કરે તો તેવી વિનંતી સ્વીકારવી કે કેમ ? તે પર વિચારણા કરવા બાબત.

<u>અનુસ્નાતક શિક્ષણ મંડળ તા. ૧૦–૬–૨૦૨૧ ઠરાવ ક્રમાંક (૧૩)</u>

::આથી ઠરાવવામાં આવે છે કે,અંતિમ પ્રવેશ પરીક્ષાના માર્કસ પ્રવેશ કાર્યવાહીના હેતુસર માન્ય ગણવા.

(અનુસ્નાતક વિભાગ)

:: આથી ઠરાવવામાં આવે છે કે, અનુસ્નાતક શિક્ષણ મંડળે તેની તા. ૧૦/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૧૩ અન્વયે કરેલ ભલામણ યથાવત્ સ્વીકારીઅંતિમ પ્રવેશ પરીક્ષાના માર્કસ પ્રવેશ કાર્યવાહીના હેતુસર માન્ય ગણવા મંજૂર કરવામાં આવે છે.

(૪૧) પીએચ. ડી. સંશોધન અભ્યાસની હવે પછી શરૂ થનાર પ્રવેશ કાર્યવાહી માટે નેટ / સ્લેટ / ગેટ / એમ. ફીલ. કવોલિફાઈડ હોય તો તેવા ઉમેદવારનું પીએચ. ડી. પ્રવેશનું ફોર્મ પ્રવેશ પરિક્ષા કેટેગરી માટે સ્વીકારવુ કે કેમ ? તે તે બાબતે અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦–૬–૨૦૨૧ની સભાએ

તેના ઠરાવ ક્રમાંક (૧૮) અન્વયે નીચે મુજબ ઠરાવેલ હોય જે ઠરાવ અવલોકને લઈ નેટ / સ્લેટ / ગેટ / એમ. ફીલ. ક્વોલિફાઈડ હોય તો તેવા ઉમેદવારનું પીએચ. ડી. પ્રવેશનું ફોર્મ પ્રવેશ પરિક્ષા કેટેગરી માટે સ્વીકારવુ કે કેમ તે પર વિચારણા કરવા બાબત.

<u>અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦–૬–૨૦૨૧, ઠરાવ ક્રમાંક (૧૮)</u>

:: આથી ઠરાવવામાં આવે છે કે, પીએચ. ડી. સંશોધન અભ્યાસની હવે પછી શરૂ થનાર પ્રવેશ કાર્યવાહી માટે નેટ / સ્લેટ / ગેટ / એમ. ફીલ. ક્વોલિફાઈડ હોય તો તેવા ઉમેદવારનું પીએચ. ડી. પ્રવેશનું ફોર્મ પ્રવેશ પરિક્ષા કેટેગરી માટે સ્વીકારવાની અરજીકર્તાની વિનંતી સ્વીકારી પ્રવેશ પરીક્ષાનું જે પરિણામ આવે તે સ્વીકારવાનું રહેશે.

(અનુસ્નાતક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,અનુસ્નાતક શિક્ષણ મંડળે તેની તા. ૧૦/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૧૮ અન્વયે કરેલ ભલામણ યથાવત્ મંજૂર કરવામાં આવે છે.**

(૪૨) પીએચ. ડી. સંશોધન અભ્યાસની પ્રવેશ કાર્યવાહીના ભાગરૂપ પીએચ. ડી. સંશોધન અભ્યાસની માન્યતા પ્રાપ્ત માર્ગદર્શક શિક્ષક દ્વારા આપવામાં આવતી દરખાસ્તની સમય અવધિ નિયત કરવામાં આવે છે. નિયત સમય અવધિના પ્રથમ દિવસ બાદના દિવસો દરમ્યાન જો અધ્યાપક આસિસ્ટન્ટ પ્રોફેસરમાંથી એસોસિએટ પ્રોફેસર તરીકે ડેઝીગ્નેટેડ થાય, અથવા એસોસિએટ પ્રોફેસરમાંથી પ્રોફેસર તરીકે ડેઝીગ્નેટેડ થાય તો તેવા અધ્યાપકની દરખાસ્ત નવા ડેઝીગ્નેશનને આધારે સ્વીકારવી કે કેમ ? તે બાબતે અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦–૬–૨૦૨૧ની સભાએ તેના ઠરાવ ક્રમાંક (૧૫) અન્વયે નીચે મુજબ ઠરાવેલ હોય જે ઠરાવ અવલોકને લઈ માર્ગદર્શન માટેની દરખાસ્ત મેળવવની નિયત સમય અવધિ દરમ્યાન એસોસિએટ પ્રોફેસર કે પ્રોફેસરની નવી જગ્યા પર નિયુકત થયેથી નવી જગ્યાને આધારે મળતી માર્ગદર્શન માટેની દરખાસ્ત સ્વીકારવી કે કેમ તે પર વિચારણા કરવા બાબત.

<u>અનુસ્નાતક શિક્ષણ મંડળ તા. ૧૦–૬–૨૦૨૧ ઠરાવ ક્રમાંક (૧૫)</u>

:: આથી ઠરાવવામાં આવે છે કે, પીએચ. ડી. પ્રવેશ માટે યુ.જી.સી.ના નિયમ અનુસાર રોસ્ટર તૈયાર કર્યા પહેલા આ પ્રકારની વિનંતીઓનો સ્વીકાર કરવો.

(અનુસ્નાતક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,અનુસ્નાતક શિક્ષણ મંડળે તેની તા. ૧૦/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૧૫ અન્વયે કરેલ ભલામણ મંજૂર કરવામાં આવે છે.**

વધુમાં પીએચ.ડી. ના પ્રવેશ પૂર્વે જે વાસ્તવમાં જગ્યા ખાલી હોય તે જગ્યા પર રોસ્ટર ક્રમમાં આવતી ખાલી રહેલ જગ્યા પર પ્રવેશની ફાળવણી રહેલ જગ્યા માટે RAC ની ભલામણ અને કુલપતિશ્રીની મંજૂરી બાદ આવા પ્રવેશો ફાળવી શકાશે.

આવા પ્રવેશ અંગે એલાઈડ સબ્જેકટના વિદ્યાર્થીઓ જેઓ બ્રીજ કોર્ષ પાસ કર્યા પછીની પ્રવેશ અંગેની તમામ કાર્યવાહી પૂર્ણ કરેલ હોય તેમને પણ પ્રવેશ આપી શકાશે.

(૪૩) પીએચ. ડી. સંશોધન અભ્યાસની પ્રવેશ કાર્યવાહીના ભાગરૂપ નેટ / સ્લેટ / ગેટ / એમ. ફીલ. ક્વોલિફાઈડ ઉમેદવાર, પ્રવેશ પરિક્ષા કેટેગરી માટે ફોર્મ સબમીત કરે અને જો તે ઉમેદવાર પ્રવેશ પરિક્ષામાં ક્વોલિફાઈ ન થાય અથવા ક્વોલિફાઈ માર્કસ ઓછા આવે અને તે ઉમેદવાર નેટ / સ્લેટ / ગેટ / એમ. ફીલ. ક્વોલિફાઈડ માર્કસ ગણતરીમાં લેવાની વિનંતી કરે તો તેવી વિનંતી

સ્વીકારવી કે કેમ ? તે બાબતે અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦–૬–૨૦૨૧ની સભાએ તેના ઠરાવ ક્રમાંક (૧૪) અન્વયે નીચે મુજબ ઠરાવેલ હોય જે ઠરાવ અવલોકને લઈ નેટ / સ્લેટ / ગેટ / એમ. ફીલ. કવોલિફાઈડ ઉમેદવાર, પ્રવેશ પરિક્ષા કેટેગરી માટે ફોર્મ સબમીત કરે અને જો તે ઉમેદવાર પ્રવેશ પરિક્ષામાં કવોલિફાઈ ન થાય અથવા કવોલિફાઈ માર્કસ ઓછા આવે અને તે ઉમેદવાર નેટ / સ્લેટ / ગેટ / એમ. ફીલ. કવોલિફાઈડ માર્કસ ગણતરીમાં લેવાની વિનંતી કરે તો તેવી વિનંતી સ્વીકારવી કે કેમ તે પર વિચારણા કરવા બાબત.

<u>અનુસ્નાતક શિક્ષણ મંડળ તા. ૧૦–૬–૨૦૨૧ ઠરાવ ક્રમાંક (૧૪)</u>

:: આથી ઠરાવવામાં આવે છે કે, પીએચ.ડી. સંશોધન અભ્યાસના ઉમેદવાર પ્રવેશ પરિક્ષામાં કવોલિફાઈ ન થાય અથવા કવોલિફાઈ માર્કસ ઓછા આવે અને તે ઉમેદવાર નેટ / સ્લેટ / ગેટ / એમ. ફીલ. કવોલિફાઈડ માર્કસ ગણતરીમાં લેવાની વિનંતી કરે તો તેવી વિનંતી નામંજૂર કરવી.

(અનુસ્નાતક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,અનુસ્નાતક શિક્ષણ મંડળે તેની તા. ૧૦/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૧૪ અન્વયે કરેલ ભલામણ યથાવત્ સ્વીકારવામાં આવે છે.**

(૪૪) પીએચ. ડી. સંશોધન અભ્યાસમાં પ્રવેશ પરિક્ષામાં કવોલીફાઈડ ઉમેદવાર દ્વારા અનુસ્નાતક અભ્યાસ અન્ય વિધાશાખા / વિષય સાથે કરેલ હોય તેવા કવોલિફાઈડ ઉમેદવારો માટે એકેડેમિક કાઉન્સિલની તા.૧૨–૬–૨૦૨૧ના ઠરાવ ક્રમાંક : (૭) અન્વયે બ્રીજ કોર્ષની પરીક્ષા પાસ કર્યા બાદ પ્રોવિઝનલ પ્રવેશની કાર્યવાહી કરવા ઠરાવેલ છે. તમામ વિધાશાખાઓમાં બ્રીજ કોર્ષના અભ્યાસક્રમ અને પરિક્ષાનું માળખું એક સમાન રહે તે હેતુથી અભ્યાસક્રમનું અને પરીક્ષાનું માળખું નકકી કરવા વિચારણા કરવા બાબત.

નોંધ : હાલમાં પીએચ. ડી. સંશોધન અભ્યાસમાં પ્રવેશની ચાલતી કાર્યવાહીમાં (૧) બાયોસાયન્સ (૨) કોમર્સ / એકાઉન્ટસી / આંકડાશાસ્ત્ર / બેંકીંગ / (૩) ઈકોનોમિકસ (૪) કોમપ્યુટર સાયન્સ (૫) એજયુકેશન (૬) અંગ્રેજી (૭) રૂરલ સ્ટડીઝ વિષયમાં ઉમેદવારો માટે એકેડેમિક કાઉન્સિલના ઠરાવ મુજબ બ્રીજ કોર્ષ સફળતાપૂર્વક પાસ કરવાનું રહે છે.

<u>અનુસ્નાતક શિક્ષણ મંડળ તા. ૨૦–૧૦–૨૦૨૦ ઠરાવ ક્રમાંક (૨)</u>

કાર્યસૂચિની બાબત ક્રમાંક ૨, ૩, ૪, ૮, ૯, ૧૦ અને ૩૦ ની સંયુકત વિચારણાને અંતે ઠરાવવામાં આવે છે કે, પીએચ.ડી સંશોધન અભ્યાસમાં જે તે પ્રવેશના વિષયમાં અરજીકર્તા ઉમેદવારોએ અન્ય વિષયમાં અનુસ્નાતક અભ્યાસ (એલાઈડ / અન્ય વિષય) કરેલ હોય તેવા ઉમેદવારોની અરજી સ્વીકારવા બાબતે ભલામણ કરવા સારૂ નીચે મુજબ સમિતિની નિયુકતી કરવામાં આવે છે. Ph.D પ્રવેશની કાર્યવાહીના ભાગરૂપ ઓનલાઈન ફોર્મ સબમીશન કરવાની કાર્યવાહી કરવામાં આવતી હોય સમય મર્યાદામાં કાર્યવાહી પૂર્ણ કરવાની સમિતિના સભ્યશ્રીઓને જાણ કરવી.

(૧) ડા. રાકેશ દેસાઈ (કન્વિનર)
(૨) તમામ વિદ્યાશાખાના ડીનશ્રી,
(૩) ડા. અપૂર્વભાઈ દેસાઈ
(૪) ડા. વિપુલભાઈ સોમાણી

<u>અનુસ્નાતક શિક્ષણ મંડળ તા. ૨૦–૧૦–૨૦૨૦ ઠરાવ ક્રમાંક (૨) થી નિયુકત સમિતિની તા. ૨૭–૧૧–૨૦૨૦ની ભલામણ</u>

:: પ્રોવિઝનલ પ્રવેશની ફાળવણી થયેથી કન્ટેન કોર્ષ અને બ્રીજ કોર્ષની પરીક્ષામાં પાસ થયેથી ફાળવણી કરેલ પ્રોવિઝનલ પ્રવેશ કાયમ કરવામાં આવશે.

<u>એકેડેમિક કાઉન્સિલ તા. ૧૨–૬–૨૦૨૧ ઠરાવ ક્રમાંક (૭)</u>

:: આથી ઠરાવવામાં આવે છે કે, કમિટિની ભલામણ સ્વીકારવામાં આવે છે. વધુમાં ઉમેદવાર એન્ટ્રન્સ પરીક્ષાપાસ કરે પછીથી બ્રીજ કોર્ષની પરીક્ષા પાસ કર્યા બાદ પ્રોવિઝનલ પ્રવેશની કાર્યવાહી કરવામાં આવે.

(અનુસ્નાતક વિભાગ)

:: આથી ઠરાવવામાં આવે છે કે,દરેક ફેકલ્ટીના અંર્તગત આવતા બોર્ડ દ્વારા સ્નાતક અને અનુસ્નાતક અભ્યાસક્રમને આવરી લેતો ત્રણ પેપરો ધરાવતો બ્રીજ કોર્ષ તૈયાર કરવો જે પ્રત્યેક પેપરદીઠ ૨ ક્રેડિટ (૨૪ કલાક) ને સમકક્ષ રહેશે.

(૪૫) શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨, જુન થી અમલમાં આવનાર એફ.વાય.એસ.વાય./ટી.વાય.બી.કોમ.નો સેમ–૧થી ૬તથા એમ.કોમ.સેમ–૧ થી ૪ નાં એકાઉન્ટ ઈન્કલુડીંગ કોસ્ટીંગ વિષયનાં અભ્યાસક્રમ અંગે એકાઉન્ટ ઈન્કલુડીંગ કોસ્ટીંગ વિષયની અભ્યાસસમિતિની ઓનલાઈન તા.૨૬/૦૫, ૦૨/૦૬,૦૪/૦૬, ૦૮/૦૬ અને ૧૧/૦૬/૨૦૨૧ નાં રોજ રોજ મળેલ સભામાં તૈયાર કરેલ આ સાથે સામેલ વિષયોનો અભ્યાસક્રમ સર્વાનુમતે મંજૂર કરી વાણિજય વિદ્યાશાખાને કરેલ ભલામણ વાણિજય વિદ્યાશાખાની મંજૂરીની અપેક્ષાએ વિદ્યાશાખાવતી વાણિજય વિદ્યાશાખાનાં અધ્યક્ષશ્રીએ મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે. જે અંગે વિચારણા કરવા બાબત.

(પરિશિષ્ટ : ૧૮)
(એકેડેમિક વિભાગ)

:: આથી ઠરાવવામાં આવે છે કે, એકાઉન્ટ ઈન્કલુડીંગ કોસ્ટીંગ વિષયની અભ્યાસસમિતિએ તેની ઓનલાઈન સભામાં તૈયાર કરેલ શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર એફ.વાય.,એસ.વાય., ટી.વાય.બી.કોમ.નો સેમ–૧ થી ૬ તથા એમ.કોમ.સેમ–૧ થી ૪ નાં એકાઉન્ટ ઈન્કલુડીંગ કોસ્ટીંગ વિષયનાં અભ્યાસક્રમ વાણિજય વિદ્યાશાખાના અધ્યક્ષશ્રીએ વાણિજય વિદ્યાશાખાની મંજૂરીની અપેક્ષાએ સ્વીકારેલ તે મંજૂર કરવામાં આવે છે.

(૪૬) શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨, જુન થી અમલમાં આવનાર એસ.વાય.બી.કોમ.નો સેમ–૩ અને ૪ (રેગ્યુલર/એક્ષટર્નલ) તથા એમ.કોમ.સેમ–૩ અને ૪ (રેગ્યુલર/એક્ષટર્નલ) તથા બી.કોમ.ઓનર્સ સેમ–૩ અને ૪ નાં નીચેમુજબનાં વિષયોનો અભ્યાસક્રમ બનાવવાનો શકય નહોય આ વર્ષ ૨૦૨૧–૨૨ માટે અગાઉનો જુનો અભ્યાસક્રમ યથાવતરાખવા કોમર્સ ઈન્કલુડીગ બી.એ. વિષયની અભ્યાસસમિતિના ચેરમેનશ્રીએ વિનંતી કરેલ જે વાણિજય વિદ્યાશાખાની અપેક્ષાએ વાણિજય વિદ્યાશાખાનાં અધ્યક્ષશ્રીએવાણિજય વિદ્યાશાખાવતી મંજૂર કરી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે જે અંગે વિચારણા કરવા બાબત.

	<u>S.Y.B.Com (Sem – III & IV)</u>		**<u>S.Y.B.Com (External)</u>**
1	Business Administration-Paper-III & IV	1	Business Administration
2	Banking (Paper- I & IIIતથા II & IV)	2	Banking (Paper- I&II)
3	Marketing(Paper- I& II)	3	Marketing(Paper- I& II)
4	Management (Paper- I & II)	4	Management (Paper- I & II)
5	Computer Application (Paper- I & II)		

(3) S.Y.B.Com –Sem– III & IV, Honors

1. Company Law

2. Business Management

	M.Com –Sem – III & IV		**M.Com - Part-II (External)**
1	FinancialManagement –Paper- I & II	1	FinancialManagement
2	Strategic Management Paper- I & II	2	Strategic Management
3	Marketing(Paper- VII,VIII & IX)	3	Marketing(Paper-IV ,V & VI
4	Marketing(Paper- X,XI & XII)		

(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી અમલમાં આવનાર એસ.વાય.બી.કોમ.નો સેમ–૩ અને ૪ (રેગ્યુલર/એક્ષટર્નલ) તથા એમ.કોમ.સેમ–૩ અને ૪ (રેગ્યુલર/એક્ષટર્નલ) તથા બી.કોમ.ઓનર્સ સેમ–૩ અને ૪ નાં નીચે મુજબનાં વિષયોનો અભ્યાસક્રમ આ વર્ષ ૨૦૨૧–૨૨ માટે અગાઉનો જુનો અભ્યાસક્રમ યથાવત રાખવા કોમર્સ ઈન્કલુડીગ બી.એ. વિષયની અભ્યાસસમિતિના ચેરમેનશ્રીએ કરેલ ભલામણ વાણિજય વિદ્યાશાખાના અધ્યક્ષશ્રીએ વાણિજય વિદ્યાશાખાની મંજૂરીની અપેક્ષાએ સ્વીકારેલ તે મંજૂર કરવામાં આવે છે.**

	S.Y.B.Com (Sem – III & IV)		**S.Y.B.Com (External)**
1	Business Administration-Paper-III & IV	1	Business Administration
2	Banking (Paper- I & IIIતથા II & IV)	2	Banking (Paper- I&II)
3	Marketing(Paper- I& II)	3	Marketing(Paper- I& II)
4	Management (Paper- I & II)	4	Management (Paper- I & II)
5	Computer Application (Paper- I & II)		

(3) S.Y.B.Com –Sem– III & IV, Honors

1. Company Law
2. Business Management

	M.Com –Sem – III & IV		**M.Com - Part-II (External)**
1	FinancialManagement –Paper- I & II	1	FinancialManagement
2	Strategic Management Paper- I & II	2	Strategic Management
3	Marketing(Paper- VII,VIII & IX)	3	Marketing(Paper-IV ,V & VI
4	Marketing(Paper- X,XI & XII)		

(૪૭) યુનિવર્સિટી બાયોસાયન્સ વિભાગના વિભાગીય વડાશ્રી દ્વારા તેમના તા. ૧૬–૦૬–૨૦૨૧ના પત્રાંકઃ બાયોસાયન્સીસ/ ૨૮૧૧/ ૨૦૨૧ થી **M.Sc. Botany** નો કોર્ષ વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટીની એફીલીએટ કોલેજોમાં ચાલુ જ હોય તો એ મુજબ લાયકાત, અભ્યાસક્રમ અને પરીક્ષા વગેરેનું માળખું યુનિવર્સિટીના નિયમ મુજબ અનુસરવામાં આવે તો આ સંદર્ભ બાયોસાયન્સીસ વિભાગ ખાતે સ્વનિર્ભર ધોરણે ૨૫ વિદ્યાર્થીઓ માટે **M.Sc. Botany**નો કોર્ષ શરૂ કરવા અને કોર્ષની ફી આશરે રૂા. ૪૩૮૭૦/–

પ્રતિ વર્ષ (૨૦૨૧–૨૦૨૨) નિયત કરવા સારું કોર્ષનું અંદાજપત્ર (**Budget**) તેમના પત્ર સાથે રજૂ કરેલ છે. જે અવલોકને લઈ યુનિવર્સિટી બાયોસાયન્સ વિભાગમાં **M.Sc. Botany** સ્વનિર્ભર અભ્યાસક્રમ ૨૫ બેઠકો સાથે રૂા. ૪૩૮૭૦/– વાર્ષિક ફી સાથે શરૂ કરવા વિચારણા કરવા બાબત.

(અનુસ્નાતક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટીની એફીલીએટ કોલેજોમાં ચાલુ હોય એ મુજબ લાયકાત, અભ્યાસક્રમ અને પરીક્ષા વગેરેનું માળખું યુનિવર્સિટીના નિયમ મુજબ અનુસરીયુનિવર્સિટી બાયોસાયન્સ વિભાગમાં M.Sc. Botany સ્વનિર્ભર અભ્યાસક્રમ ૨૫ બેઠકો સાથે રૂા. ૪૩૮૭૦/– વાર્ષિક ફી સાથે શરૂ કરવા યુનિવર્સિટી બાયોસાયન્સ વિભાગના વિભાગીય વડાશ્રી કરેલ ભલામણ સ્વીકારી તે અંગે સિન્ડિકેટને ભલામણ કરવામાં આવે છે.**

(૪૮) યુનિવર્સિટી બાયોસાયન્સ વિભાગના વિભાગીય વડાશ્રી દ્વારા તા.૧૬–૦૬–૨૦૨૧ના પત્રાંકઃ બાયોસાયન્સીસ/ ૨૮૧૩/ ૨૦૨૧ થી **M.Sc. Zoology** નો કોર્ષ વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટીની એફીલીએટ કોલેજોમાં ચાલુ જ હોય તો એ મુજબ લાયકાત, અભ્યાસક્રમ અને પરીક્ષા વગેરેનું માળખું યુનિવર્સિટીના નિયમ મુજબ અનુસરવામાં આવે તો આ સંદર્ભ બાયોસાયન્સીસ વિભાગ ખાતે સ્વનિર્ભર ધોરણે ૨૫ વિદ્યાર્થીઓ માટે **M.Sc. Zoology**નો કોર્ષ શરૂ કરવા અને કોર્ષની ફી આશરે રૂા. ૪૩૮૭૦/– પ્રતિ વર્ષ (૨૦૨૧–૨૦૨૨) નિયત કરવા સારું કોર્ષનું અંદાજપત્ર (**Budget**) તેમના પત્રના બિડાણ સાથે રજૂ કરેલ છે. જે અવલોકને લઈ યુનિવર્સિટી બાયોસાયન્સ વિભાગમાં **M.SC. Zoology**સ્વનિર્ભર અભ્યાસક્રમ ૨૫ ૨૫ બેઠકો સાથે રૂા. ૪૩૮૭૦/– વાર્ષિક ફી સાથે શરૂ કરવા વિચારણા કરવા બાબત.

(અનુસ્નાતક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટીની એફીલીએટ કોલેજોમાં ચાલુ હોય એ મુજબ લાયકાત, અભ્યાસક્રમ અને પરીક્ષા વગેરેનું માળખું યુનિવર્સિટીના નિયમ મુજબ અનુસરીયુનિવર્સિટી બાયોસાયન્સ વિભાગમાં M.Sc. Zoology સ્વનિર્ભર અભ્યાસક્રમ ૨૫ બેઠકો સાથે રૂા. ૪૩૮૭૦/– વાર્ષિક ફી સાથે શરૂ કરવા યુનિવર્સિટી બાયોસાયન્સ વિભાગના વિભાગીય વડાશ્રીએ કરેલ ભલામણ સ્વીકારી તે અંગે સિન્ડિકેટને ભલામણ કરવામાં આવે છે.**

(૪૯) કોમર્સ ડીપાર્ટમેન્ટના કો–ઓર્ડીનેટરશ્રીના તા.૧૧/૦૬/૨૦૨૧ના રોજના પત્રાંકઃકોમર્સ/૨૬૫૪/૨૦૨૧થી કોમર્સ ડીપાર્ટમેન્ટ ખાતે હાલ અંગ્રેજી માધ્યમનું ડિવિઝન (બપોરના સમયે) કાર્યરત છે. પરંતુ વર્તમાન પરિસ્થિતિનો અભ્યાસ કરતાં એમ.કોમ. નો સમય સવાર **(સવારે ૭:૩૦ થી બપોરે ૧:૩૦) નો કરવા સાથે વધારાનું અંગ્રેજી માધ્યમનું ડિવિઝન** (૭૦ બેઠકો) (બહેનો માટે) અને એક ગુજરાતી માધ્યમનું ડિવિઝન (૭૦ બેઠકો) (બહેનો માટે) કોમર્સ વિભાગ ખાતે ચાલુ કરવાની મંજૂરી આપવાની કરેલ વિનંતી અનુસ્નાતક શિક્ષણ મંડળની સભા વતી સ્વીકારી એકેડેમિક કાઉન્સિલને ભલામણ કરેલ છે, જે પર વિચારણા કરવા બાબત.

(નોંધઃ પ્રસ્તુત બાબતે જણાવવાનું કે, હાલ કોમર્સ ડિપાર્ટમેન્ટ ખાતે (૮૮) સ્વનિર્ભર બેઠકોનો અંગ્રેજી માધ્યમનો એક ડિવિઝન ચાલે છે.)

(અનુસ્નાતક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,એમ.કોમ. નો સમય સવાર (સવારે ૭:૩૦ થી બપોરે ૧:૩૦) નો કરવા સાથે વધારાનું અંગ્રેજી માધ્યમનું ડિવિઝન (૭૦ બેઠકો) (બહેનો માટે) અને એક ગુજરાતી માધ્યમનું ડિવિઝન (૭૦ બેઠકો) (બહેનો માટે) કોમર્સ વિભાગ ખાતે ચાલુ કરવાની મંજૂરી આપવા કોમર્સ ડીપાર્ટમેન્ટની એકઝીકયુટીવ કાઉન્સિલ દ્વારા કરવામાં આવેલ વિનંતી ગ્રાહય રાખી સિન્ડિકેટને ભલામણ કરવામાં આવે છે.**

વધુમાં પ્રસ્તુત અભ્યાસક્રમને ઉચ્ચ શૈક્ષણિક ક્ષિતિજ પર લઈ જવા માટે સત્વરે શિક્ષકોની નિયમોનુસાર નિમણૂંક કરવી.

(૫૦) યુસીક વિભાગના ઈ.ચા. હેડ અને કોર્સ કોર્ડિનેટરશ્રીના તા.૦૪/૦૬/૨૦૨૧ના પત્રાંકઃ USIC/2682 **થી** વિભાગમાં ચાલતા (1) MSC.(TECH) IN INSTRUMENTATION **તથા** (2) POST GRADUATE DIPLOMA IN INSTRUMENTATION **અભ્યાસમાં છેલ્લા પાંચ વર્ષના પ્રવેશના આંકડા અવલોકને લેતાં, વિદ્યાર્થીઓની ઘટતી સંખ્યાને કારણે આર્થિક રીતે પરવડે તેમ ન હોવાથી સદર અભ્યાસક્રમો આગામી શૈક્ષણિક વર્ષથી ચાલુ રાખવા, સ્થગિત રાખવા કે બંધ કરવા** યોગ્ય નિર્ણય લઈ કાર્યવાહી કરવાની કરેલ વિનંતી પત્ર ઉપર વિચારણા કરવા બાબત.

YEAR	MSC (TEHC) IN INSTRUMENTATION			PGDI	
	INTAKE	ADMITTED		INTAKE	ADMITTED
		1ST YEAR	2ND YEAR		
2016-17	30	13	04	30	0
2017-18	30	05	12	30	0
2018-19	30	06	05	30	0
2019-20	38	0	03	38	0
2020-21	38	0	00	38	0

(અનુસ્નાતક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,સદર અભ્યાસક્રમો આગામી શૈક્ષણિક વર્ષથી સ્થગિત રાખવા સિન્ડિકેટને ભલામણ કરવામાં આવે છે.**

(૫૧) **સાયન્સ** ફેકલ્ટીનાં **બાયોસાયન્સ (માઈક્રોબાયોલોજી)** વિષયમાં ડા.જયા એન્ડ હરીવદન શાહ ઈન્સ્ટિયુટ ઓફ એપ્લાઈડ સાયન્સ, સુરત રકતદાન કેન્દ્ધ એન્ડ રીસર્ચ સેન્ટર ના ઈ.ચા. આચાર્ય **ડા.શુકલા રિન્કુ વિશાલ** નેપીએચ.ડી. ના માર્ગદર્શક શિક્ષક તરીકેની માન્યતા આપવા વિચારણા કરવા બાબત.

(૧) ડા.સંદિપ ગર્ગ,પ્રોફેસર, માઈક્રોબાયોલોજી વિભાગ, ગોવા યુનિવર્સિટી, ગોવા નો અહેવાલ હકારાત્મક છે.

(૨) ડા.કમલેશ.સી.પટેલ, પ્રોફેસર એન્ડ હેડ, બાયોસાયન્સ વિભાગ, એસ.પી. યુનિવર્સિટી, આણંદ નો અહેવાલ હકારાત્મક છે.

(૩) માનનીય કુલપતિશ્રી એ BUT વતી અહેવાલોનો સ્વીકાર કરી ACને ભલામણ કરેલ છે.

BUT ની તા.૯–૫–૨૦૧૨ ની સભાના ઠરાવ ક્રમાંક : ૧૧

- આથી ઠરાવવામાં આવે છે કે સાયન્સ ફેકલ્ટીનાં ઝૂલોજી વિષયમાં પીએચ.ડી.નાં માર્ગદર્શક શિક્ષક તરીકેની માન્યતા મેળવવા યુનિવર્સિટી કેમ્પસમાં ચાલતા એમ.એસ.સી.–બાયોટેકનોલોજી (સ્વનિર્ભર અભ્યાસક્રમ) ના વ્યાખ્યાતા ડા.પ્રીતી શર્માની અરજી સંદર્ભમાં સંશોધન પેપર્સનો અહેવાલ આપવા માટે મા.કુલપતિશ્રી દ્વારા નીમાયેલ બે નિર્ણાયકોના (ડા.અશોક કુમાર– યુનિવર્સિટી ઓફ રાજસ્થાન,

જયપુર અને ડૉ. એમ.વી.રાવ– ગુજરાત યુનિવર્સિટી, અમદાવાદ) હકારાત્મક અહેવાલનો સ્વીકાર કરી માર્ગદર્શક શિક્ષકની માન્યતા આપવા એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

વધુમાં ઠરાવવામાં આવે છે કે, હવે પછીથી તમામ કેસોમાં જો બંને રેફરીના અહેવાલો હકારાત્મક હોય તો મંજૂરીની સતા માનનીય કુલપતિશ્રીને આપવી અને બી.યુ.ટી. રજૂ કરવું નહી.

(અનુસ્નાતક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,સાયન્સ ફેકલ્ટીનાં બાયોસાયન્સ (માઈક્રોબાયોલોજી) વિષયમાં ડૉ.શુકલા રિન્કુ વિશાલ ને પીએચ.ડી. ના માર્ગદર્શક શિક્ષક તરીકેની માન્યતા આપવા એકેડેમિક કાઉન્સિલને કરેલ ભલામણ સ્વીકારી તે અંગે સિન્ડિકેટને ભલામણ કરવામાં આવે છે.**

(૫૨) પીએચ. ડી. સંશોધન અભ્યાસની થીસીસ મુલ્યાંકન બાદ વાઈવા વોસનું ઓનલાઈન / ઓફલાઈન આયોજન કરવામાં આવે છે. ઓનલાઈન વાઈવા વોસની કાર્યવાહીનું રેકોર્ડીંગ કરવામાં આવે છે તે મુજબ ઓફલાઈન વાઈવા વોસનું રેકોર્ડીંગ કરવા બાબતે અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦–૬–૨૦૨૧ ની સભાએ તેના ઠરાવ ક્રમાંક (૨૧) અન્વયે નીચે મુજબ ઠરાવેલ હોય જે અવલોકને લઈ ઓફલાઈન વાઈવા વોસનું રેકોર્ડીંગ કરવા વિચારણા કરવા બાબત.

<u>અનુસ્નાતક શિક્ષણ મંડળની તા. ૧૦–૬–૨૦૨૧, ઠરાવ ક્રમાંક (૨૨)</u>

: : આથી ઠરાવવામાં આવે છે કે, પીએચ. ડી. સંશોધન અભ્યાસની થીસીસ મુલ્યાંકન બાદ વાઈવા વોસનું ઓનલાઈન / ઓફલાઈન આયોજન કરવામાં આવે છે. ઓનલાઈન વાઈવા વોસની કાર્યવાહીનું રેકોર્ડીંગ કરવામાં આવે છે તે મુજબ ઓફલાઈન વાઈવા વોસનું રેકોર્ડીંગ કરવું.

(અનુસ્નાતક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,પીએચ.ડી. સંશોધન અભ્યાસની વાઈવા વોસની પ્રવર્તમાન પધ્ધતિ યથાવત્ ચાલુ રાખવી.**

(૫૩) આગામી જુન/જુલાઈ ઓગષ્ટ માહે–૨૦૨૧ આવનારી મેડીકલ ફેકલ્ટીના યુ.જી. તથા પી.જી. પ્રેકટીકલ પરીક્ષાઓમાં એનએમસીના ધારાધોરણો મુજબ પ્રેકટીકલ પરીક્ષાઓ યોજવા તેમજ જે વિષયોમાં હાલની કોવીડ–૧૯ ની પરિસ્થિતિમાં જો કલીનીકલ વિષયમાં વિવિધ રોગના દર્દીઓ ઉપલબ્ધ ન થાય તેવા કિસ્સામાં એનએમસીના ગાઈડલાઈન મુજબ તેમજ જે વિષયમાં દર્દીઓ ઉપલબ્ધ થાય ત્યાં દર્દીઓ રાખી પ્રેકટીકલ પરીક્ષાઓ એનએમસી ગાઈડલાઈન અને Covid-19 appropriate Behaviour મુજબ લેવા અંગે વિચારણા કરવા બાબત.

(પરીક્ષા વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,આગામી જુન/જુલાઈ ઓગષ્ટ માહે–૨૦૨૧ આવનારી મેડીકલ ફેકલ્ટીના યુ.જી. તથા પી.જી. પ્રેકટીકલ પરીક્ષાઓમાં એનએમસીના ધારાધોરણો મુજબ પ્રેકટીકલ પરીક્ષાઓ યોજવા તેમજ જે વિષયોમાં હાલની કોવીડ–૧૯ ની પરિસ્થિતિમાં જો કલીનીકલ વિષયમાં વિવિધ રોગના દર્દીઓ ઉપલબ્ધ ન થાય તેવા કિસ્સામાં એનએમસીના ગાઈડલાઈનમુજબ(No.UGMEB/NMC/Final Exam/advisory/01/2021 Dated - 09/04/2021 and NMC/MCI-23(1)/2021 med/907769 dated 22/4/21 if there is shortage of clinical material, the same may be replaced by simulating material / case scenarios including provision of supporting material like x-rays, CT scan, ECG, lab reports etc) જે વિષયમાં દર્દીઓ ઉપલબ્ધ થાય ત્યાં દર્દીઓ રાખી પ્રેકટીકલ**

પરીક્ષાઓ એનએમસી ગાઈડલાઈન અને Covid-19 appropriate Behaviour મુજબ લેવા કરેલ ભલામણ મંજૂર કરવામાં આવે છે.

(૫૪) National Education Policy ૨૦૨૦ અતગત Multiple Certification Policy અગ વિચારણા કરવા બાબત....

સૂચિત પાલિસી

1. In a six semester undergraduate program, the candidate shall be awarded a Certificate on successful completion of 2 semesters based on CGPA of 2 semesters.
2. In a six semester undergraduate program, the candidate shall be awarded a Diploma on completion of 4 semesters based on CGPA of 4 semesters.
3. In a 4-semester or 6-semester post-graduate program, the candidate shall be awarded a PG Diploma on successful completion of 2 semesters based on CGPA of 2 semesters.
4. Only digitally verifiable Digital copies of such Certificate, Diploma and PG Diploma shall be issued online to all the candidates.
5. In case a candidate exits the program in-between the program student is also entitled to get the transcript based on Certificate, Diploma and PG Diploma

(એકેડેમિક વિભાગ)

:: આથી ઠરાવવામાં આવે છે કે,National Education Policy 2020 અંતગર્તMultiple Certification Policyનો સૈધ્ધાંતિક સ્વીકાર કરવામાં આવે છે.
વધુમાં એકેડેમિક કાઉન્સિલ દ્વારા આ બાબતઅનુલક્ષીને બનેલ કમિટિ દ્વારા સબમીટ થયેલા રીપોર્ટની રૂપરેખાને ધ્યાનમાં લઈને Multiple Certification Policy નાઅમલ અંગે પ્રવર્તમાન તમામ વિદ્યાશાખાના અધ્યક્ષશ્રીઓને સંયુકત રીતે રીપોર્ટ તૈયાર કરી એકેડેમિક વિભાગમાં તા. ૧૦/૦૭/૨૦૨૧ સુધીમાં જમા કરાવવો.

(૫૫) B.B.A. એડહોક બોર્ડનાં કન્વીનરશ્રી ના તા.૮/૦૬/૨૦૨૧ ના પત્રમાં જણાવ્યા મુજબ બી.બી.એ.નાં અભ્યાસક્રમ અંગે યુનિવર્સિટી કાર્યાલયનાં પરિપત્ર ક્રમાંકઃએકે/પરિપત્ર/૧૨૦૪૩ તથા પરિપત્ર ક્રમાંકઃએકે/પરિપત્ર/૧૨૦૪૪ , તા.૦૫/૦૭/૨૦૧૯ થી પરિપત્રિત કરવામાં આવેલ જેમાં બી.બી.એ. સેમ. ૧ થી ૬ સુધીનો અભ્યાસક્રમ હોય, જેમાં ક્રમશઃ અમલમાં આવતો હોય જે અંગે શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી "Summer Training Report-501, BBA Curriculum "ઈવેલ્યુએશની ગાઈડ મુજબ અમલ કરવા અંગે વિચારણા કરવા બાબત.

(પરિશિષ્ટ : ૧૯)
(એકેડેમિક વિભાગ)

:: આથી ઠરાવવામાં આવે છે કે,શૈક્ષણિક વર્ષ ૨૦૨૧–૨૨ થી "Summer Training Report-501, BBA Curriculum "ઈવેલ્યુએશની ગાઈડ મુજબ અમલ કરવાયથાવત્ સ્વીકારવામાં આવે છે.

(૫૬) યુનિવર્સિટીના વિવિધ વિદ્યાશાખાના સ્નાતક અને અનુસ્નાતક અભ્યાસક્રમોની NRI સીટો માટે નીતી નકકી કરવા અંગે વિચારણા કરવા બાબત.

(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,યુનિવર્સિટીના વિવિધ વિદ્યાશાખાના સ્નાતક અને અનુસ્નાતક અભ્યાસક્રમોનીNRI સીટો માટેપ્રવેશ સુપરન્યુમેરીક બેઠક દ્વારા આપવામાં આવે. ડીવીઝનદીઠ વધુમાં વધુ ૫% બેઠકો સુપરન્યુમેરીક બેઠક તરીકે ફાળવવા સિન્ડિકેટને ભલામણ કરવામાં આવે છે.**

(૫૭) તા.૧૬/૦૬/૨૦૨૧નાં રોજ થયેલ એકેડેમિક કાઉન્સિલ તા.૦૯/૦૩/૨૦૨૧ની ભલામણ ક્રમાંક : ૨ સિન્ડિકેટેની તા.૨૨/૦૩/૨૦૨ની સભાના ઠરાવ ક્રમાંકઃ ૧૬ મુજબ કાનૂન વિદ્યાશાખામાં જુના અભ્યાસક્રમ અને ૭૦ માર્કસના પેપરમાં નાપાસ થયેલા વિદ્યાર્થીઓને હાલ લાગુ અભ્યાસક્રમના ૧૦૦ માર્કસના પ્રશ્નપત્રો પ્રમાણેની પરીક્ષા આપવા જણાવેલ છે. તથા અગાઉના ઈન્ટરનલ કેરીફોરવર્ડ કરી એક્ષટર્નલમાં મેળવેલ ગુણના પ્રોરેટા મુજબ પરિણામ જાહેર કરવુ એમ જણાવવેલ છે. પરંતુ એલ.એલ.બીમાં નવા કોર્સ અને જુના કોર્સનાં વિષય અલગ અલગ હોય માટે આ અંગે તા.૦૫/૦૬/૨૦૨૧ની કાર્યાલયની નોંધ મુજબ તા.૦૮/૦૬/૨૦૨૧નાં રોજ પૂર્વ અધર ડીનશ્રીએ લેખિત અભિપ્રાય આપેલ છે .જે મુજબ છે. " ACની બેઠકમાં નિર્ણય થયા મુજબ જુના કોર્સનાં વિષયને નવા કોર્સમાં જે વિષય હોય તેમને સમકક્ષ ગણવા અને અગાઉના ઈન્ટરનલ કેરી ફોરવર્ડ કરી એક્ષટર્નલમાં મેળવેલ ગુણનાં પ્રોરેટા મુજબ પરિણામ જાહેર કરવું"**પરતું "આ અંગે ફરીથી પૂર્વ અધર ડીનશ્રીએ લેખિત અભિપ્રાય આપેલ છે .જે મુજબ છે.એલ.એલ.બીમાં નવા કોર્સ સાથે જુના કોષનાં વિષયો ૧૦૦ માર્કસનાં પ્રશ્નપત્રો પ્રમાણે પરીક્ષા લેવી. ACની બેઠકમાં નિર્ણય થયા મુજબ જુના કોર્સનાં વિષયો અને નવા કોર્સનાં LAW OF CONTRACT સાથે LAW OF CONTRACT અનેCONSTITUTIONAL LAW સાથે CONSTITUTIONAL LAW ગણવું. CRIME સાથે CRIME ગણવું.વધુમાં એક અથવા બે પેપરમાં નાપાસ હોય(પેપર–૧ અને પેપર–૨ બન્ને વિષયમાં નાપાસ હોય તો તેવા વિદ્યાર્થીને જે તે વિષયની પરીક્ષા આપી તેના માર્ક બીજા વિષય(પેપર)માં માર્ક તબદિલ કરવા."**તો આજ રીતે **એલ.એલ.બી સેમ–૨ અને ૩નો જુનો કોર્ષ પૂર્ણ થઈ ગયો હોવાથી તેવા વિદ્યાર્થીઓને ACમાં મજૂર થયા બાદ નવા કોર્સમાં પરીક્ષા આપવાની થાય છે તો જુના કોર્સ(CBCS MODE)નાંવિષયોને નવા કોર્સનાં વિષયો સાથે મેપિંગ કરવા.તેમજ જુના કોર્સનાં સેમ–૪,૫ અને ૬ની પરીક્ષા જુના કોર્સ(CBCS MODE) કે નવા કોર્સ મુજબ લેવાની થયા.જો નવા કોર્સ મુજબ લેવાની થયા તો જુના કોર્સ(CBCS MODE)નાંવિષયોને નવા કોર્સનાં વિષયો સાથે મેપિંગ કરવાઅંગેની બાબતે ચર્ચા–વિચારણા કરવી.**

(પરીક્ષા વિભાગ/લાૅ ફેકલ્ટી)

:: **આથી ઠરાવવામાં આવે છે કે,જુના કોર્સ(CBCS MODE) ના જે વિષયો નવા અભ્યાસક્રમના વિષયો સાથે મેપિંગ નથી કરી શકાતા તેવા વિષયોની જૂના અભ્યાસક્રમ પ્રમાણે અંતિમ પરીક્ષા લેવી પછીથી તેમને તક આપવામાં આવશે નહીં. આ વિષયોના જુના અભ્યાસક્રમો અંગેMCQ પ્રશ્નપત્રો કઢાવવા અંગે જરૂરી કાર્યવાહી સત્વરે કરવી અને તે અંગેની નોંધ પરીક્ષાના ટાઈમટેબલમાં કરાવવી.**

(૫૮) દક્ષિણ ગુજરાત યુનિવર્સિટી વિસ્તારમાં આવેલી તમામ બોર્ડની ૩૫૦૦ શાળાઓની ભૈતિક સુવિધાઓ અને માનવ સંપતિનું યુનિવર્સિટી સંલગ્ન અભ્યાસક્રમમાં પ્રવેશ,પરીક્ષા અને પરિણામમાં ઉપયોગ કરવા અંગે ડૉ.કશ્યપ પ્રવિણસિંહ ખરચીયા સેનેટ/સિન્ડિકેટ સભ્યશ્રી, વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટીના તા.૦૭/૦૬/૨૦૨૧ ના ઈમેઈલ થી મળેલ પત્ર અંગે સિન્ડિકેટે તેની તા.૨૪/૦૬/૨૦૨૧ ની સભાના ઠરાવ ક્રમાંક : ૩૪ અન્વયે કરેલ નીચેની ભલામણ પર વિચારણા કરવા બાબત.

(એકેડેમિક)

<u>સિન્ડિકેટની તા. ૨૪/૦૬/૨૦૨૧ ની સભાની ભલામણ ક્રમાંક : ૩૪</u>

:: **આથી ઠરાવવામાં આવે છે કે, દક્ષિણ ગુજરાત યુનિવર્સિટી વિસ્તારમાં આવેલી તમામ બોર્ડની ૩૫૦૦ શાળાઓની ભૌતિક સુવિધાઓ અને માનવ સંપતિનું યુનિવર્સિટી સંલગ્ન અભ્યાસક્રમનાં પ્રવેશ માટે હેલ્પ સેન્ટર તરીકે ઉપયોગ કરવો. પરીક્ષા અને પરિણામ માટે વધુ અભ્યાસ માટે બાબત એકેડેમિક કાઉન્સિલ સમક્ષ રજૂ કરવી.**

:: **આથી ઠરાવવામાં આવે છે કે,દક્ષિણ ગુજરાત યુનિવર્સિટી વિસ્તારમાં આવેલી વિવિધ શાળાઓ પૈકી જે શાળાઓ પોતાની ભૌતિક સુવિધાઓ અને માનવ સંપત્તિનું યુનિવર્સિટીના વિદ્યાર્થીઓના હીતમાં સ્વેચ્છાએ ઉપયોગ કરવા ઈચ્છતી હોય તેવી શાળાઓ પાસે આવેદન મંગાવી યોગ્ય પ્રક્રિયા દ્વારા પ્રવેશ તેમજ પરીક્ષા માટે ઉપયોગ કરી શકાય. વિવિધ પ્રકારના કૌશલ્યવર્ધક કોર્ષ માટે આ ભૌતિક સુવિધા અને માનવ સંપત્તિનો ઉપયોગ કરી શકાશે. અને સબંધિત માર્ગદર્શક વ્યકિતની જે તે સંસ્થાએ માહિતી કૌશલ્યવર્ધક કોર્ષની પરીક્ષા અગાઉ ERP System માં અપલોડ કરી દેવી અને સબંધિત વડાઓએ ERP System માં એને એપ્રુવ કરવી.**

વધુમાં યુનિવર્સિટીની HRMS (ERP System) માં યુનિવર્સિટી સંલગ્ન કોલેજો અને વિભાગોમાં જે વિઝીટીંગ/એડહોક/કરાર આધારીત અધ્યાપકશ્રીઓની માહિતી સેમેસ્ટરની પરીક્ષા અગાઉ ERP System માં અપલોડ કરી દેવી અને સબંધિત વડાઓએ ERP System માં એને એપ્રુવ કરવી.

(૫૯) હાલમાં કોરોના મહામારીને કારણે યુનિવર્સિટી દ્વારા લેવાનારી યુ.જી. અને પી.જી.માં અમુક અભ્યાસક્રમોમાં પરીક્ષાઓ ઓન લાઈન MCQ MODEમાં લેવામાં આવનાર છે. જે પરીક્ષાઓના પરિણામોનું રી–ચેકીગ તેમજ રી–એસેસમેન્ટ કરવું કે કેમ તે અંગે ઘટતું કરવા બાબત.

(પરીક્ષા/પુનઃમૂલ્યાંકન)

:: **આથી ઠરાવવામાં આવે છે કે,યુનિવર્સિટી દ્વારા લેવાનારી યુ.જી. અને પી.જી. માં અમુક અભ્યાસક્રમોમાં પરીક્ષાઓ ઓન લાઈન MCQ MODEમાં લેવામાં આવનાર છે. જે પરીક્ષાઓના પરિણામોનું રી–ચેકીગ કરાવી શકાશે.**

(૬૦) વિજ્ઞાન, વાણિજય અને વિનયન શાખાના ડીનશ્રીઓએ નીચે દર્શાવેલ બાબતો અંગે જરૂરી સ્પષ્ટતા અને માર્ગદર્શન આપવા વિનંતી કરેલ છે.

૧. વિનયન અને વિજ્ઞાન વિદ્યાશાખાની અંદર મુખ્ય વિષયના સેમેસ્ટર–૧ અને ૨માં ૨ પેપર, સેમેસ્ટર–૩ અને ૪માં ૩ પેપર અને સેમેસ્ટર–૫ અને ૬ માં ૬ પેપર હોય છે. મુખ્ય વિષયોમાં તમામ પેપરોના સંયુકત માર્કસથી પાસ થવાનું હોય છે.

પ્રવર્તમાન ERP સિસ્ટમમાં વ્યકિતગત પેપરના ગ્રેસિંગના માર્કસ મુકવામાં તકલીફ આવે છે.

૨. વિનયન, વાણિજય અને વિજ્ઞાન વિદ્યાશાખાની અંદર ઘણા વિષયોમાં સંયુકત વિષયો સાથે પાસ થવાનું હોય છે. યુનિવર્સિટીના નિયમ અનુસાર ૨/૩ વિષયોમાં પાસ થયેથી આગળના વર્ષમાં પ્રવેશ મળે છે. આ સંજોગોમાં વિષયની સંખ્યા પ્રમાણે કે હેડ (સંયુકત પેપરોનું એકજ હેડ ગણવામાં આવતું હોય છે.) પ્રમાણે ગણતરી કરી પ્રવેશ આપવો?

તો ઉપરોકત બાબતો અંગે વિચારણા કરવા બાબત.

(પરીક્ષા વિભાગ/આર્ટસ ફેકલ્ટી)

:: **આથી ઠરાવવામાં આવે છે કે,આ બાબતની વિશદ ચર્ચા આગામી એકેડેમિક કાઉન્સિલની સભામાં કરવામાં આવશે.**

(૬૧) **પ્રો રેખાબેન એમ. પટેલ, સંસ્કૃત બોર્ડ અધ્યક્ષ, એસ.બી. ગાર્ડા આર્ટસ્ એન્ડ પી. કે. પટેલ કોમર્સ કોલેજ, નવસારીનો તા. ૨૨/૦૬/૨૦૨૧ ના પત્ર પર વિચારણા કરવા બાબત.**

(પરીક્ષા વિભાગ/આર્ટસ ફેકલ્ટી)

(પરિશિષ્ટ – ૨૦)

:: **આથી ઠરાવવામાં આવે છે કે, પ્રસ્તુત પત્રનો સ્વીકાર કરી મંજૂર કરવામાં આવે છે.**

(૬૨) **પરીક્ષા કોમર્સ (વિભાગ) ની બી.કોમ. સેમેસ્ટર–૩ ની પરીક્ષા તા. ૦૬/૦૭/૨૦૨૧ (Advance Accounting and Auditing - II) ના રોજ હોય અને તેમજ C.A. ની પણ પરીક્ષા તા. ૦૬/૦૭/૨૦૨૧ સાથે કલેશ થતી હોય એ બાબતે વિચારણા કરવા બાબત.**

(પરીક્ષા વિભાગ/કોમર્સ બ્રાન્ચ)

:: **આથી ઠરાવવામાં આવે છે કે, પત્રની નોંધ લઈ તે અનુસાર પરીક્ષાના સમયપત્રકમાં જરૂરી ફેરફાર કરવો.**

(૬૩) **દરેક લૉ કોલેજનો ટાઈમ સમાન કરવા બાબતે ડિપાર્ટમેન્ટ ઓફ લૉ ના કો–ઓર્ડિનેટરશ્રીના તા. ૨૫/૦૬/૨૦૨૧ ના પત્ર વિચારણા કરવા બાબત.**

(સિન્ડિકેટ વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, આ બાબત વધુ વિચારણા અર્થે આગામી એકેડેમિક કાઉન્સિલ સમક્ષ રજૂ કરવી.**

(૬૪) P.G.D. Journalism (1st Semester) June-2021 **ની ઓનલાઈન પરીક્ષા MCQ પધ્ધતિથી લેવાનાર છે. ડિપાર્ટમેન્ટ ઓફ જર્નાલિઝમ એન્ડ માસ કોમ્યુનીકેશન, વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી, સુરતના ડિપાર્ટમેન્ટ હેડના તા. ૦૧/૦૬/૨૦૨૧ ના સાદર રજૂના અનુસંધાને સદર વિદ્યાર્થી** Savaliya Divyang Pravinbhai **૬૦% ફિઝીકલ હેન્ડીકેપ હોય, જેથી સદર વિદ્યાર્થીએ રાઈટરની માંગણી કરેલ છે. જે અંગેની રજુઆતને મા. કુલપતિશ્રીએ એકેડેમિક કાઉન્સિલમાં મંજૂરી માટે મોકલાવવાની ભલામણ કરેલ છે. જે અંગેની વિચારણા કરવા બાબત.**

(પરીક્ષા વિભાગ / પી.જી.મેનેજમેન્ટ)

:: **આથી ઠરાવવામાં આવે છે કે, યુનિવર્સિટીની ઓફલાઈન પરીક્ષાના નિયમોનુસાર કાર્યવાહી કરવી.**

(૬૫) સિન્ડીકેટ સભ્ય ડૉ. પારૂલબેન વડગામા ના તા. ૨૪/૦૬/૨૦૨૧ ના રોજના પત્ર થી પીએચ.ડી. સંશોધન અભ્યાસના વિવિધ વિષયોમાં પ્રપ્રોઝલ પ્રેઝન્ટેશન માટે મળનાર રીસર્ચ એડવાઈઝરી સમિતિમાં વિવિધ વિષયમાં પીએચ.ડી. સંશોધન અભ્યાસના માર્ગદર્શક શિક્ષકો દ્વારા માર્ગદર્શનની કરેલ દરખાસ્ત ધ્યાને લઈ માર્ગદર્શક શિક્ષકને પણ ઓનલાઈન / ઓફલાઈન મોડ થી હાજર રહેવાની મંજૂરી આપવાની રજૂઆત પર વિચારણા કરવા બાબત.

(અનુસ્નાતક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,**પીએચ.ડી. સંશોધન અભ્યાસના વિવિધ વિષયોમાં પ્રપ્રોઝલ પ્રેઝન્ટેશન માટે મળનાર રીસર્ચ એડવાઈઝરી સમિતિમાં યુનિવર્સિટી માન્ય પીએચ.ડી. ગાઈડ જેમનું નામ પીએચ.ડી. ના એડમીશન માટે ચાલુ વર્ષમાં વિદ્યાર્થીની ફાળવણી અંગે જાહેર થયેલી યાદીમાં હોય તેવા પીએચ.ડી. ગાઈડ પ્રવેશપ્રક્રિયા સમયે યોજાનાર પ્રેઝન્ટેશન દરમ્યાન સ્વેચ્છાએ તથા સ્વખર્ચે હાજર રહી શકશે. વધુમાં તેઓ પ્રવેશ પ્રક્રિયામાં કોઈપણ પ્રકારની નિર્ણાયક ભૂમિકામાં ભાગ લઈ શકશે નહીં.

વધુમાં આ અંગે યુનિવર્સિટી તરફથી કોઈ પણ પ્રકારની રજા અને મહેનતાણું મળવાપાત્ર રહેશે નહીં.

(૬૬) (માનનીય કુલપતિશ્રીના પગલાંની નોંધ લેવા બાબત.)
ઓનલાઈન M.C.Q. પધ્ધતિથી લેવાનાર પરીક્ષાઓના પ્રશ્નપત્રોમાં નીચે મુજબની કેટલીક સમસ્યાઓ આવતી હતી.

૧. કુલ પ્રશ્નો કરતાં ઓછા પ્રશ્નો હોવા.
૨. એકનો એક પ્રશ્ન બે કે તેથી વધુ વાર રીપીટ થયો હોય.
૩. કેટલાક પ્રશ્નોની આન્સર કી દર્શાવેલી ન હોવી.

ઉપરોકત ક્ષતીપૂર્તી કરવા તમામ પ્રાધ્રિનકો પાસેથી વધારાના (સ્પેર) ૧૦ પ્રશ્નો જમા કરાવવા અંગે માન.કુલપતિશ્રીએ લીધેલા નિર્ણયના પગલાની નોંધ લેવા બાબત.

વધુમાં હવે પછી લેવાનાર પરીક્ષાઓ (ઓનલાઈન) માટે દરેક પ્રાધ્રિનકો પાસેથી વધારાના૧૦ M.C.Q. મંગાવવાપરીપત્રિત કરેલ હોય તેની નોંધ લેવા બાબત.

(પરીક્ષા વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, માનનીય કુલપતિશ્રીએ લીધેલ ઉપરોકત પગલાંની નોંધ લેવામાં આવે છે.**

(૬૭) કાનૂન વિદ્યાશાખાની સેમેસ્ટર–૫ અને સેમેસ્ટર–૬ ની પરીક્ષા ઓનલાઈન (MCQ) આધારીત લેવા અંગે વિચારણા કરવા બાબત.

(પરીક્ષા વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,કાનૂની વિદ્યાશાખાની સેમેસ્ટર–૫ અને સેમેસ્ટર–૬ ની પરીક્ષા ઓનલાઈનMCQ મોડમાં લેવામાં આવશે. ટાઈમટેબલ હવે પછી જાહેર કરવામાં આવશે.**

(૬૮) યુનિવર્સિટી સંલગ્ન સરકારી તથા ગ્રાન્ટેડ કોલેજોના પી.જી. સેન્ટરોમાં શૈક્ષણિક કાર્યભાર કોન્ટ્રાકટ આધારીત અધ્યાપકશ્રીની ભરતી કરવા અંગેના નિયમોમાં છૂટછાટ આપી મંજૂરી આપવા અંગે સિન્ડિકેટ સભ્યશ્રીના તા. ૨૫/૦૬/૨૦૨૧ ના પત્ર પર વિચારણા કરવા બાબત.

:: **આથી ઠરાવવામાં આવે છે કે,યુનિવર્સિટી સંલગ્ન સરકારી તથા ગ્રાન્ટેડ કોલેજોના પી.જી. સેન્ટરોમાં યુનિવર્સિટીના અનુસ્નાતક શિક્ષક બનવાની યોગ્યતા ધરાવતા શિક્ષકો પ્રાપ્ત ન હોય તેવા સંજોગોમાં નેટ/સ્લેટ/પીએચ.ડી./પીએચ.ડી. સ્કોલર/અનુસ્નાતક કક્ષાએ ૫૫% કે તેથી વધુ ગુણ ધરાવનાર,અનુસ્નાતક કેન્દ્રો પર શૈક્ષણિક કાર્ય કરાવી શકશે. આ માટે જે તે અનુસ્નાતક કેન્દ્રએ સબંધિત વિદ્યાશાખાના અધ્યક્ષશ્રી પાસે મંજૂર કરાવેલ યાદી યુનિવર્સિટી કાર્યાલયને જમા કરાવવાની રહેશે. યુનિવર્સિટી દ્વારા નિર્ધારીત કરેલ મહેનતાણું ચૂકવવામાં આવશે. નેટ/સ્લેટ/પીએચ.ડી./પીએચ.ડી. સ્કોલર અનુસ્નાતક કક્ષાએ શિક્ષણ કાર્ય કરવા માટે અગ્રીમ પ્રાથમિકતા આપવાની રહેશે.**

(૬૯) યુનિવર્સિટીના વિવિધ વિદ્યાશાખાના સ્નાતક અને અનુસ્નાતક અભ્યાસક્રમોની ICCR મારફતે આવતા Foreign Students ની સીટો માટે નીતી નકકી કરવા અંગે વિચારણા કરવા બાબત.

નોંધ :– **સિન્ડિકેટ તા. ૨૨/૦૭/૨૦૧૩ ના ઠરાવ ક્રમાંક : ૨૨ થી અનુસ્નાતક કક્ષાએ કુલ બેઠકના ૧૫% સુપરન્યુમરી સીટો નિર્ધારિત કરેલ છે.**
(એકેડેમિક/પી.જી.)

:: **આથી ઠરાવવામાં આવે છે કે,યુનિવર્સિટીના વિવિધ વિદ્યાશાખાના સ્નાતક અને અનુસ્નાતક અભ્યાસક્રમોની ICCR મારફતે આવતા Foreign Students ની સીટો માટે ૧૫% સુપરન્યુમરી સીટો રાખવા સિન્ડિકેટને ભલામણ કરવામાં આવે છે.**

(૭૦) યુનિવર્સિટીના વિવિધ વિદ્યાશાખાના સ્નાતક અને અનુસ્નાતક અભ્યાસક્રમોની Foreign Studentsમાટેની સીટો માટે નીતી નકકી કરવા અંગે વિચારણા કરવા બાબત.
(એકેડેમિક/પી.જી.)

:: **આથી ઠરાવવામાં આવે છે કે,યુનિવર્સિટીના વિવિધ વિદ્યાશાખાના સ્નાતક અને અનુસ્નાતક અભ્યાસક્રમોની Foreign Students ની સીટો માટે ૧૫% સુપરન્યુમરી સીટો રાખવા સિન્ડિકેટને ભલામણ કરવામાં આવે છે.**

(૭૧) એક્ષટર્નલ અભ્યાસક્રમની પરીક્ષાઓ અંગે ચર્ચા વિચારણા કરવા બાબત.
(પરીક્ષા વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,સ્નાતક કક્ષાએ પ્રથમ અને દ્વિતીય વર્ષ બી.એ., બી.કોમ. તેમજ અનુસ્નાતક કક્ષાએ પ્રથમ વર્ષ ની પરીક્ષાઓ તા. ૧૯/૦૭/૨૦૨૧ થી MCQ આધારીત ઓનલાઈન પધ્ધતિથી લેવામાં આવશે.**

સ્નાતક કક્ષાએ તૃતીય વર્ષ અને અનુસ્નાતક કક્ષાએ દ્વિતીય વર્ષની પરીક્ષા અંગેની જાહેરાત તા.૦૩/૦૭/૨૦૨૧ ના રોજ કરવામાં આવશે.

એક્ષટર્નલ અભ્યાસક્રમની MCQ આધારીત ઓનલાઈન પરીક્ષાનો કુલ સમય ૨:૦૦ (બે) કલાકનો અને એક ગુણનો એક પ્રશ્ન એવા ૧૦૦ પ્રશ્નો રહેશે.

વધુમાં MCQ આધારીત ઓનલાઈન રેગ્યુલર પરીક્ષાના તમામ નિયમો આ પરીક્ષાને પણ લાગુ પડશે.

સ્નાતક કક્ષાએ પ્રથમ અને દ્વિતીય વર્ષના MCQ આધારીતએક ગુણનો એક પ્રશ્ન એવા ૧૦૦ પ્રશ્નોનો એક પેપરસેટતથા વધારાના ૨૦ પ્રશ્નોનો એક સેટ અલગ કવરમાંતા.૧૦/૦૭/૨૦૨૧ સુધીમાં જમા કરાવવાનો રહેશે.

(૭૨) બી.એ. પ્રોગ્રામ સેમેસ્ટર–૩, ૪, ૫ અને ૬માં હિન્દી મુખ્ય અને ગૌણ વિષયના વૈકલ્પિક વિષયો યથાવત્ રાખવા અંગે એસોસીયેટ પ્રોફેસર, હિન્દી વિભાગ, વનરાજ આર્ટસ્ એન્ડ કોમર્સ કોલેજ, ધરમપુરના તા. ૨૨/૦૬/૨૦૨૧ ના પત્ર પર વિચારણા કરવા બાબત.

(એકેડેમિક વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,વિનયન વિદ્યાશાખાના કોઈ પણ વિષયમાં અગાઉથી ચાલી આવતા વૈકલ્પિક વિષયોના માળખાને યથાવત્ રાખવું.**

વધુમાં બી.એ. પ્રોગ્રામ સેમેસ્ટર–૩, ૪, ૫ અને ૬ માં હિન્દી મુખ્ય અને ગૌણ વિષયના વૈકલ્પિક વિષયો યથાવત્ રાખવા અને જરૂરી હોય ત્યાં વૈકલ્પિક વિષયોનો અભ્યાસક્રમ અભ્યાસસમિતિ પાસેથી સત્વરે મંગાવી અમલ કરવો.

(૭૩) ઓનલાઈન પરીક્ષા દરમ્યાન ઉપયોગમાં લેવાના થતા "REPORT OF THE PROCTOR" ના ફોર્મેટ પર વિચારણા કરવા બાબત.

(પરીક્ષા વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે,ઓનલાઈન પરીક્ષા દરમ્યાન ઉપયોગમાં લેવાના થતા "REPORT OF THE PROCTOR" ના ફોર્મેટને યથાવત્ મંજૂર રાખવામાં આવે છે.**

(૭૪) બી.કોમ. સેમેસ્ટર–૧, ૫ તથા ૬, એમ.કોમ. સેમેસ્ટર–૨, ૩ તથા ૪, બી.કોમ. (ઓનર્સ) સેમેસ્ટર – ૧, ૫ તથા ૬ ની પરીક્ષા કેવી રીતે લેવી તથા પરીક્ષાના કાર્યક્રમની તારીખ અને સમય આપવા વિનંતી. તથા અન્ય તમામ ફેકલ્ટીની પણ પરીક્ષાના કાર્યક્રમની તારીખ અને સમય આપવા વિનંતી છે. જેથી આગળની કાર્યવાહી હાથ ધરી શકાય. તે અંગે વિચારણા કરવા બાબત.

(પરીક્ષા વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, બી.કોમ. સેમેસ્ટર–૧, ૫, એમ.કોમ. સેમેસ્ટર–૩ તથા બી.કોમ. (ઓનર્સ) સેમેસ્ટર ૧ અને ૫ ની પરીક્ષાઓ MCQ આધારીત ઓનલાઈન પધ્ધતિથી લેવામાં આવશેઅને આ પરીક્ષાઓ તા. ૧૨/૦૭/૨૦૨૧ થી શરૂ થશે.**

વધુમાં બી.એ. સેમેસ્ટર–૧ અને ૫, એમ.એ. સેમેસ્ટર–૩ ની પરીક્ષાઓ MCQ આધારીત ઓનલાઈન પધ્ધતિથી લેવામાં આવશે અને આ પરીક્ષાઓ તા.૧૨/૦૭/૨૦૨૧ થી શરૂ થશે.

બી.એસસી. સેમેસ્ટર–૧ અને ૫, એમ.એસસી. સેમેસ્ટર–૩ની પરીક્ષાઓ MCQ આધારીત ઓનલાઈન પધ્ધતિથી લેવામાં આવશે અને આ પરીક્ષાઓ તા.૧૨/૦૭/૨૦૨૧ થી શરૂ થશે.

એમ.એ., એમ.કોમ., એમ.એસસી, બી.એડ્, એમ.એડ્સેમેસ્ટર–૨ ની પરીક્ષાઓ MCQ આધારીત ઓનલાઈન પધ્ધતિથી લેવામાં આવશે અને આ પરીક્ષાઓ તા.૦૨/૦૮/૨૦૨૧ થી શરૂ થશે.

બી.એ., બી.કોમ., બી.એસસી. સેમેસ્ટર–૬ અને એમ.એ., એમ.કોમ., એમ.એસસી સેમેસ્ટર–૪ ની પરીક્ષા અંગેની જાહેરાત તા.૦૩/૦૭/૨૦૨૧ ના રોજ કરવામાં આવશે.

કોમ્પ્યુટર એન્ડ ઈન્ફર્મેશન ટેકનોલોજી વિદ્યાશાખાની સ્નાતક તથા અનુસ્નાતક કક્ષાની તમામ પરીક્ષાઓ MCQ આધારીત ઓનલાઈન પધ્ધતિથી અગાઉ જાહેર થયેલ તારીખો અનુસાર લેવામાં આવશે.

(૭૫) યુનિવર્સિટીની પરીક્ષામાં વપરાતી ઉત્તરવહી ઉપર ચોંટાડવા માટેનું વિષય કોડ, વિદ્યાર્થીનો સીટ નંબર તેમજ પરીક્ષાની તારીખ દર્શાવતુ સ્ટીકર પ્રશ્નપત્રની બેગમાં સાથે મુકવાની નવી વ્યવસ્થા ગોઠવવા અંગે નીચેનાં મુદાઓ અવલોકનમાં લેવા વિનંતી.

મુદા નં.૧.પરીક્ષાનાં પ્રશ્નપત્રો લાખોની સંખ્યામાં છપાવવામાં આવે છે તેથી પ્રશ્નપત્ર છાપકામની સંખ્યા ઓછામાં ઓછા ૩૦ દિવસ અગાઉ આપવી પડતી હોય છે પરીક્ષાનાં ફોર્મ ભરવાની અંતિમ તારીખ પૂર્ણ થયા બાદ પ્રશ્નપત્રની છાપકામની સંખ્યા આપવામાં આવે છે ઉપરોકત નવી વ્યવસ્થા ગોઠવવા માટે પરીક્ષાનાં ફોર્મ ભરવાની અંતિમ તારીખ પૂર્ણ થયા બાદ ત્રણ થી ચાર દિવસમાં પરીક્ષામાં બેસનાર વિદ્યાર્થીઓની નામાવલી(કેન્ડિડેટ લીસ્ટ) તૈયાર થવી અત્યંત આવશ્યક છે જેથી પ્રશ્નપત્રનાં છાપકામની સંખ્યાની સાથે પરીક્ષામાં બેસનાર વિદ્યાર્થીઓની નામાવલી મોકલી શકાય(નોંધઃ– ઘણાં કેન્ડિડેટ લિસ્ટ પરીક્ષાનાં ચાર પાંચ દિવસ અગાઉ તૈયાર થતા હોય છે) અને તે મુજબનાં પરીક્ષાનાં કેન્દ્ર માટેનાં સ્ટીકર પ્રશ્નપત્રનાં પેકેટમાં મુકી શકાય પરંતુ જો પરીક્ષામાં બેસનાર વિદ્યાર્થીઓની નામાવલી મોડી તૈયાર થાય તો સ્ટીકર પ્રશ્નપત્રનાં પેકેટમાં પરીક્ષાનાં કેન્દ્રો મુજબ મુકવાના હોવાથી પ્રશ્નપત્રનું છાપકામ સમયસર થવામાં મુશ્કેલી ઉભી થઈ શકે તેમ છે આવા સંજોગોમાં પ્રશ્નપત્રો છાપકામ કરીને યુનિવર્સિટીને સમયસર ન મળતા પ્રશ્નપત્રો પરીક્ષાનાં દિવસે પરીક્ષા કેન્દ્રો ઉપર પહોંચાડવામાં આવે તો વિવિધ પ્રકારની મુશ્કેલી સર્જાય શકે છે તેમજ સતત વાહનો દોડાવાને કારણે યુનિવર્સિટીનો વાહન ખર્ચમાં વધારો થઈ શકે છે.

મુદાનં.૨. વિદ્યાર્થીઓની નામાવલીમાં કોઈ પણ પ્રકારની ભુલ હોય અથવા અન્ય કોઈ ફેરફાર હોય તો પ્રશ્નપત્રનાં રી–પ્રિન્ટ અથવા પ્રશ્નપત્રો વધુ છપાઈ જવાની શકયતા રહેલી છે.

મુદાનં.૩ પરીક્ષામાં બેસનાર વિદ્યાર્થીઓની નામાવલી કોઈ પણ સંજોગોમાં સમયસર તૈયાર ન થાય તો પ્રશ્નપત્રની કામગીરી સમય મર્યાદામાં કરવાની હોવાથી કામગીરીમાં ક્ષતી શરતચૂક થવાની સંભાવનાઓ છે.

મુદા નં.૪ સ્ટીકર પર તારીખ દર્શાવવામાં આવેલ છે જે મુજબ પરીક્ષાના સમય પત્રક પરીક્ષા શરૂ થવાના અઠવાડિયા પહેલા મળે છે અને વારંવાર સમય પત્રક રિવાઈઝ રિરિવાઈઝ થતા હોય જેથી કરીને

પરીક્ષાના પેપર વિભાગની ત્વરિતની કામગીરી હોવાથી ભૂલ (ક્ષતિ) થવાની શકયતા રહેલી છે.જે અંગે યોગ્ય આદેશાર્થે ચર્ચા વિચારણા કરવા બાબત..

(પરીક્ષા વિભાગ/પેપર)

:: **આથી ઠરાવવામાં આવે છે કે,યુનિવર્સિટીની પરીક્ષામાં વપરાતી ઉત્તરવહી ઉપર ચોંટાડવા માટેનું વિષય કોડ, વિદ્યાર્થીનો સીટ નંબર તેમજ પરીક્ષાની તારીખ દર્શાવતુ સ્ટીકર પ્રશ્નપત્રની બેગમાં સાથે મુકવાની નવી વ્યવસ્થા ગોઠવવા અંગે સૈધ્ધાંતિક સ્વીકાર કરી આગળની કાર્યવાહી માટે સિન્ડિકેટને ભલામણ કરવામાં આવે છે.**

(૭૬) હોમીયોપેથી પરીક્ષાઓ ઓફલાઈન લેવા અંગે વિચારણા કરવા બાબત.

(પરીક્ષા વિભાગ)

:: **આથી ઠરાવવામાં આવે છે કે, આયુષ, ગુજરાત રાજય, ગાંધીનગરનો પત્રક્રમાંક : યનવ–૧/૧૩૧૭૪–૨૧૪/૨૦૨૧/ગ, તા. ૦૬/૦૬/૨૦૨૧ ના પત્રમાં જણાવ્યા પ્રમાણે હોમિયોપેથી/આયુર્વેદ યુ.જી. તથા પી.જી વિદ્યાર્થીઓને ઓફલાઈન શિક્ષણ શરૂ કરવા મંજૂરી આપેલ હોય તે સંજોગોમાંCOVID-19 ની તમામ SOP ના પાલન સાથે ઓફલાઈન પધ્ધતિથી પરીક્ષા યોજી શકાય.**

ક્રમાંક : એ/એ.કા./કા.વા./૮૭૭૯/૨૦૨૧
તા.૨૬/૦૬/૨૦૨૧

ઈ.ચા.કુલસચિવ

પ્રતિ,
એકેડેમિકકાઉન્સિલના સર્વે સભ્યશ્રીઓ....

Department of Rural Studies

Veer Narmad South Gujarat University, Surat

Academic Year = 2021 - 22

Syllabus

MRS(SD) Semester - III & IV

Credits of Five year Integrated Programme in Sustainable Development – MRS(SD)

Subject Code	Subject Name	Credits	Hours Per Week	Tutorials Per Week
Semester - I				
MRSSD1.1	Basic Concepts of Economics	4	3	1
MRSSD1.2	General Sociology	4	3	1
MRSSD1.3	General Principles of Ecology and Environment	4	3	1
MRSSD1.4	Introduction of Sustainability	4	3	1
MRSSD1.5	Developmental Writing, Reading and Public Speaking	4	3	1
MRSSD1.6	Environmental Issues- Local	4	3	1
	Total Credits of Semester – I	24		
Semester – II				
MRSSD 2.1	Principles of Economics	4	3	1
MRSSD 2.2	Developmental Sociology	4	3	1
MRSSD 2.3	Need of Sustainability	4	3	1
MRSSD 2.4	Composition and interpersonal communication	4	3	1
MRSSD 2.5	Environmental issues-National	4	3	1
MRSSD 2.6	Environment and Man	4	3	1
	Total Credits of Semester - II	24		
Semester – III				
MRSSD 3.1	Social Theory and sociology of development	4	3	1
MRSSD 3.2	**Social responsibility and Sustainable Development**/Society and Culture in contemporary India	4	3	1
MRSSD 3.3	Developmental Economics/**Indian Rural Economy**	4	3	1
MRSSD 3.4	Gender and Environment/**Management of Co-operatives**	4	3	1
MRSSD 3.5	Biodiversity and conservation/**Panchayati Raj and Rural Development**	4	3	1
MRSSD 3.6	Application of environmental science/**Sustainable Crop production and organic farming**	4	3	1
	Total Credits of Semester - III	24		
Semester – IV				
MRSSD 4.1	Global Environmental Issues/**Animal Husbandry and Dairying**	4	3	1
MRSSD 4.2	Technology, environment and society/**Soil science and agriculture management**	4	3	1
MRSSD 4.3	Principles of Geo-informatics/**Horticulture**	4	3	1
MRSSD 4.4	Sustainable Energy Resource	4	3	1
MRSSD 4.5	EIA and Environmental Audit/**Information Technology in Rural Development**	4	3	1
MRSSD 4.6	Rural Development Policies and Programmes	4	3	1
	Total Credits of Semester – IV	24		
Semester – V				

Subject Code	Subject Name	Credits	Hours Per Week	Tutorials Per Week
MRSSD 5.1	Environmental Economics/**Rural Entrepreneurship**	4	3	1
MRSSD 5.2	Sustainable Rural Development	4	3	1
MRSSD 5.3	Common property resource management	4	3	1
MRSSD 5.4	Sustainable water management/**Rural Planning and Development**	4	3	1
MRSSD 5.5	Legal provisions for sustainability in India	4	3	1
MRSSD 5.6	Sustainability Communications Strategy and Reporting/**Rural Industries and Rural Technologies**	4	3	1
	Total Credits of Semester – V	24		
Semester – VI				
MRSSD 6.1	Sociology of Development and Environment	4	3	1
MRSSD 6.2	Economy and sustainability	4	3	1
MRSSD 6.3	Governance and Management of Natural Resources/**Rural Marketing**	4	3	1
MRSSD 6.4	Food Security and Agriculture/**Crop protection**	4	3	1
MRSSD 6.5	Research Methodology	4	3	1
MRSSD 6.6	Field based project work	4	3	1
	Total Credits of Semester - VI	24		
	Total Credits of Semester I to VI	**144**		
Semester – VII				
MRSSD 7.1	Human Resource management for non-profit organizations	4		
MRSSD 7.2	Quantitative analysis for Development Practice	4	3	1
MRSSD 7.3	Developmental Economics - I	4	3	1
MRSSD 7.4	Integrated approaches for S D	4	3	1
MRSSD 7.5	Environment, Development and Sustainability	4	3	1
MRSSD 7.6	Quantitative analysis for Development Practice	4	3	1
	Total Credits of Semester - VII	24		
Semester – VIII				
MRSSD 8.1	Development Economics- II	4	3	1
MRSSD 8.2	Social Research Methods	4	3	1
MRSSD 8.3	Law, Society and sustainable development	4	3	1
MRSSD 8.4	Key concept of cultural and political ecology	4	3	1
MRSSD 8.5	Renewable energy, policy, planning and management	4	3	1
MRSSD 8.6	Science and Policy of climate change	4		
	Total Credits of Semester – VIII	24		
Semester – IX				
MRSSD 9.1	Economics of climate change/Environmental Economics	4	3	1
MRSSD 9.2	Sustainable Development for weaker section	4	3	1
MRSSD 9.3	Governance and management of natural	4	3	1

Subject Code	Subject Name	Credits	Hours Per Week	Tutorials Per Week
	resources			
MRSSD 9.4	Management and development of organization	4	3	1
MRSSD 9.5	Management for sustainable development	4	3	1
MRSSD 9.6	Winter Placement	4	2	-
	Total Credits of Semester - IX	24		
Semester –X				
MRSSD 10.1	Food security and agriculture	4	3	1
MRSSD 10.2	Gender and Sustainable Development	4	3	1
MRSSD 10.3	Environmental Economics	4	3	1
MRSSD 10.4	Project Design and Management for SD practice	4	3	1
MRSSD 10.5	Project Work	8	3	1
	Total Credits of Semester - X	24		
	Total Credits for Semester VII-X	**96**		

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT MRS(SD) SEMESTER - III			
Paper No.	:	**MRSSD 3.1**	
Paper Title	:	**Social Theory and Sociology of Development**	Credits : **4**

Objectives: A sociological theory is supposition that intends to consider, analyze And/or explain objects of the social reality from a sociological perspective, drawing connections between individual concepts in order to organize and substantiate sociological knowledge.

Unit:1. Social theories

- Classical social theory
- Post modern social theory
- Structural Functionalism theory
- Conflict theory
- Feminist theory

Unit:2. Theories of Development

- Modernization theory
- Dependency theory
- World system theory
- Theory of Globalization

Unit: 3. Social Development

- Meaning, definition of social development
- Features of Social Development
- Social Development in the UN's Agenda
- Social Development in India
- Factors facilitating social development
- Factors Hindering social development

Unit:4. Approaches of Development

- An Introduction of Approaches of Development
- The capitalist model of development
- The socialist model of developmemt
- Gandhian model of development

References:

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Durkheim, Emile. Suicide: A Study in Sociology. Edited with an introduction by George Simpson. Translated by John A. Spaulding & George Simpson. New York: The Free Press. ISBN: 978-0684836324.

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Durkheim, Emile. 1912. The Elementary Forms of Religious Life.

Foucault, Michel. 1990 [1978]. The History of Sexuality, An Introduction. New York: Vintage Books.

Foucault, Michel. Discipline and Punish: The Birth of the Prison. Translated by Alan Sheridan. New York: Vintage Books. ISBN: 978-0679752554.

Goffman, Erving. The Presentation of Self in Everyday Life. New York: Anchor Books. ISBN: 978-0385094023.

hooks, bell. 1981. Ain't I a Woman?: Black Women and Feminism. ISBN 0-89608-129-X

Mead, George Herbert. 1934. Mind, Self, and Society. University of Chicago Press. Mills, C. Wright. The Power Elite.

Omi, Michael and Howard Winant. 1994. Racial Formation in the United States: From the 1960's to the 1990's. New York: Routledge.

Reyes, Giovanni E., FOUR MAIN THEORIES OF DEVELOPMENT: MODERNIZATION, DEPENDENCY, WORD-SYSTEM, AND GLOBALIZATION University of Pittsburgh, USA. theory and social dev..pdf

Smith, Dorothy. 1987. The Everyday World as Problematic. Boston: Northeastern University.

Smith, Dorothy. 1990. The Conceptual Practices of Power.

Sociology of Development, SD - social development and theories.pdf

Warner, Michael. 1999. The Trouble with Normal: Sex, Politics and the Ethics of Queer Life. New York: Free Press.

Weber, Max. The Protestant Ethic and the Spirit of Capitalism. Translated by Talcott Parsons. Introduction by Anthony Giddens. New York: Routledge. ISBN: 978- 0415084345.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

MRS(SD) SEMESTER - III

Paper No. : **MRSSD 3.2**

Paper Title : **Social Responsibility and Sustainable Development**

Credits : **4**

Objectives: This course will familiarize the students with the concept of social responsibility and corporate social responsibility too. The evolution of CSR has far reaching consequences on the development sector in India. The collaboration of companies and NGOs with the community has initiated a new paradigm of change in the country. The paper will discuss a few prominent case studies of CSR.

Unit:1. Social Responsibility

- Concept and meaning of social responsibility
- Advantages of social responsibility
- Types of social responsibility
- Opinions in favour of social responsibility
- social responsibilities for different Interest groups

Unit: 2. corporate social responsibility

- Defining CSR
- Components of CSR
- Key drivers, History and Evolution of CSR in the Indian and international context
- CSR policies and Governance, Laws and Regulations

Unit:3. Stakeholder engagement in Social Responsibility

- Role of NGOs in developing CSR
- interaction in a multi-stakeholder context
- Community involvement, investment and evaluation
- Human Resource management – labor security and human rights.

Unit; 4. Corporate Social Responsibility and sustainable development

- CSR solutions to poverty
- creating livelihoods through skilling persons in the community
- Health care under CSR
- Creating health care infrastructure
- Sustainable sanitation solutions
- Delivering better education through CSR partnerships
- Case studies from different companies.

References:

1. Agarwal, S. (2008). Corporate social responsibility in India. Los Angeles: Response.

2. Baxi, C. (2005). Corporate social responsibility: Concepts and cases : The Indian experience. New Delhi, India: Excel Books.
3. Bhattacharya, D. Corporate social development: A Paradign shift. New Delhi: Concept publishing company
4. Crane, A. (2008). Corporate social responsibility: Readings and cases in a global context. London: Routledge.
5. Visser, W. (2011). The age of responsibility CSR 2.0 and the new DNA of business. Chichester, West Sussex: John Wiley & Sons.
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7. Werther, W., & Chandler, D. (2006). Strategic corporate social responsibility: Stakeholders in a global environment. Thousand Oaks: SAGE Publications
8. Sustainable development, SD - social development and theories.pdf
9. https://byjus.com/commerce/what-is-social-responsibility/

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT MRS(SD) SEMESTER - III			
Paper No.	:	**MRSSD : 3.3**	
Paper Title	:	**Indian Rural Economy**	Credits : **4**

Objectives :-

This paper is prepare d with the objective to create awareness among the students regarding the rural economy of India abd factors affecting it. It also provides insight on the role of agriculture and animal husbandry in rural economy. It also deals with new avenues to reduce unemployment and poverty from the rural India.

Unit-I Rural Economy of India

- Characteristics of rural economy
- Role and importance of agriculture and animal husbandry in rural economy

Unit-II Agricultural productivity and marketing

- Farm size, land utilization and cropping pattern, causes of low agricultural productivity, measures taken to improve productivity.
- Importance, merits and demerits of present system of marketing agricultural produce. New policy for marketing of agricultural produce.
- Role of irrigation facilities, transport and communication and electrification in increasing income of farmers.

Unit-III Rural poverty and unemployment

- Causes and extent of rural poverty and unemployment, various rural development program including MGNREGA for reducing the rural poverty and unemployment

Unit-IV Rural Industrialization and finance

- Need, importance and problems of agro-based industries and cottage industries.
- Need and sources of rural finance, problems of rural indebtness and its relief measures
- Soils erosion- its types, effects and methods of prevention.

Unit-VPractices / field visits

- Visit to selected villages and village institutions (bank, dairy, agriculture market, etc.) to understand various components of rural economy

REFERENCES :

1. Tyagi B P Agricultural Economics and Rural Development. Jai Prakashan, Merrut.
2. Mamoria C B and Tripathi BB. Agricultural problems of India. Century Printers, Allahabad
3. Nanavati M B and Anjaria J J. The Indian Rural Problems. Vora and Co., Mumbai.
4. Misra S K and Puri V K. Indian Economy, Himalaya Publishing Co.
5. Dutt R and Sundharam K P M. Indian Economy. S. Chand and Company, New Delhi.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

MRS(SD) SEMESTER - III

Paper No. : **MRSSD 3.4**

Paper Title : **C0-operatives Management** Credits : **4**

Objectives:

1. To enable them to understand the principles, value and economic activities of cooperation.
2. To enable them to understand emergence and development of co operative Activity in the world.
3. To facilitate them to understand the forms of cooperative activities and management
4. To provide insights about NABARD and NDDB as well as AMUL model of cooperative in India

Unit: 1. Content of co operation

- Meaning and characteristics of co operation
- Modern principles of co operation
- Values of co operation
- Economic Activities and co operation(Capitalism, socialism and mixed co operation)

Unit:2. Emergence and development of co operative Activities

- Emergence and development of co operative Activity in the world(England, Germany, Denmark, Israel)
- Emergence and development of co operative Activity in India
- Emergence and development of co operative Activity in Gujarat

Unit:3. Forms of co operative Activity and management

- Introduction of Forms of various co operatives
- Co operative farming society
- Co operative Irrigation society
- Primary milk producers Co operative
- Primary agricultural credit Co operative society
- Sugar producers Co operative
- Management of Co operative societies

Unit: 4. Preliminary Introduction of co operative societies

- NABARD
- National Dairy Development Board (NDDB)
- National Co operative Development Corporation
- AMUL

Suggested Readings:

1. Gupta, K.B, Siddiqui, F and Alam, I(2011). Rural Management. Word Press, Lucknow.
2. Nakkiran, S (2006). Cooperative Management-Principles and Techniques, Deep & Deep Publications Pvt. Ltd: New Delhi

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT MRS(SD) SEMESTER - III			
Paper No.	:	**MRSSD 3.5**	
Paper Title	:	**Panchayati Raj and Rural Development**	Credits : **4**

OBJECTIVE:

The Students understand the role of gram panchayat in planning and become aware of self-governance, village development and Gandhiji's concept of village self-government. Despite this the student to study the structures for village planning and develops face to face understanding.

Unit: 1 Historical perspective of Panchayat
- Evolution and development of Panchayati Raj in India
- Gandhiji's concept of Gram Swaraj and panchayati raj
- Gujarat panchayati raj statute:1961 – A Review
- Concept and Structure of Three tier panchayati raj

Unit: 2 Three tier Panchayati Raj System
- 73rd Constitutional Amendment
- Structure of Gram Sabha and Gram Panchayat
- Functions of Gram Panchayat
- Gram Panchayat and E- Governance (General Introduction)

Unit: 3 Rural Planning
- Meaning and characteristics of of rural planning
- Approaches of Rural Planning (Top to Down and Bottom to Up Approach)
- Types of Rural Planning
- 1. Centralized and decentralized planning 2. Strategic and Functional planning
- Meaning of Micro planning, form and characteristics (Regional /specific planning)

Unit: 4 Decentralized Rural Planning System
- Concept of Decentralized Planning
- Need of Decentralized Rural Planning for Rural Development
- Process of Decentralized Rural Planning
- Understanding of authority and responsibility in relation to decentralized rural planning

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT MRS(SD) SEMESTER - III				
Paper No.	:	**MRSSD 3.6**		
Paper Title	:	**Sustainable Crop Production and Organic Farming**	Credits	: **4**

Objectives:

To make students aware of need of sustainability in crop introduction and organic farming. It also envisages to create awareness about crops of Gujarat and explain the concept of organic farming.

Unit-I Need forsustainable crop production.

- Fundamental of crop production
- Tillage – Importance & Types
- Fertilizers & Manures
- Role of water in development of plant.

Unit-II Seeds

- Importance, Types and Selection, Seed treatment, Seed Storage and Seed production.

Unit-III Crops of Gujarat

- Cereals - Wheat sorghum, paddy, Maize
- Cash crops – sugar cane, cotton, groundnut, castor.
- Vegetables – Potato, onion, Brinjal, cabbage, Leafy vegetables etc.
- Legumes – moong, urid, pegion pea, chick peas

Unit-IV Organic Farming

- Concept and need of organic farming
- Basic principles of organize farming
- Role of earthworms and other organisms in organic farming
- Compost, wormi compost &wormi wash.

References:

By · 2017

1. Arpita Mukherjee, Souvik Dutta, Tanu M. Goyal (2017) Organic Farming in IndiaStatus, Issues and Way Forward. Academic Foundation, New Delhi.
2. Palaniappan SP and Annadurai (2018) Organic Farming: Theory and Practice, Scientific Publishers, Jodhpur.

3. Somsundaram E. and UdhayaNandhini (2017) Traditional Organic Farming Practices. New India Publishing Agency,

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT MRS(SD) SEMESTER - III			
Paper No.	:	**MRSSD : 4.1**	
Paper Title	:	**Animal Husbandly and Dairying**	Credits : **4**

Objectives :

To make students aware of role of animal husbandly in self-employment in rural areas. This course details pillars of animal husbandly to make students ready to accept new researches in the field as animal keeper.

Unit-I Importance of animal husbandly in rural India.

- Different indigenous and exotic breeds and hybrid cow

Unit-II Animal Breeding

- Its need various types of breeding methods, basic introduction of animal reproduction, Artificial insemination- history merits and demerits.

Unit-III Animal nutrition

- Digestive system of ruminants
- Nutrients in animal feed – carbohydrates, protein, minerals, vitamins and water.
- Measuring food – Quantity and quality
- Forage crops

Unit-IV Animal housing & health

- Importance of animal housing & management of common diseases- symptoms and their treatments. Vaccination
- Composition of milk & clean milk production
- Types of dairy

Unit-V Field Visits

- Visit to dairy farm cattle breading institute and dairy processing unit.

References:

1. ICAR (2010) Animal Husbandry, ICAR Publication, New Delhi.
2. EIRI Hand book of poultry farming and feed formulations.
3. Pashu Vyavastha: Arun D. Dave, Universtiy Granth Nirman Board, Ahmedabad

4. Shukal Krushanlal (2000) Vyavaharu Gopalan :, University Granth Nirman Board Ahmedabad
5. "Godarshan" A Monthly Gujarati Magazine, Dept. of A.H.., Gujarat State, Gandhinagar
6. A Text Book of Animal Husbandry : G.C.Banerjee : Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
7. ICAR (2006) A Hand Book of Animal Husbandry. ICAR, New Delhi
8. Singh B D (2018) Principle and Methods of Plant - Breeding. Kalyani Publishers.
9. Chopra V L (2018) Plant Breeding.- Theory and Practice. Oxford and IBH Publishing Pvt. Ltd.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT MRS(SD) SEMESTER - III				
Paper No.	:	**MRSSD : 4.2**		
Paper Title	:	**Soil Science and agriculture management**	Credits	: **4**

Objectives :-

This paper is meant to make students understand the importance of soil in agriculture and the soil science. The students will know various physical and chemical properties of soil and their role in agricultural production. The paper will make the students well versed about needs and methods of soil management for sustainable agriculture.

Unit-I Meaning and formation of soil

- What is soil? Factors affecting formation of soil.
- Various types of rocks forming soil.
- Minerals forming soil – meaning and properties of various minerals and properties of various minerals, classification of minerals, study of important minerals.

Unit-II Profile and Layers

- What is soil profile?
- Ingredients of soil – Types, proportions and functions.
- Classification of soil.

Unit-III Physical and chemical properties of soil.

- Texture, structure, colour, density, porosity, consistency,
- Electric conductivity, plant nutrients, organic soil carbon, salinity, acidity

Unit-IV Management of soil

- Role of soil in sustainable agriculture
- Need for soil management, management of waste, acidic, salinity, water logged soils.
- Soils erosion- its types, effects and methods of prevention.

Unit-VPractices / field visits

- Soil and water sampling
- Visit to soil testing laboratory
- Demonstration of various types of soils

REFERENCES :

(1) Pandya H G. Mehta P M Hariya N H. JaminVigyan – Part 1 University Gaanth Nirman Board

(2) Avarani Babubhai Jaminvigyan and vyavastha. Anadaprakashan

(3) Suthar Hasmukh Jaminvigyan and vyavastha

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT MRS(SD) SEMESTER - IV			
Paper No.	:	**MRSSD : 4.3**	
Paper Title	:	**Horticulture**	Credits : **4**

Objectives :

To make students understand the importance of horticulture in human life. This paper will prepare the students in learning & doing various methods of propagation of horticulture crops post harvest technologies and different horticultural crops of Gujarat.

Unit-I Introductionof horticulture

- Primary requirement for cultivating horticulturally important crops- Weather, Water and soil.
- Selection of site
- Green manure and intercropping

Unit-II Methods of propagation

- Through seeds – merits demerits
- Vegetative propagation – different methods
- Tissue culture

Unit-III Treatment and value addition

- Horticulture crops and Bahar (Flowering)
- Thinning, trimming and training
- Value addition – jam, jelly, syrup, pickling & dehydration

Unit-IV Major horticulture crops of Gujarat

- Mango- sapota
- Lemon- aonla
- Banana - papaya
- Pomegranate – coconut.

References:

1. ICAR (2005) Handbook of Agriculture Indian Council of Agricultural Research, New Delhi.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT MRS(SD) SEMESTER - III				
Paper No.	:	**MRSSD : 4.4**		
Paper Title	:	**Sustainable Energy Resources**	Credits	: **4**

Objectives:

This paper is designed to give an insight on the need for sustainable energy resources in current period and various sources to obtain green energy.

Unit I- Scenario of Renewable Energy (RE) Sources: Needs of sustainable energy, advantages and limitations of Renewable Energy, present energy scenario of conventional and RE sources, Various non-conventional energy resources- availability, classification, relative merits and demerits

UNIT-II Solar Thermal Energy: Solar radiation, flat plate collectors and their materials, applications and performance,

UNIT-III Geothermal Energy: Resources of geothermal energy, environmental considerations.

UNIT-IV Wind Energy: Wind power and its sources, site selection, criterion,

UNIT-V Bio-mass: Availability of bio-mass and its conversion theory. Bio-gas production and utilization. Wave and Tidal Wave, Waste Recycling Plants.

References:

1. Raja et al, “Introduction to Non-Conventional Energy Resources” Scitech Publications.
2. John Twideu and Tony Weir, “Renewal Energy Resources” BSP Publications, 2006.
3. M.V.R. Koteswara Rao, “Energy Resources: Conventional & Non-Conventional” BSP Publications,2006.
4. D.S. Chauhan,”Non-conventional Energy Resources” New Age International.
5. C.S. Solanki, “Renewal Energy Technologies: A Practical Guide for Beginners” PHI Learning.
6. Peter Auer, "Advances in Energy System and Technology". Vol. 1 & II Edited by Academic Press.
7. Godfrey Boyle,“ Renewable Energy Power For A Sustainable Future”, Oxford University Press.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

MRS(SD) SEMESTER - III

Paper No. : **MRSSD : 4.5**

Paper Title : **Information technology in rural development** Credits : **4**

Objectives: To make students learn about computer system, it's operation and information technology. The students will get skills to use different software and office automation. The students will also get introduced to communication, networking and Internet. They will also understand E Commerce, e government and ICT schemes.

Unit 1: **Introduction**

Information technology – definition, concept, components, role,

Computer- definition characteristics format limitations, generations, classification, uses, computer operation, system, computer system unit, number system, BOS, **Input**- keyboard pointing device, audiovisual device, card reader, text/code reading, sensor, control

Output: soft and hard device, audio-visual, printing, plotter

Memory: computer memory, ram, room, flash and cache memory buffer and port

Storage: magnetic storage, nickel storage, solid state storage, back up

Multimedia

Unit 2: Software and operating system

Types of software, system and application software, language software

various operating systems and methods, work methods, classification, function, Module, interface, boot, mobile system, server system, DOS, UBANTU

Concept of windows structure, you needs, main program, Office automation program, types of data, selection of data, data organization, types of database

Unit 3: network, Internet and security

Data communication, types of transmission, signal transmission, transmission media, wireless network

Concept of network, classification, married Sandy merits, types of LANE, Topology,

Network devices: switch, repeater, bridge, router, gateway, modem, NIC

OSI letter, network and data security, firewall

Internet, connection, protocols, HTML, email, WWW, URL, IP address, domain, account

Internet services, uses, development of Internet, issues with its use.

Computer security-Ingredients, attack, security measures, types of viruses, hacking and hackers, software copyright.

E-commerce, e-government and advancement

Concept of e-commerce, types, usefulness, electronic data interchange and payment

E-government, digital device, e-readiness, info-kiosk,

E-governance in India, Digital Bharat, Digital Gujarat

GSWAN network, e gram, SWAGAT, ATVT, OJAS, Schemes for ICT, Mobile apps

System, MIS and Expert system

References:

1. SaidhantikaneHetulakshi "Computer" by Dr. Satish Patel, Dr. Satish Patel Self Publication.
2. Computer Fundamentals by Dr. Satish Patel & Mr. Bhavin Patel, Dr. Satish Patel Self Publication.
3. Computer Network by Dr. Satish Patel, Dr. Satish Patel Self Publication, Gandhinagar
4. Comdex computer course
5. Information System by Dr. Satish Patel, Self Publication, Gandhinagar
6. E-commerce by Dr. Satish Patel, Self-Publication, Gandhinagar.
7. E-Government by Dr. Satish Patel, Self-Publication, Gandhinagar.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT MRS(SD) SEMESTER - III			
Paper No.	:	**MRSSD : 4.6**	
Paper Title	:	**Rural Development Policies and Programmes**	Credits : **4**

Objectives:

To familiarize students with the policies for rural development. To cultivate the student's understanding of the Rural Development Programmes in India since Independence Earlier Programmes and Current developmental efforts in india

Unit I:Policies for Rural Development

- Land Policy; Technology Policy
- Agricultural Policy
- Employment Policy
- Education and Extension Policy
- Rural Institutions Policy; Price Policy

Unit II: Rural Development Programmes in India since Independence Earlier Programmes

- Area Development Programmes
- Target-Group Oriented Programmes
- Wage Employment Programmes
- Self Employment Programmes
- Welfare Programmes
- Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)
- Swarnajayanthi Gram Swarojgar Yojana (SGSY)
- National Social Assistant Programmes (NSAP)

Unit III: Current Rural Development Programmes

- National Rural Livelihood Mission
- Pradhan MantriGramin AwaasYojana
- Pradhan Mantri Gram SadakYojana (PMGSY)
- DAY-NRLM; DDU-GKY
- SanasadAadarsh Gram Yojana (SAGY)
- Prime minister Rural Development Fellows Scheme
- SampoornaGrameenRozgarYojana (SGRY)
- Swachh Bharat Abhiyan (SBA) or Swachh Bharat Mission (SBM)
- Shyama Prasad MukherjiRurban Mission (SPMRM)

References:

B. K. Prasad, 2003, Rural Development: Concept, Approach and Strategy Sarup& Sons.

Bibhuti Bhushan Malik, 2009, Poverty in India: Fundamental Issues: a Social Science Perspective, Mittal Publications.

Bikramaditya Singh, 1992, Planning for Rural Development and Poverty Alleviation, Mittal Publications. Desai, Vasant, 1991, Fundamentals of Rural Development, New Delhi: Rawat Publications.

G. N. Karalay, 2005, Integrated Approach to Rural Development: Policies, Programmes and Strategies, Concept Publishing Company.

Gogula Parthasarathy, 2003, Economic Reforms and Rural Development in India, Academic Foundation.

Department of Rural Studies

Veer Narmad South Gujarat University, Surat

Academic Year = 2021 - 22

Syllabus

MRS Semester - I to IV

FACULTY OF RURAL STUDIES
DEPARTMENT OF RURAL STUDIES REGULATIONS RELATING TO MASTER OF RURAL STUDIES
(ADMISSION, TEACHING AND EVALUATION)

M. R. S. R. 1:

These regulations shall come into the force with effect from academic year 2021-22 and shall be made applicable to both M.R.S. Part - I and M.R.S. Part - II.

M. R. S. R. - 2:

Candidate seeking admission to Master of Rural Studies must have obtained Bachelor Degree of any faculty of Veer Narmad South Gujarat University or of an institution or university recognized by the V.N.S.G.U. as equivalent to its degree course.

M. R. S. R. - 3:

Candidate seeking admission to M.R.S. Part-1 course must have obtained 45% at the graduate examination. The Candidate should have also offered English as one of the subjects at least, during one of the three years of their graduate study. This regulation will not be applicable in case of those who have studied in English medium.

M. R. S. R. - 4:

The number of seats available for the course shall be determined by the University from time to time and over above there shall be 10% seats available at higher payment fees.

M. R. S. R. - 5:

The candidate seeking admission to M.R.S. course must appear at the entrance test held by the Department of Rural Studies and personal interview before a Selection Committee. However, if number of eligible candidates is less than twice the intake, the assessment of the students will be done through Personal interview only.

The composition of the Selection Committee will be as follow:

1. Head of the Department (Chairman)
2. Dean, Faculty of Rural Studies

3. An expert nominee of Vice-Chancellor
4. A Representative of Faculty member (nominee)
5. A representative of SC/ST/OBC appointed by the Vice-Chancellor

Rules for reservation and relaxation of the state as well as university will be followed during admission procedure.

M. R. S. R - 6:

The structure of the course, and credits for the different subjects shall be asunder.

SEMESTER – I			
NO.	COURSE CODE	NAME OF THE COURSE	CREDITS
1	CC-01	Extension Education for rural Development	4
2	CC-02	Rural Economic Environment	4
	CC-03	Rural Social Structure and Transformation	4
4	CC-04	Research Methodology	4
5	ID-01	Agriculture and Allied Technologies	4
6	SOC-1	Participatory Rural Appraisal-1	4
7	ID-2	Climate Change and Rural Society	4
Total			28

SEMESTER – II			
NO.	COURSE CODE	NAME OF THE COURSE	CREDITS
1	CC-05	Theories and Strategies for Rural Development	4
3	CC-06	Animal Husbandry and Dairying	4
3	CC-07	Natural Resource Management	4
4	EC-01	Corporate Social Responsibility/ Development of Rural Children	4
5	SOC-2	Computer Applications in Rural Studies/HR-2 / Sociology of health/ Political Sociology	4
6	ID-03	Sustainable Development	4
7	SOC-3	Participatory Rural Appraisal-2	4
Total			28

Specialization SEMESTER – III NATURAL RESOURCE ANAGEMENT/RURA; DEEVELOPMENT			
NO.	COURSE CODE	NAME OF THE COURSE	CREDITS
1	CC-08	Common Property Resource Management / Rural Development Administration	4
2	CC-09	Natural Resources for Sustainable Livelihood / Rural Development Planning & Management	4
3	CC-010	Water Harvesting Technologies / Rural Development Organizations and Management	4

4	CC-11	Extension for Natural Resource Management / Development of Weaker Section	4
5	EC-03	Gender Equality and Women Empowerment/ Gender and rural Development	4
6	SOC-4	Participatory Rural Appraisal-3	4
7	SOC-5	PRA dissertation	8
Total			32

SEMESTER – IV			
NO.	COURSE CODE	NAME OF THE COURSE	CREDITS
1	CC-12	Internship	12
2	CC-13	Dissertation	12
3	SOC-6	Seminar	No Credit
Total			24
Total Credits		112	

CC – Core Course (13)
EC – Elective Course (2)
SOC – Skill Oriented Course (6)
ID – Intra/Inter Disciplinary (3)

M. R. S. R. - 8:

There shall be two areas of specialization (one each from Social Sciences and Science stream) offered to the students at the end of semester - II. Based on their merits students can select any one of them depending upon the availability of faculty in the department.

M. R. S. R. - 9: (Dissertation)

Based upon the area of specialization selected, the student, shall have to prepare a dissertation under the supervision of the teacher concerned bearing a total of 12 credits. At the beginning of Semester-IV the topic for dissertation will be finalized and the student will collect data and relevant information. Before the end of the fourth semester the student shall submit three copies of the final report.

A student failing to complete the dissertation satisfactorily shall have to rewrite/redo the project work and examination for the same will be held in next semester only.

Specification of Dissertations

1. The dissertation may be based on any problem relevant to the study of rural area.
2. It should be based on primary sources of data.
3. It can be supplemented by secondary data.
4. Dissertation should have a minimum of 50 pages excluding the heading page and appendix if any. Typed, Spiral bound (Language: Gujarati, Hindi and English)
5. The dissertation shall contain the following items.

A) Introduction and Review of literature
B) Selection of research problem, objectives and Hypothesis of the Study (if any)
C) Methodology
D) Analysis and interpretation
E) Conclusion and Suggestion if any
F) References and Appendix if any

6. The dissertation assignment may be given in the 4th semester and report should be submitted at the end of 4th semester before the university examination as decided by the Department.

M. R. S. R. – 10 (Internship)

Objectives:

The basic purpose of providing internship to the students is to make them learn the application of basics of rural studies at field level. It is expected that the students get first hand information about various aspects of rural society and their problems and possibilities of their development. Also they will learn how various programs of Rural Development are being implemented at the grass root level. During their internship they will also understand the modalities of functioning of various agencies working in the field of rural development be it government, semi government, co-operatives or NGOs.

Modality:

The internship shall be for eight weeks. The students will be placed with two agencies for a period of four weeks each. Preferably these agencies are selected based on their works in various aspects of rural development.

The student shall be required to obtain certificates of satisfactory completion of internship from the agencies/institutions. Students shall be required to submit a report on the work that was carried out at the agency. Upon failure to do satisfactory work the student shall have to undertake internship again for the period of 8 weeks with the same or other agencies/institutions as recommended by Head of the Department in consultation with the teacher concerned.

The result of the students will be declared only after the completion of dissertations and internship satisfactorily.

M. R. S. R. - 11 Examinations and Evaluation*

Candidate shall be permitted to appear in any semester examination only after the Head of the Department certifies that the candidate has fulfilled the requirements of University rules prescribed from time to time as per the provisions of O.65.

M. R. S. R. – 12*

Candidates desirous of appearing at any semester examination must forward their applications in the prescribed form to the Registrar, through the Head of the Department.

M. R. S. R. – 13*

No candidate shall be permitted to reappear at any semester examination which he/she has already passed.

M. R. S. R. – 14*

Each theory paper taught during Semester-I to Semester -III will have 100 marks. Out of which 70 marks will be for University (External) examination and 30 marks will be for Internal examination. At the university examination there shall be an internal examiner (Chairman) and an external examiner. Internal evaluation shall consist of at least 1 written tests and have weightage of total 20 marks. Remaining 10 marks will be given on the basis of their attendance, class participation, seminar, assignment, oral examination and over all discipline of the students.

a. Evaluation of Dissertation

Internal evaluation: Based on continuous evaluation and viva-voce examination (90 marks)

External Evaluation: Based on dissertation and viva-voce examination. The dissertation will have 150 marks and viva-voce have 60 marks weightage (Total 210 marks).

b. Evaluation of PRA Dissertation

Internal evaluation: Based on continuous evaluation and viva-voce examination (60 Marks)

External Evaluation: Based on dissertation and viva-voce examination. The dissertation will have 100 marks and viva-voce have 40 marks weightage (100 + 40 = 140 Marks)

c. Evaluation of Internship

The students will be evaluated both internally as well as externally.

Internal evaluation: During the period of placement the teachers of the department shall visit the students at the placement agency during their internship, at least once, to evaluate their work. This evaluation and the day to day diary of the students will contribute to their internal evaluation of 90 marks.

External evaluation: There will be 210 marks for external evaluation. The placement agencies will evaluate the students based on their activities, initiatives, sincerity towards duties, punctuality, interpersonal relationship and support to establishment and general impression for 150 marks. At the end of the internship the students will submit a report of their activities at the placement agencies and a viva voce based on the submission will have weightage of 60 marks.

M. R. S. R . - 1 5 *

The standard of passing at M.R.S. examination will be as under. To pass any semester examination, the candidate must obtain at least 40 % marks at the university examination and 40 % marks in the aggregate of university and Internal examination in each course of theory, placement and project. However, the candidate should obtain at least 20% marks at internal examination in each course of theory, internship and dissertations.

M. R. S. R. – 16*

There shall be no improvement of marks obtained at internal examination.

M. R. S. R. – 17*

a) Candidate shall be allowed to join even semester of a particular year irrespective of his / her result of the odd semester of that particular year.

b) If a candidate fails in certain heads in any semester examination, he/she can reappear in those heads along with subsequent semester examination.

c) A candidate who fails in not more than three heads of passing in a particular semester will be allowed to attend the course of the next higher year but the result of the next higher year will be withheld till the candidate clears all the heads of failure in the previous year.

M. R. S. R. – 18*

Students shall be allowed to appear at M.R.S. examination for a period of five years after his / her admission'.

M. R. S. R. – 19*

At the end of the final year the successful candidate shall be awarded the class on the basis of the aggregate marks of M.R.S. Part- I and Part- II examination.

Percentage Marks	Class to be awarded
40.0 to 49.99	Pass Class
50.00 to 59.99	Second Class
60.00 to 69.99	First Class
70.00 and above	First Class with Distinction

*The rules regarding examination and evaluation may change from time to time as per the decisions taken by the competent authorities of the University and apex body.

New teaching pedagogy for the courses taught at the Mahatma Gandhi Department of Rural Studies

Introduction:

Mahatma Gandhi Department of Rural Studies was established in the year 1970 with the aim of providing avenues of higher studies to the Graduate from Gandhian Institutes who have obtained Bachelors of Rural Studies. Over a period of half a century of its establishment the department has travelled a long and during this period along with fulfilling the original objectives it has also catered need of students from other disciplines and from Governments.

During the recent past, with up-gradation of curricula and introduction of new and relevant subjects, field work and research based dissertations have become essential parts of learning. The dissertations and field based learning have added a lot to the student's understandings of the rural problems and suggesting their sustainable solutions. However, it was noticed that the department and the students do not reciprocate the village/s and people from whom the learning was made.

The teaching pedagogy adopted by the department includes classroom teaching with traditional chalk and board method, use of ICT facilities, field based experiments, field visits etc. The practical training in the field of various aspects of the rural studies was felt missing from the pedagogy that has potential to enhance the teaching learning process and overall development of the students. Adoption of such field based practical training of various subjects of rural studies like natural resource management, water harvesting, climate change and rural society, rural social structure, rural economy, rural development programmes and planning, agricultural technology, animal husbandry and dairying, etc. would not only harness the capabilities of the students in understanding the problems faced by people, impact of interventions of the Government in solving these problems etc. but also bring the practitioners of rural development with the planning and implementing agencies nearer.

To give back to the villagers from whom the students have learned as a part of **Institutional Social Responsibility** and to improve the learning process leading to

overall development of the students, the department proposes a new teaching pedagogy for all the papers taught at Master of Rural Studies in its four semesters.

Another aspect of this novel method of learning and providing them back, is that research work in rural studies can be carried out on various aspects and models prepared and implemented in the villages for its holistic development. If other academic disciplines join this task, the University has potential to understand the rural communities in a holistic manner with a thorough and true interdisciplinary research as envisaged in the National Education Policy 2020.

The Method:

It is proposed to adopt a village where students will visit during entire period of their study and learn and inculcate the necessary aspects of rural life and their values. The selection of the village will be based mainly on the following criteria:

- Vicinity from Surat.
- Easy approachability
- Village with less than 500 households
- Logistic facilities provided by the villages
- Preparedness of the villagers to accept the students and faculty
- Co-operation from the villagers

It is proposed that the department will remain in the adopted village/s for a period of about five years and thereafter adopt another village.

Possible outcomes:

The students of the department will learn all the aspects of rural areas including but not limited to agriculture, animal husbandry, sources of livelihood, socio-economic characteristics of the village, natural and human resources of the village, functioning of various village institutes and panchayati raj institutes, development planning and implementation, role and functioning of various government agencies associated with

rural development, implementation of various developmental schemes and programmes of government etc. and the steps to be taken for its development, if required.

The department will not be giving anything in the form of material or money to the villages but the villagers will get support from the department, through its interventions and support arranged from various government departments, agencies and other related institutions like banks etc., for holistic sustainable development of their villages. Apart from these direct benefits, awareness about various social and economic aspects, health and hygiene, spirit of oneness, homogeneity among villagers and all other aspects of the life will be inculcated in the villagers. Regular meetings with the students and teachers of the department along with various functionaries of the government, institutions and other organizations will boost up the morals of the villagers in general and weaker sections of the society including women and children in particular.

Deliverables:

As it is an academic endeavor there will be limited deliverables. It will include a detailed report of the interventions by the department and the impact analysis of such interventions. A report of the holistic sustainable development plan prepared by the students and duly endorsed by the faculty members of the department will be made available to the Gram Panchayat and other functionaries of the Government. Copies of all the reports will be made available, in soft form, to the University.

Support of the University sought:

It is expected that the University will provide financial support to the students and the faculties of the Department in the form of providing travelling expenses and the dearness allowances as per the existing norms. These expenditures can be made from the Laboratory fees collected from the students and the departmental budget respectively. If necessary, the University can make special financial provisions for the department for its field learning from its Central Development Fund. It is also expected that the University will sanction **on duty leave** to the faculties of the department as and when they visit the adopted villages for teaching and field work.

Future Activities:

In future various departments of the University can visit the adopted village/s and learn about the rural realities and can help in solving the problems faced by the rural societies. These solutions will improve the quality of life of the people and at the same time the students and faculties of various academic departments will learn about the rural social and economical setup. It will be a win-win situation for the University and the rural community.

Department of Rural Studies

Veer Narmad South Gujarat University, Surat

Academic Year = 2021 - 22

Syllabus

MRS Semester - I

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - I

Paper No. : **CC-01**

Paper Title : **Extension Education for rural Development** Credits : **4**

Objectives :

This course is designed to impart the basic theoretical elements and techniques of Extension Education for transferring knowledge and technologies in different fields of Rural Development. It will also help students to understand the problems of rural areas and enable them to find appropriate solution by encouraging people participation.

Unit: - 1 Concepts, Philosophy and Principles of Extension

1.1. Introduction
1.2. Meaning and Concept of Extension
1.3. Definitions of Extension
1.4. Philosophy of Extension
1.5. Principles of Extension
1.6. Objectives, Importance & Functions of Extension

Unit: - 2 Historical Development of Rural Extension in India

2.1. Pre-Independent Extension Efforts For Rural Development in India.
2.2. Post-Independent Organized/Government Efforts for Rural Development in India.
2.3. Broad Based Extension System

Unit: - 3 Adoption and Diffusion

3.1. Adoption
3.2. Categories of adopters
3.3. Individual characteristics of the adopters
3.4. Diffusion

Unit: - 4 Communication Strategies for Rural Development

4.1. Communication Process, Models and Strategy
4.2. Individual, Group & Mass approaches in Extension Education
4.3 Selection, Planning & Use of different Extension Methods in Rural Development
4.4 Concept of I.C.T. & it's role in Rural Development

Reference: -

1. Ishwarbhai Patel - Education of agri. Extension

2. Dhiraj Dhakan- Principle of agri. Extension
3. Sanders, H.C. (ed) (1966) The Cooperative Extension Service, Prentice hall, Inc, Englewood, cliffs, New York USA
4. Dahama, O.P. and Bhatnagar, O.P. 1987 Education and Communication for Development, Oxford and IBH Publishing Co. New Delhi.
5. Directorate of Extension, Govt. of India, 1961 Extension Education in Community Development, DOE Ministry of food and Agriculture , GOI New Delhi.
6. Roy G. L. (1991) Extension Communication and Management, Naya Prokash Calcutta
7. Supe S.V. (1983) An Introduction to Extension Education Oxford & IBH Publishing Co. New Delhi.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - I

Paper No. : **CC-02**

Paper Title : **Rural Economic Environment** Credits : **4**

Objectives:

The main objective of the paper is to familiarize students with the forces unleashed by economic liberalization and globalization and its impact on Rural Economy of India. The paper will also make students understand the flow of money and various sources of income in the rural areas.

Unit: - 1 Introduction

- Concept, Meaning of Rural Economy
- Rural Economy: Agriculture and Industries
- Problems/Issues of Rural Economy in India (Hunger and Food Security etc.)
- Reforms in rural economy agriculture and agribusiness in a Globalised Economy.
- Introduction of new Agricultural Acts

Unit : - 2 Rural Poverty

- Concepts and Measures of rural poverty
- Determinants of Poverty.
- Causes of Rural Poverty
- Poverty alleviation programmes in India

Unit : - 3 Rural Unemployment

- Concept, Types and Characteristic of Rural Unemployment.
- Causes of Unemployment
- Economic Reforms and their impact on Rural Unemployment Situation.
- Measures to reduce unemployment in rural areas.

Unit : - 4 Rural Labour

- Concept, types and Characteristics of Rural Labour
- Economic Liberalization and its impact on Rural Labour.
- Various Issues Faced by Rural Labour.
- Labour Force Participation in Rural Economy

REFERENCE :

1. Bardhan, P. (1984) “Land, Labour and Rural Poverty”, Oxford University Press, New Delhi.
2. Bhalla. G.S. (1994) “Economic Liberalization and Indian Agriculture” Institute for studies in Industrial Development, New Delhi.
3. Chaddha, G.K. and A.N.Sharma (1997), Growth, Employment and Poverty: Change and Continuity in Rural India” Vikas Publishing House, New Delhi.
4. Dantwala, M.L.et. al (1991), “Indian Agricultural Development Since Independence Oxford & IBH, New Delhi.
5. Gulati Ashok ; Kelly Tim (1999), “Trade Liberalization and Indian Agriculture”, Oxford University Press, New Delhi.
6. Joshi B.H. (1999), “Indian Agriculture development and Challenges”, University Granth Nirman Board, Ahmedabad.
7. Pandya Kiran, (1996), “Agrarian Structure, New Technology and labour in India”, Himalaya Publishing House, Mumbai.
8. Rao C.H. Hanumantha, (2005), “Agriculture, Food Security, Poverty and Environment: Essay on Post-reform India”, Oxford University Press, New Delhi.
9. S.S.Acharya & D.P.Choudhri:, (2001), “India Agriculture Policy at the Crossroads, Ed; Rawat Publication, Japur.
10. Vaidyananthan, A. (1985), The Indian Economy : Crisis, response and Prospect”, Orient Longmans, New Delhi.
11. Visaria, P. and R. Basant (1994) “Non-Agriculture employment in Indian: Trends and Prospects”, Sage Publication, New Delhi.
12. Bhalla G.S. Singh Gumail, (201), “Indian Agriculture: Four Decades of Development”, Sage Publication, New Delhi.
13. Prasad C.S. (2006), “Sixty Years of Indian Agriculture: 1947 to 2007”, New Century Publication, New Delhi.
14. Padmanabhan M. and Swaminathan M.C. (1994), Rural Development report: National Institute of Rural Development, Hyderabad.
15. Lipton Michael, (1989), “Poverty, Undernutrition, and Hunger.
16. Lipton Michael, (1988), “The Poor and The poorest World Bank Discussion Papers.

17. Planning Commission, (Dec.2006), “Report of the XI Plan Working Group on Poverty Elimination Programmes”, New Delhi.
18. Renana Jhabvala, Ratna M. Sudarshan and Jeemol University. (2003).” Informal Economy & Food & Agriculture., New Delhi.
19. Dandekar V.M. & Rath Nilakantha. (1971), “Poverty in India” Indian School of Political Economy.
20. Shukla Rohit, “Poverty in India”, University Granth Nirman Board, Ahmedabad,
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22. International Bank for Reconstruction and Development, 1989, World Development Report 1989, Oxford University Press:New York.
23. Kindleberger, Charles P. and Harrick, Bruce, 1977, *Economic Development*, Mc Grawhill. Kogakusha Ltd. : New Delhi.
24. Mishra, R.P.1985, Development Issues of Our Time, Concept Publishing Company: New Delhi.
25. Mier Gerald (Ed), 1987, Leading Issues in Economic Development, (Fourth Edition), Oxford University Press: New Delhi.
26. Todaro, Michael P. 1997, Economics for a Developing World: An Introduction to Principles, Problems and Policies for Development. Orient Longman : London.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - I

Paper No. : **CC-03**

Paper Title : **Rural Social Structure and Transformation** Credits : **4**

Objectives : This Paper is designed to equip the students to understand the rural sociology and society, economic life of the rural people as well as modalities of Socio-Cultural transformation in rural Society.

Unit : - 1 Introduction and Importance of Rural Sociology

1.1 Origin and development of rural sociology in India
1.2 Subject matter of rural sociology
1.3 Importance of rural sociology in India

Unit :- 2 Rural Society and nature

1.1Nature and characteristics of rural society in India
2.2 Elements of rural community
2.3 Concept and characteristics of little community Peasant Society: Culture and characteristics
2.4 Caste and Caste Dominance In rural society

Unit: - 3 Economic Life of the Rural People

3.1 Meaning of Economic Life
3.2 Means and characteristics of Economic Life of the rural People
3.3Village as a self sufficient unit
3.4 Occupation and Agrarian Class structure in rural society
3.5 Jajmani system and Labour Market in rural society
3.6 Economic Problems of rural People
3.7 Factors of change in rural economic life

Unit: 4. Modalities of Socio - Cultural Transformation

4.1 Transformation of Societies
4.2 Strategies for Social and Cultural Transformation

4.3 Process of Social Change: Sanskritization, Westernization, Industrialization and Urbanization as factor for social change
4.4 Features, Explanation, Factors and Processes of Change in Caste System
4.5 Migration and rural Transformation

REFERENCE:

1. Singer Milton, 1972, When a great Tradition Modernizes: An Anthropological Approach to Indian civilization, Vikas, New Dlhi.
2. Singh Yogendra, 1972, Modernization of Indian Tradition, Thomson press, New Delhi.
3. Agarwal, J. 1983, Landmark in the History of Modern Indian Education, vikas, New Delhi.
4. Naik, J. P. 1982, The Education commission and after, Allied Publishers New Delhi.
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6. Bottomore, T. B. 1975, Sociology as social racism, George Allen and Unwin: London.
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10. Lindgren, C. Henry, 1969, Introduction to Social Psychology, John wiley & sons: New York.
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12. Mahajan Rajiv (2004), Rural Sociology,Arjun publishing House, new delhi.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - I

Paper No. : **CC-04**

Paper Title : **Research Methodology** Credits : **4**

Objectives:-

This Paper is designed to equip the student with basic elements of Social Survey and Social Research methodology, Data Processing and Outline of Report writing which may be useful to study and analyze the rural issues.

Unit: 1. Research Methodology

- Selection of Problem Reflective Thinking
- Concept
- Selection and Formation of Research Problem
- Review of Related Literatur (Meaning; Objectives; Sources
- Hypothesis

Unit: 2. Designing a Research Study

- Types of Social Research
- Process of Social research
- Research Design

Unit: 3. Sampling and Inquiry

1. Content Analysis: Meaning, Characteristics, Steps, Process, Types, Trends and Limitations
2. Logic of Inquiry: Science and Logic, Elements of Logical Analysis: Terms, Propositions, Arguments and Syllogisms, Validity and Truth, Types of Reasoning of Arguments, Strategies in Research

Unit: 4. Some Statistical Concepts

1. Variables: Quantitative and Qualitative Variables , Discrete and Continuous Variables, Independent and Dependent Variables

2. Scale: Nominal Scale, Ordinal Scale, Interval Scale, Ratio Scale, Limitations of Hypothesis

Unit: 5. Data Processing and Report writing: Coding, Checking and Editing of Data, Classification, Tabulation and Interpretation of Data, Report Writing: Introduction, Research Methodology, Analysis of Data, Findings of the Study, Conclusions, Bibliographical References and Appendix

Unit: 6. Field work

References:

1. Ram Ahuja: Social Survey and Research, Ravat pub.,ISBN-81-7033-750-x
2. Research Methodology: Methods and Techniques C.R. Kothari, Wiley Eastern Ltd., New Delhi.
3. Research Methods in Commerce - Amarchand D, Emeraled Publishers, Chennai.
4. Conceptual Foundations of Business Research - Rigley, Paul - H, John Wiley and Sons, New York.
5. Research Methodology in Social Science - B.C. Tandon, Allahabad.
6. Thesis and Assignment writing - Anderso J.berry H.D. & Poole M. Wiley Eastern Limited, Delhi.
7. Research Methodology Techniques and Trends, Singh Y.K.; R.B. Bajpai, 2007.
8. Methods in Social research - IGNOU - 2008
9. Research Methodology, Sharma Virendra Prakash Punchshil Pub. Jaypur, 2004

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - I

Paper No. : **ID-01**

Paper Title : **Agriculture and Allied Technologies** Credits : **4**

Objectives:-

This paper will make students aware about the newer technologies available for increasing agricultural Production. It will also introduce them with the technologies for harvesting alternative energy sources in rural areas. The paper gives insight into the sanitation and health in rural area.

Unit - 1 : Agricultural Technologies 1 : Climate resilient agriculture, horticultural practices, pest and disease management (Integrated Pest Management), post-harvest technology.

Unit - 2 : Agricultural Technologies 2 : Water management, soil management, agricultural engineering,

Unit - 3 : Alternative energy resources: Bio-gas, Solar and Wind Energy

Unit - 4 : Sanitation and Hygiene: Need and correlation with malnutrition, low cost technologies for sanitation in rural areas.

References :

1. ICAR 92004) Selected Technologies for Agriculture - A compendium. ICAR Publication, New Delhi.

2. Selendy J.M.H. (ed) Water and Sanitation Related Diseases and Environment, Wiely-Blackwell. 2011.

3. Smith Z.A. andA.D. Taylor Renewable Energy Resources: Basic Principles and Applications. Alpha Science International

4. Tiwari G. N. and M. K. Ghosai (2005) Renewable Energy resources: Basic Principles and Applications. Alpha Science International

5. Rathore NS and Nl Panwar (2007) Renewable Energy Sources for Sustainable Development. New India Publishing Agency, New Delhi.

6. Satyanarayan G & H. S. Madhusudan (2012) Rural Development and Poverty Alleviation in India, New Century Publication, New Delhi
7. Shrivastava M.P. & Jaishankar Singh (2008) Dairy Development in the New Millennium. Deep & Deep Pub. Pvt. Ltd.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - I

Paper No. : **SOC-01**

Paper Title : **Participatory Rural Appraisal - 1** Credits : **4**

Objectives: The aim of this paper is to help strengthen the capacity of villagers to plan, make decisions, and to take action towards improving their own situation. Participatory Rural Appraisal (PRA) is considered one of the popular and effective approaches to gather information in rural areas. In edition that this paper is designed to equip the students to understand concept, theoretical approaches, Principles, Mapping, Modeling and Transects etc.

Unit - I. Introduction of Participatory Rural Appraisal

- Concept, Objective, Meaning and approaches of PRA

Unit-: II. Evolution of Participatory Rural Appraisal (PRA)

- Evolution of Participatory Rural Appraisal (PRA)
- Participation: Meaning, Types, Advantages and Limitation
- Sources of Participatory Rural Appraisal
- Rapid Rural Appraisal (RRA): Meaning, Features, Limitations
- Phases of Participatory Rural Appraisal: First Phase (Late 1980s and early 1990s), Second Phase (Mid- 199s) and Third Phase (Late 1990s to date)

Unit-III: Principles of Participatory Rural Appraisal

- Definition and Features of Participatory Rural Appraisal
- Principles of Rapid Rural Appraisal & Participatory Rural Appraisal
    - Reversal of Learning
    - Learning Rapidly and Progressively
    - Offsetting Biases
    - Optimizing Trade-off
    - Triangulating
    - Seeking Complexity and Diversity
- Additional Principles of Rapid Rural Appraisal
    - Facilitating
    - Self-Critical Awareness and Responsibility
    - Sharing

Unit-IV: Participatory Modeling and Transects

- Meaning, Participants, Procedure
- Application of Participatory Modeling with Merits and Limitations
- Transects: Meaning
- Types: Village Transects and Resource Transects
- Cultural Transects
- Evaluation of Agro-forestry

Unit-V: Field work

Basic Textbook

N. Narayanasamy (2009), Participatory Rural Appraisal: Principles, Methods and Application, SAGE Publication India Pvt. Ltd. New Delhi [ISBN:9352801369]

References:

Amitava Mukherjee (2004), Participatory Rural Appraisal: Methods and Applications In Rural Planning (Essays In Honour Of Robert Chambers), Concept Publishing Company, India [ISBN: 8180691055]

H. P. S. Arya (2004), Participatory Rural Appraisal in Agriculture and Animal Husbandry: A Training Manual, Concept Publishing Company, India [ISBN: 8180691160]

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Mamata Swain (2014), Participatory Rural Appraisal (PRA): Issues and Approaches, SSDN Publishers & Distributors, India [ISBN: 9381176795]

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Neela Mukherjee (1993), Participatory rural appraisal: Methodology and applications (Studies in rural participation), Ceocept Pub. Co. India [ISBN: 817022473X]

Neela Mukherjee (1995), Participatory Rural Appraisal and Questionnaire Survey, Concept Publishing Company Pvt. Ltd., India [ISBN: 8170225604]

Neela Mukherjee (1997), Participatory appraisal of natural resources, Concept Pub. Co. India [ISBN: 817022618X]

Prahlad Mishra (2014), Participatory Rural Appraisal (PRA): Issues and Application, SSDN Publishers & Distributors, India [ISBN: 9383158131]

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.R.S. SEMESTER - I

Paper No. : **ID-02**
Paper Title : **Climate Change and Rural Society** Credits : **4**

Objectives:-

Climate change is affecting every aspect of our life. World leaders have recently resolved to overcome the impact of change in climate globally and have agreed to take steps to prevent further deterioration. India is also experiencing the impact of climate change. In this context this new paper is introduced with the aim of providing understanding of what climate change is and what are its impacts on rural socio-economic and livelihood status.

Unit - 1 : Climate Change meaning and factors responsible for it. Global Warming and Climate Change, Indicators of climate change, impact of global warming, green house gases and emissions. International and national initiatives to limit global warming

Unit - 2 : Climate change and agriculture and animal husbandry- impact, mitigation strategies and aversion at national and international level.

Unit - 3 : Impact of change in climate on rural economy-
farmers, food security, agro-based industries, rural poverty, health- working hours/day. Role and response of women to climate change

Unit - 4 : Impact of climate change on rural society : Social behavior, habitation, Health, food habit, livelihood and migration at regional, national and international level.

References :

1. Purdom & Anderson (1983) Environmental Science Bell & Howell

2. Shivakumar A K, P. Pnda & R. R. Ved (eds) (2010) Hand Book of Population & Development, Oxford

3. Ehrlich P R, A.H.Ehrlich and H.P.Holdgen (1977) Ecoscience : Population, Resources, Environment, W.H.freeman & Co Sanfransico

4. Subramanian V. (2002) textbook in Environmental Science, Narosa Publication, New Delhi.

5. Kadekodi G. K. (2004) Common Property Resource Management, Oxford University Press.

6. Vijay V K and H. P. Gard (eds) (2009) renewable energy & Environment for Sustainable Development, Narosa Publishing House, New Delhi.

7. UNDP (2007) Human Development Report 2007-08, Fighting Climate Change Human solidarity in a divided world. UNDP.

8. Chakrabarty PGD (ed) (2015) Climate Change and Sustainable Development Oxford University Press, (2011) The Economics of Climate Change Mitigation Book well, New Delhi.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - II

Paper No. : **CC - 05** Credits : **4**

Paper Title : **Theories and Strategies for Rural Development**

Objectives :

The objectives of the paper are to familiarize students with the concept of Development, various theories and programmes pertaining to the Development and their critical evaluation.

Unit : - 1 Development

1.1 Concept of Development
1.2 Indicators Development
1.3 Theories of Development
Rostow's stages of Growth.
The lewis Theory of Development
International Dependency theories
Gandhian View of Development
Marxian Theory of Development
1.4 Michael Lipton, A.K.sen and Robert Chamber"s views on Development

Unit : - 2 Approaches for Rural Development

2.1 Community Development approach
2.2 Area Development approach
2.3 Beneficiary Development approach
2.4. Integrated Rural Development approach
2.5 Minimum needs
2.6 Employment approach
2.7 Participatory Approach

Unit : - 3 Major Programmes for rural Development

3.1 Rural Development Programmes (Pre-New Economic Policy reforms **(1951-1990)**

3.2 Rural Development Programmes (Post- New Economic Policy Reforms - up to 12th Five Year Plan)

Unit : - 4 Rural Development Programs under NITI Ayog.

4.1 Water, Food Security and Health Programmes
4.2 Land, Forestry and Environment Programmes
4.3 Housing and Electricity Programmes
4.4 Road & Transportation Communication Connectivities Programmes
4.5 Welfare Programmes

Unit: 5 Field Work

References :

1. David Morawetz, Twenty year of Economic Development (1950-175), The World Bank, 1997.
2. Mahebul ul Haq, The poverty curtain – Choices for the third world – Colombia University press, 1976.
3. Toddaro Michael, Economics for a developing world Longman, 1995.
4. Katarsingh, rural Development Sage, (New revised edition) 2004, World Bank
5. Rural Development sector policy, World Bank. 1975.
6. John Harries, Rural Development 2005, (New adition),
7. Uma Lele, the design of Rural Development Lessongs from Africa, 1080.
8. Michael Lipton, Why people stay poor. Vikram Sarabhai Memorial Lecture in John Harris edited Rural Development
9. Robert Chambers., Rural Development : Putting the last first, Oxford.
10. Robert Chambers., Challenging the Precessions Frontiers for Rural Development. Intermediate Technology Publication, London UK 1993.
11. Michael Lipton (edited), Including the Rural Poor, The World Bank, 1993.
12. M. L. Dantwala (edited), Asian Rural Development JIM, 1989.
13. C. T. Kurien, Poverty, Planning and Social change, Allied, 1980.
14. U. M. Dandekar., Poverty in India, 1970.
15. Government of India – Planning Commission Five Year Plans (1951 – 2007 – 12)
16. Indira Hirway, Target Group Approach to poverty – Oxfor IBH, New Delhi.
17. Dharam Ghai, Agricultural systems and Rural Development, ILO, 1880.
18. Satya Sundram, Voluntary Agencies and Rural Development Concept – 2004
19. L. C. Jain, Grass without Roots, Sage, 1990.
20. K.Gandhi, Hindswaraj, Navjivan, 1995 (New Edition)
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23. Paul Samuel, Managing Development Programmes Boulder West Press, 1990.
24. IRMA, Managerial Issue of Voluntary Organizations, 1992.
25. Shankar Datta and Others., Management of Development Organizations, 1996.
26. Dililp Shah, Alternatives in Rural Development Sterling – 1988.
27. Dilip Shah, Gandhian Approach to Rural Development. 2000.
28. Batra, Globalization and Rural Development SAGE, 2006.
29. S. B. Varma, P. N. Shanker and Others Rural Bassed Development strategies Development – 2006.
30. NITI Ayog, Government of India
31. Planning Commission of India

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.R.S. SEMESTER - II

Paper No. : **CC - 06**
Paper Title : **Animal Husbandry and Dairying** Credits : **4**

Objectives:
This paper is aimed at providing introduction to the opportunities and challenges in the sector of animal husbandry and dairying in Gujarat and India. It also provides recent development in the field of management of milch animals and milk processing. The paper also deals with the initiatives by the Governments and other agencies to promote animal husbandry in the country.

Unit - 1 Need for animal management, animal husbandry as profitable occupation. Government interventions to promote animal husbandry in Gujarat and India. Interventions of various other agencies-co-operative and NGO.

Unit - 2 Breed Improvement-need and various methods, Artificial Insemination-need and technique. Feed management, Housing, Health Management-selected diseases and vaccination, Management of animal reproduction

Unit - 3 Scope for inland fisheries in rural areas of Gujarat. Various types of fishes suitable for inland fisheries. Fresh water fish culture.

Unit - 4 Poultry rearing for livelihood, various types of poultry breeds and rearing methods suitable for small scale rearing, diseases and vaccination.

Unit - 5 Field Visits

References:

1. ICAR (2010) Animal Husbandry, ICAR Publication, New Delhi.
2. EIRI Hand book of poultry farming and feed formulations.
3. Pashu Vyavastha: Arun D. Dave, Universtiy Granth Nirman Board, Ahmedabad
4. Shukal Krushanlal (2000) Vyavaharu Gopalan :, University Granth Nirman Board Ahmedabad
5. "Godarshan" A Monthly Gujarati Magazine, Dept. of A.H.., Gujarat State, Gandhinagar

6. A Text Book of Animal Husbandry : G.C.Banerjee : Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.

7. ICAR (2006) A Hand Book of Animal Husbandry. ICAR, New Delhi

8. Singh B D (2018) Principle and Methods of Plant - Breeding. Kalyani Publishers.

9. Chopra V L (2018) Plant Breeding.- Theory and Practice. Oxford and IBH Publishing Pvt. Ltd.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - II

Paper No. : **CC - 07**

Paper Title : **Natural Resource Management** Credits : **4**

Objectives :

1. To understand meaning and uses of Natural Resources Management for Rural Development
2. To understand the latest techniques of allied sectors of Rural Development
3. To understand present and future implications of such techniques
4. To know research and discovery their type and uses

Unit 1

- What is the N.R.M. meaning importance of N.R.M. for Rural Development. Types of N.R.M. preservation and development of natural resources.

Unit 2 - Horticulture

- Care taken at the time of planting
- Cultivation practices of fruit crops in Gujarat state
- Harvesting and value addition in fruit crops
- Fruit growers motivation policy of Gujarat state

Unit 3 - Forestry

- Definition of Forest, Types of Forest importance, Forest management in Gujarat state
- Forest products, Major and allied products
- Forest conservation needs and solution
- Concepts and needs of Social forestry
- Importance and functions of forest co-op. society

Unit 4 - Fisheries

- Importance of Fisheries activities, its economical value in Rural Development
- Fisheries research in Gujarat state (sea and sweet water)
- Co Operative Societies for Fisheries activities needs and importance
- Fish preservation uses of ice, salt and sunlight

Unit 5 - Biotechnology

- Tissue culture what is tissue culture, methods of tissue culture, General procedure to raise a plant by cell culture use of tissue culture in agriculture
- B.T. seed, what is B.T. seed ? use of B.T. seeds in crop production, Merits and demerits of B.T. seeds
- Use of Biotechnology in crop production

Unit 6 – Field visits

References

1. Principals of Horticulture Adam C.R. burn ford K.M. and Early M.P. (1992)
2. Propagation of Horticulture and subtropical Horticulture Crops, Bose D.K., Mishra S.K. and Sadhu M.K. Nayaprakarhan, Culcutta
3. Horticulture a basic awareness, Bindu Dristai R.F., Reston publishing Co.
4. JaminVigyan and Vyavastha (Guj. Ed.) BabubhaiAvarni, AnadaPrakashan
5. Krishi Kheti (Guj.) Pub by Sarvoday Smruti Kendra, Junagadh
6. Biotechnology Vishneshank (Godarshan) Guj. Edi.
7. Forestry in India Dwivedi A.P.
8. Forests and Forestry, Sacriva K.P.
9. Fish and Fisheries in India Jhinagram V.G.
10. Forestr's Companion Mastekar A.R.
11. Biotechnology

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT M.R.S. SEMESTER - II			
Paper No.	:	**EC - 01**	
Paper Title	:	**Corporate Social Responsibility**	Credits : **4**

Objectives :

This paper is intended to introduce the students of the new emerging field providing financial and technical help in rural development. Field visits prescribed in the syllabus will enable students to get practical knowledge of the method of implementation of the Corporate Social responsibility ACSR) activities of various companies.

Detailed Syllabus :

1. **Introduction :**
   Introduction of CSR dimensions and importance of CSR understanding CSR history of CSR in India.

2. **Need for intervention in Rural Development**
   Rural development in India Government driven areas where government is lagging NGOs Financial and technical support to NGO role of Corporate sector

3. **Provisions under Companies ACT 2013**
   Legal provisions of CSR in other countries mandatory provisions under Companies Act 2013 director"s duties spend obligations companies under CSR Spend obligations.

4. **CSR models in India**
   Gujarat model CSR activities of various corporate positive and negative aspects

5. **Field Visits.**

References :

1. Chatterji Madhumita (2014) Corporate Social Responsibility. Oxford University Press. New Delhi.
2. Agrawal Sanjay (2014) Corporate Social Responsibility, Sage Publication, New Delhi.
3. Garg Kamal (2014) Corporate Social Responsibility with Companies Rule Book 2014. Bharat Law House, New Delhi.

4. CII-PwC Handbook on Corporate Social Responsibility in India.
5. Baxi C V and Prasad A. (2013) Corporate Social responsibility. Concepts and Cases. Excel Book, New Delhi.
6. Baxi C V and Ray R S (2015) Corporate Social Responsibility, Vikas Publication, New Delhi.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - II

Paper No. : **SOC - 02**

Paper Title : **Computer Applications in Rural Studies**

Credits : **4**

Objectives :

This course is designed to impart the knowledge about computer and its application in rural studies. It will also help students for operating computer and ms office and Internet.

Unit : - 1 Fundamental of Computers

1.1 Computer Block diagram
1.2 Input and output devices
1.3 Memory (Storage Devices)
- Primary memory
- Secondary memory

Peripherals
Classification of computer
Generation of computers

- **Software**
  - What is software? Types of software. Classification of software.
  - System Software
    - What is operating system?
    - Why of is required?
    - Classification of OS.
    - Task of OS
    - Introduction to windows XP

  Application software.

- **Network**
  - Network fundamentals
  - Need of network
  - Types of network
  - Network hardware.

Unit : - 2 Microsoft Word

2.1 Network fundamentals.
2.2 Formatting document (Page setup)
2.3 Drawing, graphics and word art
2.4 Mail merge
2.5 Macro.
2.6 All the menus.

Unit : -3 Microsoft Excel

3.1 Introduction to MS EXCEL.

3.2 Creating workbook and worksheet.

3.3. Applying various formulas

3.4 Various functions

3.5 Working with Charts

3.6 Data handling in Excel.

3.7 All the menus

Unit : - 4 Internet

4.1 Uses of Internet

4.2 How internet works

4.3 Internet addresses

4.4 World Wide web

4.5 Email (From, To, Cc, Bcc, Subject)

5.6 Viruses

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - II

Paper No. : **ID - 03**

Paper Title : **Sustainable Rural Development** Credits : **4**

Objectives :

This course provides an introduction to the interdisciplinary field of sustainable development, drawing on the most recent developments in the social and biological sciences. The course describes the interaction between ecology and economic development, and it stresses the ways in which the impact each other. Ecological constraints (climate, disease ecology physical resources such as soil and energy resource, topography and transport conditions) Significantly shape the patterns of economic development, demography and wealth and property. At the same time, anthropogenic activities (farming, resource depletion, demographic and wealth and property. and energy use) change the physical environment. The course offers a rigorous treatment of the field and aims to provide students with an understanding of economic development and its relation to natures processes.

Unit : - 1 Challenges to development, concept of sustainability, need of sustainability

Unit : - 2 Brief history of sustainable development, issues and problems of sustainable development

Unit :- 3 Environmental ethics, goals and strategies of sustainable development

Unit :- 4 Sustainable development yardsticks: Measuring process and success. Future of sustainable development.

Unit :- 5 Field Visits.

References :

1 Reyazzuddin and R.P. Singh (2010) Challenges to Sustainable development in India. Deep and Deep Publications, New Delhi

2 SakaramaSomayaji Environmental concern and Sustainable Development. TERI Publication

3 Baumgartner R. and R. Hogger (ed) (2004) In Search of Sustainable Livelihood. Sage Publications.

4. Singh K. (2009) Rural Development : Principles, Policies & Management. Sage Publication

5 Rogers P.P., Jalal K.F and J A Boyd (2008) An Introduction to Sustainable Development P rentice-Hass of India Pvt.Ltd. New Delhi

6. Das Kumar (2009) Sustainable Development Reference Press, New Delhi.

7. Biswas M. (2007) Environmental Economics, Mittal Publication, New Delhi.

8. Ganesamurthy V.S. (2009) Environmental Economics in India. New Century Publication, New Delhi.

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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - II

Paper No. : **SOC - 3**

Paper Title : **Participatory Rural Appraisal - 2** Credits : **4**

The aim of PRA is to help strengthen the capacity of villagers to plan, make decisions, and to take action towards improving their own situation. Participatory Rural Appraisal (PRA) is considered one of the popular and effective approaches to gather information in rural areas. In edition that this paper is designed to equip the students to understand PRA tools, techniques, map, diagrams, calendar and ranking, timeline, trend analysis, etc.

Unit-I: Participatory Mapping

- Meaning, Purpose and Types of MAPs
- Social Map: Meaning, Procedure for Drawing Social Map
- Topical Social Map: Health Map, Water and Sanitation Map, Education Map, Leadership Map, Indigenous Skill Map, Vulnerability Map
- Resource Map: Meaning, Purpose,
- Thematic Resource Maps
- Project Formulation and Problem Analysis

Unit-II: Mobility Map & Venn Diagram

- Mobility Map: Meaning, Procedure
- Preparation of the Project
- Facilities, Services, Livelihood Opportunities and Resource Location
- Venn Diagram: Meaning, Procedure and Application
- Impact Analysis: Merits and Limitations

Unit-III: Flow Diagrams, Timeline and Trend Analysis

- Flow Diagrams: Meaning, Procedure
- Causal Diagrams: Cause and Impact Diagram, Problem Tree
- Impact Diagram & Systems Diagram With their Applications

- Timeline: Meaning, Procedure and Application
- Timeline of: Leadership, Institution, Common Property Resources, Problem and Family
- Trend Analysis: Meaning, Procedure
- Application: Understanding the Socio-economic Conditions, Analysis of Problem an Status of Natural Resources
- Poverty Assessment, Gender Analysis, Monitoring and Evaluation & Impact Analysis

Unit-IV: Seasonal Calendar and Daily Schedule

- Seasonal Calendar: Meaning, Purpose and Procedure
- Application of Seasonal Calendar: Agriculture, Livelihood Sources and Health
- Food Calendar
- Daily Schedule: Meaning, Purpose and Procedure
- Application: Gender Analysis and Child Labour
- Workload of Fisherwomen and Fisherman: Comparison and Differences
- Differences in Workload across the Season

Unit- V: Well-being Ranking, Pair-wise Ranking and Matrix Ranking and Scoring

- Well-being Ranking: Meaning
- Wealth Ranking by Card Sorting and Wealth Criteria – based Card Sorting
- Pair-wise Ranking: Meaning
- Application: Preference for Sources of Credit, Teaching Practice in School and Disease Problem Ranking
- Matrix Ranking: Meaning, Procedure for Matrix Scoring, Direct Ranking
- Hundred-seeds Scoring Technique and Decision-making Matrix

Basic Textbook

N. Narayanasamy (2009), Participatory Rural Appraisal: Principles, Methods and Application, SAGE Publication India Pvt. Ltd. New Delhi [ISBN:9352801369]

References:

Amitava Mukherjee (2004), Participatory Rural Appraisal: Methods and Applications In Rural Planning (Essays In Honour Of Robert Chambers), Concept Publishing Company, India [ISBN: 8180691055]

H. P. S. Arya (2004), Participatory Rural Appraisal in Agriculture and Animal Husbandry: A Training Manual, Concept Publishing Company, India [ISBN: 8180691160]

Kirti Shukla (2011), Participatory Rural Appraisal Technique for Farm Women, Discovery Publishing Pvt.Ltd, India [ISBN: 8183567169]

Mamata Swain (2014), Participatory Rural Appraisal (PRA): Issues and Approaches, SSDN Publishers & Distributors, India [ISBN: 9381176795]

N. Narayansamy (2005), Participatory Rural Appraisal: The Experience of NGOs in South India, Concept Publishing Company., India [ISBN: 8180691667]

Neela Mukherjee (1993), Participatory rural appraisal: Methodology and applications (Studies in rural participation), Ceocept Pub. Co. India [ISBN: 817022473X]

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Department of Rural Studies

Veer Narmad South Gujarat University, Surat

Academic Year = 2021 - 22

Syllabus

MRS Semester - III

Specialization : Natural Resource Management

Specialization : Rural Development

Common Sub. :

* **Gender Equality and Women Empowerment**
* **Participatory Rural Appraisal - III**
* **Dissertation**

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
M.R.S. SEMESTER - III

Specialization : Natural Resource Management

Paper No : **CC - 8**
Paper Title : **Common Property Resource Management** Credits : **4**

Objectives :

This paper is designed to give an in depth idea about the common property resources and need for its management with the help of number of case studies from International, national and local study area. It will help students to decide policies suitable for the region for sustainable management of the common property resources.

Unit 1 :

- Concept and methods of CPRM
- Definition and Characteristics of CPRM
- Importance of CPR for the poor: Tragedy of commons
- Need for CPRM

Unit 2 :

- Traditional CPRM systems in India
- CPRM in transitional villages
- Alternatives Resource Management Systems: Privatization, Public management and Collective management including CSR activities.

.

Unit 3 :

- Management of CPR in selected dry areas of India for animal husbandry and dry farming
- Managing CPR in India – Case Studies.
- Conservation of water in Gujarat – Case Studies.
- Impact of participation in the management of CPR: Selected Case Studies
- Community Forestry- As practiced in India prior to Independence, after independence and Joint Forest management

Unit 4 :

- Conflicts in CPRM
- Conflict resolution cases from local, national and international background.

Unit 5 : Field Visits

References

1. Agarwal, R. M. (2000), 'Possibilities and Limitations to Cooperation in Small Groups: The Case of Group-Owned Wells in Southern India,' World Development 28(8):148l - 1497.
2. Agrawal, A. (2001), 'Common Property Institutions and Sustainable Governance of Resources', World Development Report 29 1649-1672.
3. Agrawal, B. (2000), 'Conceptualizing environmental collective action: why gender matters,' Cambridge Journal of Economics 24: 283-3 10.

   Annual conference the International Association for the Study of Common Property (IASCP), Simon Fraser University, Vancouver, British Columbia, Canada, June 10-14,1998.
4. Arnold, J. E. M. (1990), 'Common Property Management and Sustainable Development in India', Working Paper No. 9, Forestry for Sustainable Development Program, Department of Forest Resources, University of Minnesota, St. Paul, MN.
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6. Chopra, K., G. K. Kadekodi and M. N. Murty (1989), 'Peoples participation and common property resources', Economic and Political Weekly 24(51-52): A189-195
7. Chopra, K., G. K. Kadekodi and M. N. Murty (1990), 'Participatory Development: Peopleand common property resources', Sage Publications, New Delhi.
8. Chopra, K., G. K. Kadekodi and M. N. Murty (1990), 'Participatory Development: People and Common Property Resources', Newbury Park, Sage publications, CA.
9. Dadibhavi, R. V. (2000), 'Management of common property resources: a review and some policy issues', Journal of Rural Development 19(2): 199-2 17.
10. n, G. (1998), 'Extensions of the tragedy of the commons', Science 280:
11. Jodha, N. and A. Bhatia (1998), 'Community Management of the Commons: Reempowerment Process and the Gaps', presented at "Crossing Boundaries", the seventh
12. Jodha, N. S. (1990), 'Rural common property resources: Contributions and crisis', Economic and Political Weekly 25(26): A65 — A78.

13. Jodha, N. S. (1992), 'Common property resources, A missing dimension of development strategies,' World Bank Discussion Paper no. 169, The World Bank, Washington D. C.
14. Jodha, N. 5. (1994), 'Management of common property resources in selected dry areas of India', in Kerr, John et al., op cit, pp. 339-361.
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16. Jodha, N. S. (1995), 'Common property resources and the environmental context: Role of biophysical versus social stresses', Economic and Political Weekly 30(51): 3278-3283.
17. Kothari, A., N. Pathak, R. V. Anuradha and B. Taneja (Eds.) (1998), 'Communities and Conservation: Natural Resource Management in South and Central Asia,' UNESC and Sage Publications, New Delhi.
18. Mishra, G. P. and B. K. Bajpai (Eds.) (2001), 'Community Participation in Natural Resource Management', Rawat Publications, Jaipur and New Delhi.
19. Pasha, S. A. (1992), 'CPRs and rural poor: a micro level analysis', Economic and Political Weekly 27(46): 2499-2503.
20. Poffenberger, M. (Ed.) (1996), 'Communities and Forest Management: A Report of the IUCN Working Group on Community Involvement in Forest Management with Recommendations to the Intergovernmental Panel on Forests', Gland, Switzerland, World Conservation Union (IUCN).
21. Shiva, V. (1986), 'Coming Tragedy of the Commons', Economic and Political Weekly 21(15): 613-614.
22. Singh, K. (1994), 'Managing Common Pool Resources: Principles and Case Studies,' Oxford University Press, New Delhi.
23. Singh, K. and V. Ballabh (Eds.) (1996), 'Cooperative Management of Natural Resources', Sage Publications, New Delhi.
24. Srivastava, H. C. and M. K. Chaturvedi (1989), 'Dependency and Common Property Resources of Tribal and Rural Poor,' Commonwealth Publications, New Delhi.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
M.R.S. SEMESTER - III

Specialization : Natural Resource Management

Paper No : **CC - 09**
Paper Title : **Natural Resources for Sustainable Livelihood** Credits : **4**

Objectives :

This paper is designed to provide an in depth knowledge about the used of natural resources for providing sustainable livelihood in the rural and tribal areas where otherwise livelihood options are limited. Use of the local resources on sustainable basis will not only conserve the resources but also will be helpful in reducing drudgery of the poor. A number of case studies are included in the paper to give a practical training to the students.

Introduction: Rural Livelihood and Natural Resources

Unit 1 : Micro and macro perspectives of rural livelihood:

Understanding livelihood systems as complex wholes. Economic reforms and the livelihood of rural households: evidence and future prospects

Unit 2 : Risks and opportunities for livelihood security in the villages

1. Core issues in the agrarian economy and society about livestock and agriculture
2. Technology adoption and farm management in rural livelihood systems.
3. Rural-urban linkages, occupational diversification, and sustainable rural livelihood systems.
4. Role of non-economic motivation in natural resource management.
5. Women and rural livelihood – conservation and utilization of natural resources.

Unit 3 : Indian livelihood systems in transition:

1. The threshing floor disappears: rural livelihood systems in transition.
2. From Marey to market: changing faces of rural livelihood systems.
3. Emerging rural leadership and sustainable management of natural resources.
4. Integrating local experiences into watershed interventions: a modern drainage line treatment

Unit 4 : From research to practice:

1. Participatory research on rural livelihood.
2. GIS and natural resource management.

Unit 5 : Field Visits

References

1. Mishra, G. P. and B. K. Bajpai (Eds.) (2001), 'Community Participation in Natural Resource Management', Rawat Publications, Jaipur and New Delhi.
2. Poffenberger, M. (1990), 'Joint Management of Forest lands, Experiences from South Asia', Ford Foundation, New Delhi.
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11. Ruedi Baumgartner and Ruedi Hogger.(Ed) (2004). In Search of Sustainable Livelihood Systems: Managing Resources and Change. New Delhi, Sage, 2004.
12. Singh, K. and V. Ballabh (Eds.) (1996), 'Cooperative Management of Natural Resources', Sage Publications, New Delhi.
13. Elinor Ostrom, Thomas Dietz, Nives Dolsak, Paul C. Stern, Susan Stonich, and Elke U. Weber, (Eds), 2002 The Drama of the Commons, The National Academic Press, Washington (DC) USA.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
M.R.S. SEMESTER - III

Specialisation : Natural Resource Management

Elective Paper No : **CC - 010**
Paper Title : **Water Harvesting Technologies** Credits : **4**

Objectives :

To introduce students with the importance of water and to inculcate the value of water harvesting and water management under present situation. The course will also give a detail insight in various experiments conducted by people in the country and especially in Gujarat.

Unit 1 : Water Harvesting Technologies

- Need for Water Harvesting in Rainfed agriculture.
- Traditional Water Harvesting Technologies
    - Multipurpose Tank Methods of South India,
    - Vav and Talav in Gujarat
    - Phad system of Maharashtra.
    - Roof-rain water harvesting in Gujarat and Rajasthan
- Concept of Basin area treatment and Watershed.

Unit 2 : Recent Techniques in water harvesting

- Check dams
- Continuous Contour Trench (CCT) and Deep CCT
- Well Recharge
- Bore well Recharge/ Dug well Recharge
- Farm pond
- Nala bunds/ Nala plugs
- Field bunds and Field waste weir
- Gabion Structure
- Loose Boulders
- Percolation Tank
- Percolation Well and Waste weir

Unit 3 : Post Water Harvesting Technologies.

- Water harvesting and conservation including modern irrigation practices.
- Use of GIS in Water Harvesting Programs.

Unit 4 : Case studies from arid and semi-arid regions of Gujarat – Benefits in agriculture and allied sectors.

Unit 5 : Field Visits

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3. Atharale R.N. (2003) Water Harvesting and Sustainable supply in India, Centre for Environment Education, New Delhi, India
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5. Vivekanand Hand Book on Rain Water Harvesting, Vivekand Kendra, Kanyakumari
6. Oweis T.Y. Rainwater Harvesting for Agriculture in the Dry Areas, CRC Press, London
7. Umashankari and Esha Shah (1993) Water Management Traditions in India, PP ST Foundation, Chennai, India
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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
M.R.S. SEMESTER - III

Specialization : Natural Resource Management

Paper No : **CC - 11**
Paper Title : **Extension For Natural Resource Management** Credits **: 4**

Objectives :

The main objective of this paper is to enable the students to assist local communities and other stake-holders, by formal or non-formal education, to acquire and use the available knowledge, skills, information and technology for their benefit, leading to an improvement in their socio-economic status and quality of life.

Introduction: Rural Livelihood and Natural Resources

Unit 1 : Concepts:

1. Natural Resource Management (NRM): Concept, Issue and Approaches.
2. Need for developing extension strategies for NRM
3. Extension strategy for disaster management.
4. Research in NRM by prioritization approach and techniques.

Unit 2 : Issues and strategies:

1. Issues in management of NRM.
2. Case Studies explaining Extension methods adopted for conservation of Soil, Water, Air and Forests in India and world.
3. Monitoring and auditing in Natural Resource Management (NRM).

Unit 3 : Problems, Applications and responsibilities:

1. Joint forest management: an approach for Natural Resource Management.
2. The role of State and Central Government.
3. Responsibility and involvement of (Corporate sector) Indian agro-chemical industry in Natural Resource Management and ensuring food safety.
4. Context of Natural Resource Management in Urban ecology.

Unit 4 : Field Visits

References

1. Adhikary M M, S.K. Acharya and Debabrata Basu. (2007) Extension Strategy on Natural Resource Management, Udaipur, Agrotech Publishing Academy, 2007.

2. Agarwal, C. and S. Saigal (1996), 'Joint Forest Management in India: A Brief Review,' Society for Promotion of Wastelands Development, New Delhi, India.

3. Ahmed, S. (1995), 'Who Participates? The Case of Rural Women, an NGO and Joint Forest Management in Gujarat', Working Paper No. 83, Institute of Rural Management, Anand, India.

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9. Greg Leach (2007) Implementing extension in natural resource management:
   NR&M the Agency, NRM the business
   http://www.regional.org.au/au/apen/2001/n/Leach2.htm

10. Sharad Singh Negi (2001), Participatory Natural Resource Management, Indus Publishing, Delhi.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - III

Specialisation : **Rural Development**

Paper No. : **CC - 08**

Paper Title : **Rural Development Administration** Credits : **4**

Objectives:-

This Paper is designed to make student understand legislation and its Importance in Rural Development. the students will be also gained in depth knowledge of development administration concept and approaches, bureaucracy and good governance for the rural development in india.

Unit: 1. Constitution and Government in India

- Nature and Characteristics of the Constitution of India
- Preamble
- Forms of Government
- Directive Principles of State Policy
- Fundamental Duties
- Center - State Relations

Unit: 2. Development Administration: Concept and Approaches

- Concept, Meaning, Evolution, scope, Characteristics and Features of Development Administration
- Critique of Development Administration
- Difference between Traditional Administration and Development Administration
- Riggs and Weidner on Development Administration
- Early Approaches and Contemporary Approaches of Development Administration
- People as an agent of Development Administration

Unit: 3. Rural Development Administration in India

- Rural Administration during the British Period
- Administrative Structure and Organizations for Rural Development in India
- Rural Development Administration
- Centralized and Decentralized Rural Development Administration
- Panchayat Raj Institution and District Rural Development Agency

Unit: 4. Bureaucracy and Development

- Concept, Meaning, Characteristics and Features of Bureaucracy
- Importance and Role of Bureaucracy
- Structure and Functions of Bureaucracy; Bureaucracy and Development
- Rural Bureaucracy
- Role of Bureaucracy in Rural Development
- Bureaucracy and Peoples' Representatives

Unit: 5. Good Governance

- Concept and Criteria of Good Administration
- Concept of Good Governance
- structure and features of e-governance
- e-governance in the rural development sector

Field work: the students will go for various Line department of rural development in the Gujarat state and outside of the state also for the observation of the governance and administration practice.

Reference:

- Basu, Rumki, Public Administration: Concepts and Theories, Sterling Publishers Private Limited
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- Nayak, Dolatbhai (2014). Constitutional law of India, University granth Nirman board, Gujarat state.

- Khosla, J.N. ‘ Development Administration- New Dimensions’, Indian Journal of Public Administration
- Panandikar Pai, V.A & S.S Kshirsagar, Bureaucracy and Development Administration, Centre of Policy Research, New Delhi
- Ray, Amal & Venkatsubbiah, Vanita, Studies in Rural Development and Administration, The Third World Press Pvt Ltd.
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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - III

Specialisation : **Rural Development**

Paper No. : **CC - 09**

Paper Title : **Rural Development Planning and Management**

Credits : **4**

The Objective of the paper is to make students appreciate the role of Planning in the Economy and familiarize them with the linkages between Decentralized Planning and the total system of Planning.

Unit 1. Introduction

- Concept and Nature of Planning
- Indian Planning : The General Approach
- Basic Objectives and Strategy
- Planning, Policies and Programmes

Unit 2. Decentralized and Multilevel Planning

- The Need and Justifications
- Merits and Demerits
- Decemtralized Planning in India
- Levels and Functions of Planning

Unit 3. Multilevel Structure of Planning

- Macro-Meso-Micro Level Plans
- Significance of Micro Level Plans
- Identification of Area Levels, Activities and Planning Agencies

Unit 4. District, Block Level and Grassroots Level Planning

- Need, Concept and Scope
- Components of District Planning
- Process of District Planning
- Block Planning and the District Plan
- Planning Process at Block Level
- The Panchayati Raj System and Village Level Planning
- Planning Process at Village Level Planning

Unit 5. Management of Rural Development Project

- Meaning and Importance of Management
- Scope for use of Management Techniques in Rural Development
- Project Identification and Formalation
- Different Types of Project Appraisals
- Planning and Management of Project Implementation
- Monitoring Development Projects
- Project Evaluation

References :

- IGNOU Planning for Development 4-EEC-02
- IGNOU Rural Development Management 2-RDD-3
- IGNOU Rural Development Planning 1-MRD-103
- IGNOU Planning, Policies &Programmes 5-MS-3
- Rural Development Principals, Policies and Mangement 3rd Edition by Katarsing -Sage Texts
- Decentralized Multilevel Planning Principals and Practice, Asian & African Experiences - K.V. Sundaram
- Concept Publishing Company, N.Delhi-110059

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - III

Specialization : **Rural Development**

Paper No. : **CC - 08** Credits : **4**

Paper Title : **Rural Development Organizations and Management**

Objectives : This paper is designed to make student understand rural organizational structure and management at rural areas. also the student gain in depth knowledge of different rural Organizations Through theoretical and field work.

Unit: 1. Panchayati Raj System in India

- History of panchayati raj system in India
- Three tier of Panchayati raj system
- Functions of panchayat raj Institutions
- 73rd Amendmen act.1993 and Rural Development
- Panchayats Extension to the Scheduled Areas (PESA) Act 1996

Unit: 2. Co-operative Institutions

- Concept and Principles of Co-operation
- Nature and Development of Co-operatives in India
- Types of Co-operatives Structure in India
- Need for Professional Management of co-operative Organizations
- Issues of co-operative management

Unit: 3. Voluntary and Participatory Organizations and Management for Rural Development

- Introduction & Meaning of CBO, CSO and VOs as Informal Organisations
- The Functions of the CBO, CSO and VOs for Rural Development
- VOs and Government
- Limitations of the VOs
- People's Participation based Organisations

Unit: 4. Non Government Organizations and management

- Concept of NGO as formal Organization
- Classification and Types of NGOs
- Legal Procedure for Registration/Setting Up/formation/tax exemption/pattern funding
- Organizational structure and personnel management
- Strategies for NGO Management
- Problems and Limitations of NGO Management
- Role and Functions of NGOs – Case studies

Unit: 5. Field Work

Reference:

1. Rural Development Administration and Institutins,ERD-01, Rural Development – Indian Context, IGNOU, 2009.
2. Shahu, Saket (2007), Management of NGOs, Print Media Publication, Jaipur.
3. Goel, S.L., R. Kumar (2005), Administration and Management of NGOs Text and Case Studies, Deep & Deep Publication, New Delhi.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - III

Specialization : **Rural Development**

Paper No. : **CC - 11**

Paper Title : **Development of Weaker Sections of Rural India** Credits : **4**

Objectives:

To understand the Socio-Economic condition of Scheduled caste and Scheduled Tribe, other backward class, economical weaker sections and women in India. except this the students also tries to understand the process of developmental efforts and welfare schemes run by different ministries/departments of central and state government for the betterment of the weaker sections.

Unit : 1. Introduction of weaker sections of India

1.1 Concept, Meaning, characteristics of weaker sections in India
1.2 Problems of weaker sections in India
1.3 Structure and Role of Commissions for weaker sections in India (SC,ST,OBC,EWS and Women)

Unit : 2. Development of Scheduled castes

2.1 Introduction to caste system
2.2 Concept, characteristics of Caste System
2.3 Historical perspective of Scheduled Castes
2.4 Characteristics and situation of Scheduled Caste in India
2.5 Problems and Issues of Scheduled Caste
2.6 Developmental Efforts at centre and (Gujarat)State Level Government

Unit : - 3. Development of Scheduled Tribes

3.1 Introduction to Scheduled Tribe
3.2 Concept and Definition and characteristics of Tribe in India
3.3 Classification of scheduled tribes in India
3.3 Problems and Issues of scheduled tribes in India
3.4 Developmental Efforts at center and state (Gujarat) level Government

Unit : - 4 Other Backward Class, Economical Weaker Section and Women

4.1 Introduction of OBC, EWS and Women In India

4.2 Concept and characteristics of OBC and EWS in India

4.3 Problems and Issues of the OBCs, EWSs and Women in India

4.4 Developmental Efforts at center and (Gujarat) state level Government for OBCs, EWS and Women in India

Field work: the students will go for various Line department of the SC,ST, OBC and EWS in the Gujarat state and outside of the state also for the observation of the good governance and developmental activities.

REFERENCE :

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2. Saksena H.S. (1981),Safegiards for scheduled caste and tribed, New delhi
3. India, National commission for scheduled caste and scheduled tribes, a handbook, 1997, New delhi
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8. Beteille, Andre, 1974, studies in agrarian social structure, delhi
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10. Govt. of India, Tenth five year Plan Planning Commission, New Delhi.
11. Govt. of India, Ministry of Labour, Annual Report 2002-03, New Delhi.
12. Govt. of India, Ministry of Rural Area & Employment, Annual Report, 2002-03, New Delhi.
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14. Nadeem Hasnain : Tribal India, New Royal Book Co., Lucknow, ISBN:81-89267-34-5, 2007.

15. Aggarwal, P.K.: Tribal Development Planning in India,Pub. Mahavir & Sons, New Delhi,ISBN-978-81-8377-184-9, 2007.
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26. Lipton, M., and Toye, J. 1990. Does Aid Work in India? A Country Study of the Impact of Official Development Assistance. London: Routledge.
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44. National commission of scheduled tribe – A hand book , https://ncst.nic.in/sites/default/files/documents/NCST_HANDBOOK_WEB.pdf
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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - III

Paper No. : **EC - 3**

Paper Title : **Gender Equality and Women Empowerment** Credits : **4**

Objectives:-

1. To introduce redefinition of gender equality and concept
2. To introduce discourse of Women empowerment
3. To introduce the women employment
4. Interconnection between Indian Constitution Relating to Women and Legal Rights

Unit: I Gender Equality and Planning

- Concept of Gender Equality
- Methods of Activity at Gender Based Analysis : Gender Related Development Index, Gender Empowerment Measures
- Mainstreaming Gender development policies
- Paradigm shift from women well-being to Women's Empowerment
- Gender and Power : Resistance and Movements

Unit-II Women Empowerment

- Women Empowerment : Meaning, Concept, Nature, Objectives.
- women Development and Women Empowerment
- programmes of central and state government
- Women's Representation in Local Bodies

Unit-III Women Employment

- employment Generation Schemes
- Approaches and Access to Credit From traditional form of credit to micro credit
- micro finance Revolution
- SHGs and Economic Empowerment

Unit-IV Indian Constitution Relating to Women and Legal Rights

- Fundamental Rights
- Directive principles and fundamental duties related to women
- Laws' related to Marriage, Divorce and maintenance
- Inheritance of property
- Dowry prohibition Act
- Domestic violence Act

Unit: 5 Field work

REFERENCE :

Susie, T and Tejaswini Niranjana. 1999. 'Problems for a contemporary theory of gender' in N. Menon (ed.) Gender and Politics in India. New Delhi: Oxford University Press. (Pages 494-525)

Abu-Lughod, L. 2002. 'Do Muslim Women Really Need Saving?: Anthropological Reflections on Cultural Relativism and its Others', in American Anthropologist 104 (3). (Pages 783-790).

Kumar, R. 1999. 'From Chipko to Sati: The Contemporary Indian Women's Movement', in N. Menon (ed.) Gender and Politics in India. New Delhi: Oxford University Press. (Pages 342-369)

Ghosh, A. (ed.). 2007. Behind the Veil: Resistance, Women and the Everyday in Colonial South Asia.Ranikhet: Permanent Black

Weeks, J., Donovan, C. and Heaphy, B. 1999. 'Everyday Experiments: Narratives of Non-heterosexual Relationships', in E. B. Silva and C. Smart (eds.) The New Family?. London: Sage. (Pages 83-99)

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - III

Paper No. : **SOC - 4**

Paper Title : **Participatory Rural Appraisal - III** Credits : **4**

The aim of PRA is to help strengthen the capacity of villagers to plan, make decisions, and to take action towards improving their own situation. Participatory Rural Appraisal (PRA) is considered one of the popular and effective approaches to gather information in rural areas. In edition that this paper is designed to equip the students to understand SWOT, Mapping, Data Collection and PRA Methodology etc.

Unit-I: Forced Field Analysis and SWOT Analysis

- Forced Field Analysis: Meaning, Procedure
- Assignment of Weights to Forces
- Application: Family Level, Community Based Organization (CBO) Level, Village Level, Institutional Level, Individual Level
- STEEPLED Analysis
- Monitoring and Evaluation of Forced Field Analysis
- SWOT Analysis: Meaning, Procedure & Application

Unit-II: Pie Diagram and Body Mapping

- Pie Diagram: Meaning, Procedure
- Application: Population details, Agriculture and Natural Resources, Individual Level
- Comparative Analysis & Deeper Analysis
- Body Mapping: Meaning, Purpose, Procedure
- Application of Body Mapping
- Body Mapping: Complementary with Other Methods, Merits and Limitations

Unit-III: Semi-Structured Interview, Focus Group Discussion and Direct Observation

- Semi-Structured Interviewing (SSI)
- Types of Interviews
- Semi-Structured interview Technique under PRA
- Semi-Structured interview: Guidelines, Errors and Limitations
- Focus Group Discussion (FGD): Basic Tenet and Uses
- Steps in Conducting Focus Group Discussion

- Direct Observation: Characteristics and Types

Unit-IV: Members of PRA Team: Role and Responsibilities & Application of PRA Methodology

- Roles: Facilitator, Interviewer and Content Writer
- Process Observer and Gatekeeper
- Application of PRA Methodology
  - Participatory Poverty Assessment
  - Sustainable Livelihood Assessment
  - Analysis of Hunger
  - Vulnerability Analysis
  - Institutional Analysis
  - Participatory Evaluation

Basic Textbook

N. Narayanasamy (2009), Participatory Rural Appraisal: Principles, Methods and Application, SAGE Publication India Pvt. Ltd. New Delhi [ISBN:9352801369]

References:

Amitava Mukherjee (2004), Participatory Rural Appraisal: Methods and Applications In Rural Planning (Essays In Honour Of Robert Chambers), Concept Publishing Company, India [ISBN: 8180691055]

H. P. S. Arya (2004), Participatory Rural Appraisal in Agriculture and Animal Husbandry: A Training Manual, Concept Publishing Company, India [ISBN: 8180691160]

Kirti Shukla (2011), Participatory Rural Appraisal Technique for Farm Women, Discovery Publishing Pvt.Ltd, India [ISBN: 8183567169]

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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - III

Paper No. : **CC - 13**

Paper Title : **Dissertation** Credits : **8**

- In this paper student has to prepare filed based dissertation.
- Dissertation can be prepared individually or in group.
- It is expected that student can make use of learning from Semester-I to Semester-III while preparing dissertation in Participatory Rural Appraisal.
- They are expected to use PRA methodology and various techniques of PRA / RRA.
- SWOT analysis can be an integral part of dissertation prepared by student.

Evaluation of Dissertation

- Internal Evaluation: Based on Continuous Evaluation and Viva-Voce Examination
- External Evaluation: Based on Dissertation + Viva-Voce Examination
- In external evaluation Dissertation will have weightage of 70% and Viva-Voce examination will have weightage of 30%.

Basic Textbook

N. Narayanasamy (2009), Participatory Rural Appraisal: Principles, Methods and Application, SAGE Publication India Pvt. Ltd. New Delhi [ISBN:9352801369]

References:

Amitava Mukherjee (2004), Participatory Rural Appraisal: Methods and Applications In Rural Planning (Essays In Honour Of Robert Chambers), Concept Publishing Company, India [ISBN: 8180691055]

H. P. S. Arya (2004), Participatory Rural Appraisal in Agriculture and Animal Husbandry: A Training Manual, Concept Publishing Company, India [ISBN: 8180691160]

Kirti Shukla (2011), Participatory Rural Appraisal Technique for Farm Women, Discovery Publishing Pvt.Ltd, India [ISBN: 8183567169]

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Department of Rural Studies

Veer Narmad South Gujarat University, Surat

Academic Year = 2021 - 22

Syllabus

MRS Semester - IV

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - III

Paper No. : **CC - 12**

Paper Title : **Internship** Credits : **12**

Objectives:

The basic purpose of providing internship to the students is to make them learn the application of basics of rural studies at field level. It is expected that the students get first hand information about various aspects of rural society and their problems and possibilities of their development. Also they will learn how various programs of Rural Development are being implemented at the grass root level. During their internship they will also understand the modalities of functioning of various agencies working in the field of rural development be it government, semi government, co-operatives or NGOs.

Modality:

The internship will be for eight weeks. The students will be placed with two agencies for a period of four weeks each. Preferably these agencies are selected based on their works in various aspects of rural development.

Evaluation:

The students will be evaluated both internally as well as externally.

Internal evaluation: During the period of placement the teachers of the department shall visit the students at the placement agency during their internship, at least once, to evaluate their work. This evaluation and the day to day diary of the students will contribute to their internal evaluation of 90 marks.

External evaluation: There will be 210 marks for external evaluation. The placement agencies will evaluate the students based on their activities, initiatives, sincerity towards duties, punctuality, interpersonal relationship and support to establishment and general impression for 150 marks. At the end of the internship the students will submit a report of their activities at the placement agencies and a viva voce based on the submission will have weightage of 60 marks.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.R.S. SEMESTER - IV

Paper No. : **CC - 13**

Paper Title : **Dissertation** Credits : **12**

Specification of Dissertation

1. The dissertation may be based on any problem relevant to the study of rural area.
2. It should be based on primary sources of data.
3. It can be supplemented by secondary data.
4. Dissertation should have a minimum of 50 pages excluding the heading page and appendix if any. Typed, Spiral bound (Language: Gujarati, Hindi and English)
5. The dissertation shall contain the following items.

    A) Introduction and Review of literature
    B) Selection of research problem, objectives and Hypothesis of the Study (if any)
    C) Methodology
    D) Analysis and interpretation
    E) Conclusion and Suggestion if any
    F) References and Appendix if any

6. The dissertation assignment may be given in the 4th semester and report should be submitted at the end of 4th semester before the university examination as decided by the Department.

Evaluation of Dissertation

A) Internal evaluation : Based on continuous evaluation and viva-voce examination (90 marks)

B) External Evaluation: Based on dissertation and viva-voce examination. The dissertation will have 150 marks and viva-voce have 60 marks weightage (Total 210 marks).

A/P.G

12/08/2021

એકેડેમિક કાઉન્સિલ તા. ૨૫/૦૬/૨૦૨૧
બાબત : ૧૦ બિડાણ : ૫

૨૯૪૩૯-૭૦

ક્રમાંક: મેમસીજી/ઓફ લાઇન/શિક્ષણ/શરૂ કરવા/આઇ/૨૧
આરોગ્ય તબીબી સેવાઓ અને તબીબી શિક્ષણ
(તબીબી શિક્ષણ)ના કમિશનરશ્રીની કચેરી,
૪, ડી.જીવરાજ મહેતા ભવન,
ગાંધીનગર,
તા.૧૬/૦૬/૨૦૨૧

પ્રતિ,
ડીનશ્રી,
સરકારી મેડીકલ કોલેજો,
અમદાવાદ,વડોદરા,સુરત,રાજકોટ,જામનગર,ભાવનગર,
ડીનશ્રી, તમામ જી.એમ.ઇ.આર.એસ. અને સ્વ નિર્ભર મેડીકલ કોલેજો,
ડીનશ્રી, તમામ સરકારી/સ્વ-નિર્ભર ડેન્ટલ કોલેજો,
પ્રિન્સીપાલશ્રી, તમામ સરકારી/સ્વ-નિર્ભર ફીઝીયોથેરાપી કોલેજો,
પ્રિન્સીપાલશ્રી, સરકારી નર્સીંગ કોલેજ,
અમદાવાદ/વડોદરા/સુરત/જામનગર/રાજકોટ/ભાવનગર/પાટણ/સિધ્ધપુર

વિષયઃ- ઓફ લાઇન અભ્યાસક્રમ શરૂ કરવા બાબત...

ઉપરોકત વિષય અન્વયે જણાવવાનું કે, કોવિડ-૧૯ ની પરિસ્થિતિને ધ્યાને લઇ રાજયના તમામ અભ્યાસક્રમો ઓન લાઇન ચલાવવામાં આવે છે પરંતુ વિધાર્થીઓ હાલમાં પ્રેકટીકલ કાર્ય તથા કોવિડ ડયુટીમાં સંકળાયેલા છે ફકત ટીચીંગ કાર્ય જ ઓન લાઇન થાય છે.

મેડીકલ/ડેન્ટલ/ફીઝીયોથેરાપી/નર્સીંગ/ઓપ્ટોમેટ્રીના અભ્યાસકમોના મોટાભાગના વિધાર્થીઓ તથા સ્ટાફ વેકસીનેટ થઇ ગયેલ છે તથા જે વિધાર્થીઓને વેકસીન લેવાની બાકી હોય તે તમામને વેકસીનેટ કરવાની કાર્યવાહી કરવા જણાવવામાં આવે છે.

આમ ટીચીંગની ગુણવત્તા જળવાઇ રહે તે હેતુસર Covid Appropriate Behaviour (CAB) અને Infection Cantrol & Prevention ની તકેદારી સાથે મેડીકલ/ડેન્ટલ/ફીઝીયોથેરાપી/નર્સીંગ/ઓપ્ટોમેટ્રીના યુ.જી. તથા પી.જી. વિધાર્થીઓને ઓફ લાઇન શિક્ષણ તાત્કાલિક અસરથી શરૂ કરવા જણાવવામાં આવે છે.

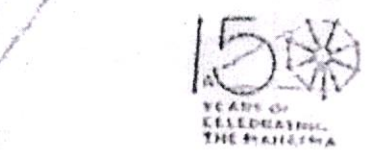
કમિશનર
આરોગ્ય, તબીબી સેવાઓ અને તબીબી શિક્ષણ
(તબીબી શિક્ષણ), ગાંધીનગર

નકલ રવાના : (૧) સી.ઠ.ઓ.શ્રી, જી.એમ.ઇ.આર.એસ. ગાંધીનગર
(૨) અધિક નિયામકશ્રી, ડેન્ટલ, સરકારી ડેન્ટલ કોલેજ, અમદાવાદ
(૩) અધિક નિયામકશ્રી, તબીબી સેવાઓ, બ્લોક નં.૫, જુના સચિવાલય, ગાંધીનગર
તા.૨ જરૂરી કાર્યવાહી સારૂ.

નકલ સાદર રવાના : માન.અગ્ર સચિવશ્રી, આરોગ્ય અને પરીવાર કલ્યાણ વિભાગ, નવા સચિવાલય, ગાંધીનગર

એકેડેમિક કાઉન્સિલ તા.૨૧/૬/-૨૦૨૧
બાબત.....૧૨.....નિયામકશ્રીનિર્ણય.....૬.....

ઈ-મેઈલ



નં.ધનવ-૧/વ૩૨૫૮-૨૧૬/૨૦૨૧/ગ
નિયામકશ્રી, આયુષની કચેરી, બ્લૉક નં.૧/૨ માળ,
ડો.જીવરાજ મહેતા ભવન, ગાંધીનગર
તા.૨૩/૦૬/૨૦૨૧

વિષય:- ઓફલાઈન અભ્યાસક્રમ શરૂ કરવા બાબત .

ઉપરોકત વિષય અન્વયે જણાવવાનું કે, કોવિડ-૧૯ ની પરિસ્થિતીને ધ્યાને લઈ રાજયના તમામ અભ્યાસક્રમો ઓનલાઈન ચલાવવામાં આવે છે. આયુર્વેદ/હોમિયોપેથીના અભ્યાસક્રમોના મોટાભાગના વિદ્યાર્થીઓ તથા સ્ટાફ વેકિસનેટ થઈ ગયેલ છે તથા જે વિદ્યાર્થીઓને વેકિસન લેવાની બાકી હોય તે તમામને વેકિસનેટ કરવાની કાર્યવાહી કરવા જણાવવામાં આવે છે.

વિદ્યાર્થીઓને પ્રેકટીકલ તથા ટીચીંગની ગુણવત્તા જળવાય રહે હેતુસર Covid Apropriate Bahaviour (CAB) અને Infection Cantrol & Prevention ની તકેદારી સાથે આયુર્વેદ/હોમિયોપેથી યુ.જી. તથા પી.જી. વિદ્યાર્થીઓને ઓફલાઈન શિક્ષણ તાત્કાલિક અસરથી શરૂ કરવા જણાવવામાં આવે છે.

નિયામક
આયુષ
ગુજરાત રાજય, ગાંધીનગર

પ્રતિ,
આચાર્યશ્રી,

- સરકારી/સ્વ-નિર્ભર/ગ્રાન્ટ-ઈન-એઈડ આયુર્વેદ કોલેજ (તમામ)
- સરકારી/સ્વ-નિર્ભર/ગ્રાન્ટ-ઈન-એઈડ હોમિયોપેથી કોલેજ (તમામ)

નકલ સાદર રવાના જાણ સારૂ:
માન.નાયબ સચિવશ્રી, (આયુષ) આ.પ.ક.વિભાગ, નવા સચિવાલય, ગાંધીનગર

S.N.K.H.M.C., Vyara
Inward No.: 6453
Date : 18/6/21
Sine :

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એકેડેમિક કાઉન્સિલ તા. ૨૫/૦૬/૨૦૨૧
બાબત : ૧૨ બિડાણ : ૭

Anju Sharma, IAS
Principal Secretary
Education Department

सत्यमेव जयते

Education Department
Government of Gujarat
Block No. 5, 8th Floor,
Sardar Bhavan, New Sachivalaya,
Gandhinagar-382 010

Date : **June 02, 2021**

D.O. No. NEP/1221/EduPolicy(P.F)/KH

Dear Dr. Chavda

Multidisciplinary higher education is a key theme in the National Education Policy 2020 and need to be promoted at all levels. Students need to be encouraged to take electives in other discipline. Hence, in every University, It is required to implement a framework of credit transfer by identifying the colleges that can be constituted as a cluster within which multidisciplinary courses can be offered to students. The guidelines of UGC for CBCS as attached may be used in this regard to work out the number and credit completion of such courses. I would therefore request you to consider this in your academic council and inform the department of the steps taken in this regard.

Regards

(Anju Sharma)

AS Khers 17/06/2021

Dr. Kishorsinh N. Chavda,
Vice Chancellor,
Veer Narmad South Gujarat University, Surat.

Tel : 079-23251306, 23251308 Fax : 079-23254697 E-mail : secedu@gujarat.gov.in

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B. Sc. (MATHEMATICS) Semester: III, IV
Effective from June 2021

B. Sc.	Paper	Name of the Paper	Hours	Credit	Marks
Semester III	**MTH-301**	Mathematics-V	3	3	**70** (20 Internal + 50 External)
	MTH-302	Mathematics-VI	3	3	
	MTH-303	Mathematics-VII	3	3	
	EG-3001	Mathematical Methods	2	2	
	EG-3002	Group of Symmetries – I	2	2	
Semester IV	**MTH-401**	Mathematics-VIII	3	3	
	MTH-402	Mathematics-IX	3	3	
	MTH-403	Mathematics-X	3	3	
	EG-4001	Mathematical Modeling	2	2	
	EG-4002	Group of Symmetries – II	2	2	

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B. Sc. (MATHEMATICS)
SEMESTER - III
MTH-
(Mathematics-V)
Effective from June 2021
Marks:70 (20 internal + 50 external)
(3 Hours / Week – Credits: 3)

Unit I:
Limits and Continuity of a function of two variables, Partial Differentiation, Total Differential, Composite function, Homogeneous functions.

Unit II:
Euler's theorem for Homogeneous functions, Taylor's theorem for functions of two variables, Maclaurian's expansions in power series, Jacobian.

Unit III:
Maxima-Minima for functions of two variables: Necessary and sufficient conditions for extreme points.

Unit IV:
Vector point function, Differentiation of a Vector point function, Gradient, Divergence and Curl and their properties, Line Integral.

The course is covered by the following reference books:

1. Shantinarayan, P. K. Mittal : A course of Mathematical Analysis, S. Chand and Co., New Delhi.
2. Hari Kishan : Vector Algebra and Calculus, Atlantic Pub. & Distributors(P) Ltd., New Delhi.
3. T. M. Apostol : Mathematical Analysis, Narosa Publishing House, New Delhi.
4. S. C. Malik : Mathematical Analysis, Wiley-Eastern Ltd, New Delhi.
5. N. P. Bhamore & et el : Mathematics Paper III–IV, Popular Prakashan, Surat.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B. Sc. (MATHEMATICS)
SEMESTER - III
MTH-
(Mathematics-VI)*
Effective from June 2021
Marks:70 (20 internal + 50 external)
(3 Hours / Week - Credits: 3)

Unit I:
Error estimation: Errors and their computations, A general error formula.

Unit II:
Numerical Solutions of Algebraic and Transcendental Equations: Bisection Method, Method of False position, Iteration Method, Newton-Raphson's Method.

Unit III:
Forward Differences, Backward Differences, Central Differences, Symbolic relation and separation of symbols, Differences of Polynomials.

Unit IV:
Newton's Forward and Backward Formulae, Gauss' Interpolation formulae.

The course is covered by the following reference books :

1. S. S. Sastry : Introductory methods of Numerical Analysis, Prentice-Hall of India Pvt. Ltd.; 5th Edition.
2. M. K. Jain, Iyenger, Jain : Numerical Methods for Scientific and Engineering Computations, New Age International Ltd.
3. Goel, Mittal : Numerical Analysis, Pragati Prakashan, Meerut.
4. Kaiser A. Kunz : Numerical Analysis, Mc Graw Hill Book Co., London.
5. James I. Buchanan, Peter R. Turner : Numerical Methods and Analysis, Mc Graw Hill Book Co., London.
6. P. C. Biswal:NumericalAnalysis,Prentice-HallofIndia, 2008.
7. H. C. Saxena: Finite Differences and Numerical Analysis, S. Chandand Co., 2005.

* Use of Scientific non – programmable calculator is allowed.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B. Sc. (MATHEMATICS)
SEMESTER - III
MTH-
(Mathematics-VII)
Effective from June 2021
Marks:70 (20 internal + 50 external)
(3 Hours / Week - Credits: 3)

Unit I:
Linear Differential Equations with variable coefficients, Homogeneous Differential Equations, Legendre's Differential Equation.

Unit II:
Second order Differential Equations: Solution in terms of known Integral, Solution by method of removal of first order derivatives, Method of Changing Independent Variable.

Unit III:
Formation of Partial Differential Equation, Solution of Partial Differential Equations, Equations solvable by direct integral.

Unit IV:
Partial Differential Equations of first order, Nonlinear Partial Differential Equations of first order, Some special methods.

The course is covered by the following reference books :

1. D. A. Murray: An Introductory Course in Differential Equations, Orient Longmans, Bombay.
2. I. N. Sneddon: Elements of Partial Differential Equations, McGraw Hill Book Company.
3. B. S. Grewal: Higher Engineering Mathematics, Khanna Publishers, New Delhi.
4. Gorakh prasad : Differential Equations, Pothishala Pvt. Ltd., Allahabad.
5. M. D. Rai Singhania : Differential Equations, S. Chand & Co., New Delhi.
6. Nita H. Shah : Ordinary and Partial Differential Equations : Theory and Applications, PHI Learning Pvt. Ltd, New Delhi.
7. N. P. Bhamore & et el. : Mathematics Paper III–IV, Popular Prakashan, Surat.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B. Sc. (MATHEMATICS)
SEMESTER -III
Elective Generic
EG-3001
(Mathematical Methods)*
Effective from June 2021
Marks:70 (20 internal + 50 external)
(2 Hours / Week - Credits: 2)

Unit I:
Notations of finite difference calculus, Operators , , , , Relations between different operators and their prosperities, Relation between difference and differential operators, Method of constructing difference tables, Finding the missing terms.

Unit II:
Factorial notation, Expression of polynomials in factorial notation by using finite differences, Method of unknown coefficients.

Unit III:
Difference equations: Order and degree of a difference equation, Solution of difference equations, Homogeneous difference equations with constant coefficients.

The course is covered by the following reference books :

1. S.S. Sastry : Introductory methods of Numerical Analysis, Prentice-Hall of India Pvt. Ltd.; 4th Edition.
2. M. K. Jain, Iyenger, Jain: Numerical Methods for Scientific and Engineering Computations, New Age International Ltd.
3. Goel, Mittal : Numerical Analysis, Pragati Prakashan, Meerut.
4. Kaiser A. Kunz : Numerical Analysis, McGraw Hill Book Co., London.
5. James I. Buchanan, Peter R. Turner : Numerical Methods & Analysis, McGraw Hill Book Co., London.

* Use of Scientific non – programmable calculator is allowed.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B. Sc. (MATHEMATICS)
SEMESTER – III
Elective Generic
EG-3002
(Group of Symmetries-I)
Effective from June 2021
Marks:70 (20 internal + 50 external)
(2 Hours / Week - Credits: 2)

Unit I:
Definition of a group and its elementary properties, Order of a group, Order of an element of a group, Group multiplication tables, Examples of groups including finite groups and infinite groups, Abelian groups, Cyclic groups.

Unit II:
Subgroup, Condition that a subset is a subgroup, Examples of subgroups, Basic concept of symmetry, Symmetry elements and symmetry operations in a space, Identity symmetry operation.

Unit III:
Symmetry planes and reflection symmetry, Inversion centre and inversion symmetry, Rotation axes and rotation symmetry, Improper axes and improper rotation symmetry, Product of symmetry operations.

The course is covered by the following reference books:

1. F. A. Cotton: Chemical application of group theory, Wiley Inter Science, Wiley Eastern Ltd., New Delhi.
2. G. Davidson: Intro. Group Theory for Chemists, Applied Science Publisher.
3. I. N. Herstein: Topics in Algebra, Wiley Eastern Ltd., New Delhi.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B. Sc. (MATHEMATICS)
SEMESTER -IV
MTH-
(Mathematics-VIII)
Effective from June 2021
Marks:70 (20 internal + 50 external)
(3 Hours / Week - Credits: 3)

Unit I:
Beta-Gamma functions: Relation between Beta and Gamma functions, Properties, Applications of Beta-Gamma function.

Unit II:
Double and Triple Integrals: Change of order of Double integrals, Area.

Unit III:
Laplace Transforms: Laplace Transform of elementary functions, Properties of Laplace Transform, Differentiation and Integration of Laplace Transform, Laplace Transform of derivatives and integrals.

Unit IV:
Inverse of Laplace Transform: Method of Partial fractions, Properties of inverse Laplace Transform.

The course is covered by the following reference books:

1. David V. Widder : Advanced Calculus, PHI Learning Pvt. Ltd, New Delhi
2. Kreysig: Advanced Engineering Mathematics, John Wiley, New York, 1999.
3. Shantinarayan, P. K. Mittal : A course of Mathematical Analysis, S. Chand and Co., New Delhi.
4. N. P. Bhamore & et al : Mathematics Paper III-IV, Popular Prakashan, Surat.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B. Sc. (MATHEMATICS)
SEMESTER -IV
MTH-
(Mathematics-IX)*
Effective from June 2021
Marks:70 (20 internal + 50 external)
(3 Hours / Week - Credits: 3)

Unit I:
Finite difference with unequal interval, Lagrange's Interpolation Formula, Divided Differences, Newton's General Interpolation Formula.

Unit II:
Numerical Differentiation: 1^{st} and 2^{nd} order derivatives based on Newton's forward and backward difference interpolation formulae.

Unit III:
Numerical Integration: General Integration formula, Trapezoidal Rule, Simpson's 1/3-Rule, Simpson's 3/8-Rule.

Unit IV:
Solution of Ordinary Differential Equations by Taylor's series method, Picard's approximation method, Euler's method.

The course is covered by the following reference books:

1. S. S. Sastry : Introductory methods of Numerical Analysis, Prentice-Hall of India Pvt. Ltd.; 4^{th} Edition.
2. M. K. Jain, Iyenger, Jain: Numerical Methods for Scientific and Engineering Computations, New Age International Ltd.
3. Goel, Mittal : Numerical Analysis, Pragati Prakashan, Meerut.
4. Kaiser A. Kunz : Numerical Analysis, McGraw Hill Book Co., London.
5. James I. Buchanan, Peter R. Turner: Numerical Methods and Analysis, McGraw Hill Book Co., London.

* Use of Scientific non – programmable calculator is permitted.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B. Sc. (MATHEMATICS)
SEMESTER -IV
MTH-403403
(Mathematics-X)
Effective from June 2021
Marks:70 (20 internal + 50 external)
(3 Hours / Week - Credits: 3)

Unit I:
Sets and elements, Operations on sets, Functions, Real-valued functions.

Unit II:
Countable & Uncountable sets, Greatest lower bound and least upper bound.

Unit III:
Sequences of real numbers, Sub-sequences, limit of a sequence, Convergent sequences, Divergent sequences.

Unit IV:
Divisors, Greatest common divisor, Least Common multiple, Prime numbers, Fundamental theorem of Arithmetic, Congruence relation, Equivalence classes.

The course is covered by the following reference books :

1. R. R. Goldberg : Methods of Real Analysis, Oxford & TBH Pub. Co.
2. I. N. Herstein : Topics in Algebra, Wiley Eastern Ltd., New Delhi, 2006.
3. I. H. Sheth : Abstract Algebra, Nirav Prakashan, Ahmedabad.
4. T. M. Apostol : Mathematical Analysis, Narosa Publishing House, New Delhi.
5. S. C. Malik : Mathematical Analysis, Wiley-Eastern Ltd, New Delhi.
6. Shantinarayan : Modern Algebra, S. Chand and Co., New Delhi.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B. Sc. (MATHEMATICS)
SEMESTER -IV
Elective Generic
EG-4001
(Mathematical Modeling)*
Effective from June 2021
Marks:70 (20 internal + 50 external)
(2 Hours / Week - Credits: 2)

Unit I:
Mathematical modelling through ordinary differential equation of first order, Linear growth models; Linear decay models, Models for growth of Science and scientists.

Unit II:
Non-linear growth and decay models, Model of Logistic law of population, Spread of technological innovation, Spread of infectious diseases.

Unit III:
Mathematical models of geometrical problems through ordinary differential equation of first order, Simple geometrical problems, Orthogonal trajectories.

The course is covered by the following reference books :

1. J. N. Kapoor: Mathematical Modelling, New Age International Publishers, New Delhi.
2. Kreysig: Advanced Engineering Mathematics, John Wiley, New York, 1999.
3. J. K. Sharma: OR Theory & Applications, Mac Milian India Ltd., 1998.
4. G. Hadley: Linear Programming, Narosa Publishing House, New Delhi,1995.
5. G. Paria : Linear Programming, Transportation, Assignment, Game, Books & Allied Pvt. Ltd. Calcutta.

* Use of Scientific non – programmable calculator is allowed.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B. Sc. (MATHEMATICS)
SEMESTER – IV
Elective Generic
EG-4002
(Group of Symmetries-II)
Effective from June 2021
Marks:70 (20 internal + 50 external)
(2 Hours / Week - Credits : 2)

Unit I:
Formation of groups of symmetries (in space) of the following Plane figures (regarded as rigid objects):
1. An isosceles triangle (cyclic group C_2 of order 2)
2. An equilateral triangle (the group S_3 of order 6)
3. A rectangle (the group V_4)
4. A square (the group D_4)

Unit II:
Formation of groups of symmetries of the following Chemical Molecules (Configuration of atoms).
1. H_2O (the group V_4)
2. H_2O_2
3. Trans- $N_2 - F_2$ (the group V_4)
4. NH_3, PCl_3, $CHCl_3$(the group S_3)

Unit III:
Concept of isomorphism of groups, Isomorphism of multiplicative group with the group C_2 of the symmetries of an isosceles triangle, Isomorphism of multiplicative group with the group $V_4$of the symmetries of a rectangle, Isomorphism of group V_4 of the symmetries of a rectangle with the group of symmetries of H_2O, Isomorphism of group S_3 of the symmetries of an equilateral triangle with the group of symmetries of NH_3, PCl_3, $CHCl_3$.

The course is covered by the following reference books:

1. F. A. Cotton: Chemical application of group theory, Wiley Inter Science Wiley Eastern Ltd., New Delhi.
2. G. Davidson: Intro. Group Theory for Chemists, Applied Science Publisher.
3. I. N. Herstein: Topics in Algebra, Wiley Eastern Ltd., New Delhi, 2006.

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VEER NARMAD SOUTH GUJARAT UNIVERSITY
Third Year B. Sc. Semester -V
Chemistry Paper – VI (Inorganic Chemistry)
Proposed syllabus from June 2021

50 Marks (External) **Total: 30 Hrs**
20 Marks (Internal) **Time: 2 Hrs. (Uni. Exam)**

UNIT – I

Topic –1: Quantum Mechanics: **5 Hrs**

Postulates of Quantum mechanics, particles in three dimensional box, Schrodinger's wave equation in polar coordinates, its separation in to R, θ and ϕ. Discussion of solution of Schrodinger's equation for the rigid rotator.

Topic –2: Boron Hydride: **5 Hrs**

Boron hydride and its classification, Wade's Rule, preparation, properties, structure and bonding in diborane, tetra borane (10), penta borane (9), penta borane (11), hexaborane (10) and dodeca borane (12) anion.

UNIT – II

Topic –1: Thermodynamic and Kinetic Aspects of metal complexes: **5 Hrs**

A brief out line of thermodynamic stability of metal complexes and factors affecting stability of metal complexes. Lability and inertness. Factors affecting lability of metal complexes. Labile and inert complexes on the basis of reaction rate, VBT and CFT.

Topic –2: Bonding in Transition Metal Complexes: **5 Hrs**

Jahn Teller Theorem , Distortation in octahedral complexes. Ligand Field Theory. Molecular energy level diagram and magnetic properties for $[CoF_6]^{3-}$, $[Co(NH_3)_6]^{3-}$, $[FeF_6]^{3-}$, $[Fe(CN)_6]^{3-}$, π- bonding in octahedral complexes.

UNIT – III

Topic –1: Metal Carbonyls: **5 Hrs**

Definition, classification, nature of bonding in metal carbonyls, structure and IR spectra in $Ni(CO)_4$;$Fe(CO)_5$, $Fe_2(CO)_9$,$Mn_2(CO)_{10}$, $Cr(CO)_6$, $Co_2(CO)_8$.

Topic –2: Corrosion and its Protection: **5 Hrs**

Definition and importance of corrosion, Types of corrosion: uniform, pitting, inter crystalline and stress cracking corrosion, electro-chemical theory of corrosion. Protection methods: Coating, Inhibitors (Organic, Inorganic, anodic, cathodic), anodic and cathodic protection.

Reference Books:

1) Introduction to quantum chemistry, by A. K. Chandra,Tata Mc.Graw Hill,Delhi.
2) Quantum mechanics in chemistry by M. H. Hanna
3) Theoretical Inorganic chemistry by Day & Selbin , Affiliated East West Publ. Pvt. Ltd.
4) Advanced Inorganic Chemistry by Cotton and Wilkinson, John Wiley.
   Uni. Chemistry by B. H. Mohan
5) Structural Inorganic chemistry by A. F. Wells.
6) Chemical Bonding - an introduction By Rawal, Patel & Patel.
7) Environmental Chemistry by Amritha anand and Sugumar.
8) Basic Inorganic Chemistry by Cotton and Wilkinson
9) A Text book of Inorganic Chemistry by P.L.Soni
10) Introduction to Inorganic Chemistry by Durrant and Durrant
11) Modern Co-ordination Chemistry by R. Lewis and R.G. Wilkinson.
12) Inorganic Chemistry- Principles of structure and reactivity by J.E. Huhhey and E.A. Keiter.
13) Application of Group Theory to Chemistry by P.K.Bhattacharya., Himalaya Publishing House, Mumbai.
14) Quantum Rasayan, University Granth Nirman Board (Gujarat).
15) Environmental Chemistry by A.K. De.
16) The corrosion and oxidation of metals by Evans U.R. (1961), Arnold, London.
17) Corrosion, Causes and Prevention, Speller. F.,Mc Grqw Hill,New york.
18) Dhatvik Ksharan, Part-I & II by M.N. Desai, Uni. Granth Nirman Board (Gujarat).
19) Corrosion and Corrosion Control, Uhlig H., Wiley.
20) Corrosion Engineering by Fontana M.G. and Green N.D., Mc Graw Hi.

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Third Year B. Sc. Semester -V
Chemistry Paper – VII (Organic Chemistry)
Proposed syllabus from June 2021

50 Marks (External) **Total: 30 Hrs**
20 Marks (Internal) **Time: 2 Hrs. (Uni. Exam)**

UNIT – I

(A) Reaction Mechanism: 7 Hrs

(a) Different types of mechanism for Esterification and Hydrolysis: B_{AC}^2, A_{AC}^2, A_{AC}^1, A_{AL}^1

(b) Mechanism of formation and hydrolysis of amides.

(c) Pyrolytic elimination : Cope and Chugaev reaction.

(d) Organic Name Reaction: Knoevenagel Reaction, Reformatsky Reaction, Claisen Condensation Reaction.

(B) Aromaticity: 3 Hrs

Introduction to Aromaticity, Huckel's Rule, Aromatic Character of Arenes, Definition & Examples of Aromatic, Non-Aromatic, Anti-Aromatic Compounds (Benzenoids and Non-Benzenoids).

UNIT – II

(A) Alkaloids: 5 Hrs

The occurrence, Classification, General methods to determine their structure, Analytical and Synthetic evidence to prove the structure of Nicotine and Papavarine.

(B) Vitamins and Hormons: 5 Hrs

General Introduction, Classification, Structural determinations and Synthesis of Pyridoxine, Vitamin – C, Thyroxine and Adrenalene.

UNIT – III

(A) Synthetic Drugs: 5 Hrs

Classification, based on pharmacological action, synthesis and uses of Amylnitrate, **Chloroquine**, Pyrimethamine, **Sulpha Pyrimidine**, Diazepam, Lidocaine, Chlorpropamide, Dapsone, Isoniazide, 5-Fluoro Uracil.

(B) Polypeptides: 5Hrs

Definition & only Structures of Amino acid (in Tabular form) , Synthesis of peptide by Merry Field Method, End group analysis, N-terminal determination, Sanger's method, Edman method, C-terminal determination by generation of amino alcohol and using digestive enzymes. End group analysis, selective hydrolysis of peptides classical levels of protein structure, Protein denaturation.

Reference Books:

1) Mechanism and Structure in organic chemistry-Goulde. S.
2) Reaction mechanism in organic chemistry by Mukhargy & Singh
3) Principles of reaction mechanism in organic chemistry by Dharmaraha & Chawla
4) Organic reaction mechanism by Bansal Tata Mac. Hill
5) Organic Chemistry (Vol I & II) 6 th Edn, I. L. Finar.
6) Organic Chemistry by Hendrickson, Cram & Hammond
7) Organic Chemistry by Brown R. F.
8) Organic Chemistry by Solomon W. Graham
9) Principles of Organic Synthesis- R. O. C. Norman
10) Basic Principles of Organic chemistry, by R. Y. Caserio, W. A. Benjamin
11) May's Chemistry of synthetic Drugs by Dyson.
12) Chemistry of drugs , Ener and Caldwell
13) Synthetic drugs by Tyagi and Yadav.
14) Synthetic Organic Chemistry by O. P. Agarwal
15) Organic Chemistry by Morrison and Boyd.
16) Chemistry of organic Natural Product Vol. I & II by O. P. Agarwal.
17) Chemistry of synthetic drugs by Trivedi
18) Principles of Medicinal Chemistry Vol. I & II by S. S. Kadam, K. R. Mahadik, K. G. Bothara (Nirali Prakashan)
19) Medicinal Chemsitry By Asuthosh kar 4/e
20) Organic reactions & their mechanism by P. S. Kalsi, New age international publishers
21) **Organic Name Reactions by Gautam Brahmachari, Narosa Publishing House, New Delhi.**
22) **Organic Chemistry, 8th edition by Paula Yurkanis Bruice, University of California, Santa Barbara.**

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Third Year B. Sc. Semester -V
Chemistry Paper – VIII (Physical Chemistry)
Proposed syllabus from June 2021

50 Marks (External) **Total: 30 Hrs**
20 Marks (Internal) **Time: 2 Hrs. (Uni. Exam)**

UNIT – I

A - OPEN SYSTEM THERMODYNAMICS 5 Hrs

Partial molal free energy, (chemical potential), Derivation of Gibb's Duhem Equation, chemical potential in case of a system of ideal gases. Concept of fugacity, Fugacity function, Fugacity at low pressures, Physical significance of fugacity, Graphical method for determination of fugacity, Lewis fugacity rule. Activity and activity coefficient (Only concept). Standard state, Standard state of Solid, Liquid and Gas, Numerical problems**.**

B - THE THIRD LAW OF THERMODYNAMICS 5 Hrs

The Nernst Heat Theorem (NHT), limitations of NHT, Statement of The third law of Thermodynamics, Consequence of third law of thermodynamics, Determination of absolute entropy of gases and liquids and solid, Applications of third law of thermodynamics, Concept of residual entropy, Exceptions to the third law of thermodynamics, Numerical problems.

UNIT-II

A - BASICS OF ELECTRODICS 4 Hrs

Concept of Oxidation and Reduction, Electrochemical series (Reduction series), definition of electrode, half-cell and cell, single electrode potential, sign of electrode potential, standard electrode potential (oxidation and reduction potential), Electrochemical process, Galvanic cell with example of Daniel cell, EMF of a cell and its measurements, Standard Weston cell, Different types of reversible electrodes, Determination of single electrode potential, Calculation of standard EMF of cell and Determination of cell reaction, Standard Hydrogen Electrode, Calomel electrode and Ag –AgCl electrode. Numerical problems.

B-CLASIFICATION OF ELECTROCHEMICAL CELL AND THERMODYNAMICS 6 Hrs

Chemical and concentration cell, electrode and electrolyte concentration cell, liquid junction potential (LJP), salt bridge in elimination of LJP, concentration cell with and without transference [with derivation of equation for emf of cell and LJP]

Free energy change and Electrical energy, Prediction of spontaneity of cell reaction, Relation of standard free energy change with equilibrium constant, Temperature coefficient of EMF of a cell, Entropy change and Enthalpy change of cell reaction. Numerical problems.

UNIT – III

NUCLEAR CHEMISTRY **10 Hrs**

Stable and unstable isotopes, separation of isotopes by different methods, gaseous diffusion, thermal diffusion, distillation, chemical exchange methods, Bainbridge velocity focusing mass spectrograph, Dempster's direction focusing mass spectrograph.

Particle accelerators : Linear accelerator, Cyclotron, Discovery of artificial disintegration, Classification of nuclear reaction based on overall energy transformations and - particles used as projectiles, Merits and demerits of different projectiles, Numerical problems

REFERENCE BOOKS:

1) Elements of physical chemistry by Glasstone and Lewis
2) Physical chemistry by G.M. Barrow
3) Physical chemistry by W. Moore
4) Physical chemistry by Atkins
5) Physical chemistry by G.K.Vemulapalli
6) Physical chemistry by B.K.Sharma
7) Physical chemistry by Gurdeep raj
8) Physical chemistry by Puri, Pathania, Sharma
9) Essential of Physical chemistry by Bahl and Bahl
10) Physical chemistry by Negi and Anand
11) Physical chemistry by K.L. KapoorVol 1-5.
12) Physical chemistry by Baliga,Dhavale and ZaveriVol 1-3.
13) Physical chemistry by Dr. S. Pahari
14) Nuclear chemistry by Arnikar
15) Electro chemistry by S. Glasstone
16) Electrochemistry by B.K.Sharma
17) Modern Electrochemistry by J'omBockris and Redd
18) Physical Chemistry by D.N. Bajpai.

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Third Year B. Sc. Semester -V
Chemistry Paper – IX (Industrial Chemistry)
Proposed syllabus from June 2021

50 Marks (External) **Total: 30 Hrs**
20 Marks (Internal) **Time: 2 Hrs. (Uni. Exam)**

UNIT-I

(A) Manufacture with flowsheet & uses of **6 Hrs**

Acrylonitrile (Sohio Process), Bisphenol-A, Styrene, **Industrial manufacture and uses of Polyolifines: Poly ethylene (HDPE & LDPE) and Polypropylene**.

(B) Fluorocarbons **4 Hrs**

Nomenclature of chloro fluoro derivatives of Methane & Ethane, **General methods of preparation, Properties** and Uses of Fluoro carbons, Manufacture of Freon-12 from fluorspar, Manufacture of Freon-12 from Vinylidine fluoride. Pollution hazards of Fluoro carbons.

UNIT-II

Unit Processes in Organic Chemistry **10 Hrs**

(A)Nitration

Definition, Nitrating agent, Reaction mechanism of Nitration. Nitration of Acetylene, Benzene, **Toluene** and Naphthalene.
Artificial perfumes: Musk xylene, Musk ketone, Musk ambrette.
Explosives: Trinitrophenol, Trinitrotoluene, Trinitro glycerine, Emitol.

(B) Amination

Definition, Amination by reduction: Metal - Acid reduction **(strong and weak)**, Metal - Alkali reduction **(strong and weak)**, Catalytic reduction, Sulphide reduction.
Amination by ammonolysis : Amination of Chlorobenzene, Phenol & Benzene sulphonic acid.
Importance of amination in the manufacture of Bismark Brown G dye from m-phenylene diamine, Synthetic fibre (Nylon 6,6) from HMDA, Methyl Red Indicator from Anthranilic acid, Cyclonite explosive from Hexamethylene tetramine.

(C) Sulphonation - Definition, Sulphonating agents, Mechanism of sulphonation. Sulphonation of Benzene, Toluene and **Anthracene, Preparation of Phenol and Resorcinol from benzene**.
Importance of Sulphonation reaction in industry in the manufacture of Saccharine, Chloramine T and Alizarine Red S.

UNIT-III

Metallurgy of different metals (occurrence, extraction, properties and uses) 10 Hrs

(A) (1) Tungsten (2) Molybdenum (3) Chromium (4) Aluminium

(B) Some small scale preparation of

(1) Safety matches

(2) Naphthalene balls

(3) Wax candles

(4) Shoe polish

(5) Writing/ fountain pen ink

(6) Chalk crayons

(7) Plaster of paris.

Reference books:

1) Shreve Chemical Process Industries 5 ed. George. T. Austin . Mag. Hill. Book Agency
2) Reigel's Industrial Chemistry Ed. By James A. Kent.
3) Unit Process in Organic Synthesis by D. H. Groggins.
4) The Chemical Process Industries by R. Norris Shreve; McGraw-Hill Book Company,Ltd.
5) An Introduction to Industrial Chemistry by Peter Wiseman , Applied Science Pub. Ltd. London.
6) Industrial Chemistry by Clerk Ranken; Andesite Press.
7) Industrial Chemistry by B. K. Sharma Goel Pub.
8) Quantitative Analysis by R.A.Day & A L Underwood, 6th ed. Pub. Prentice Hall of India ltd.
9) Vogel's Text Book Inorganic Quantitative Analysis, 6 th ed.

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Third Year B. Sc. Semester -V
Chemistry Paper – X (Analytical Chemistry)
Proposed syllabus from June 2021

50 Marks (External) **Total: 30 Hrs**
20 Marks (Internal) **Time: 2 Hrs. (Uni. Exam)**

UNIT-I

(A)INTRODUTION TO ANALYTICAL CHEMISTRY: 03Hrs

Chemical and Instrumental Analysis (advantages and disadvantages) Overview of methods used in Quantitative analysis (classification of classical and instrumental analysis), Factors affecting the choice of analytical methods (in brief), **Step in quantitative analysis (Flow diagram), Analytical methods on the basis of Sample size (in brief), Sampling methods. Sampling in different physical states**

(B)TREATMENT OF ANALYTICAL DATA

Significant figures and rules of computation. **07 Hrs**

Error Definition, Types of errors: Determinates errors, indeterminate errors, constant and proportional errors. Define and explain the following terms – Accuracy and Precision, mean, median, deviation, average deviation, standard deviation, variance, coefficient of variation, relative mean deviation, range, absolute errors, relative errors. Minimization of determinates errors, Normal error curve. Rejection of result from a set of results, 2.5 d rule, 4.0 d rule and Q-test. (Problems based on above topics)

UNIT-II

GRAVIMETRIC ANALYSIS : 10 Hrs

Factors affecting solubility of precipitates. (1) Common ion (2) Diverse ions (3) pH (4) Hydrolysis (5) Complex formation (With Numerical problems) The precipitation process,. Nucleation growth. Von Weimarn's theory of relative super saturation . Digestion of precipitates Factor affecting quality of precipitate: Co-precipitation and post precipitation Precipitation from homogeneous solution with illustration of Barium and Aluminum. Thermogravimetry, general principle,

General applications of TGA : Determination of purity and thermal stability of primary and secondary standards, determination of correct drying temperature, determination of curie point, automatic determination of mixtures, analysis of alloys, Specific application in analysis of (1) CaC_2O_4, H_2O (2) MgC_2O_4 , $2H_2O$ [No instrumentation].

UNIT-III **10 Hrs**

TITRIMETRIC ANALYSIS :

(A) ACID BASE TITRATION : **05 Hrs**

Different terms for titrant, titrand, analyte, end point and equivalence point. Theory of acid base indicators. Indicator range. Selection of proper indicators Calculation of pH at different stages of titrations of monobasic and dibasic acid with strong base Construction of titration curve, Titration of carbonate mixture and **amino acids.** Problems

(B) COMPLEXOMETRIC TITRATIONS:

05 Hrs

EDTA titration, Absolute and conditional stability constant, Distribution of various species of EDTA as function of pH. Absolute and conditional stability constants. Derivation of factors : α 4 for effect of pH, β4 for the effect of auxiliary complexing agent. Construction of Titration curves: Theory of metallochromic indicators, Masking, Demasking and kinetic masking. Types of EDTA titrations. Problems

Reference Books:

1) Quantitative Analysis by R. A. Day & A. L. Underwood, 6 th ed. Pub. Prentice Hall of India ltd.
2) Vogel's Text Book Inorganic Quantitative Analysis, 6 th ed.
3) Analytical Chemistry (Principles & Technique) by Lary G. Hargis.
4) Fundamental of Analytical Chemistry by Skoog D. A. & West D. M.
5) Holler F.J.Instrumental Methods of Analysis by B. K. Sharma
6) Instrumental analysis by R.D.Braun Mc Graw Hill.
7) Analytical Chemistry by Gary Christian Instrumental methods of chemical analysis Dr.H.Kaur. Pragati prakashan Meerut.
8) College Analytical Chemistry by Mangaonkar, Teckchandani, Sathe, Ghalsasi, Jain (Himalaya Publication House)

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Third Year B. Sc. Semester -V
Chemistry Paper – XI (General Chemistry)
Proposed syllabus from June 2021

50 Marks (External) **Total: 30 Hrs**
20 Marks (Internal) **Time: 2 Hrs. (Uni. Exam)**

UNIT – I

IR SPECTROSCOPY 10 Hrs.

IR absorption spectroscopy: Terms, Instrumentation, Molecular vibrations, Hook's law, Selection rules, Intensity and position of IR bands. Measurement of IR spectrum, Finger print region, Characteristics absorption of various functional groups. Application of IR spectra. Factors influencing IR vibrational frequency.

UNIT- II

[A] LABORATORY HYGENE AND SAFETY 03 Hrs.

1. Handling of chemicals [Carcinogenic chemical, Toxic and poisonous chemicals], List of Hazardous chemicals.
2. General procedure for avoiding accidents [Apron, Safety goggles, Gloves pipetting process]
3. First aid technique [Organic substance in skin, Acid on clothing, Burns in eyes, Inhalation of toxic vapors etc…]
4. Colour codes and symbols for safety in chemical plants (i) classification of colour codes and symbols (ii) colour codes for gas cylinders and (iii) colour codes for pipelines.

[B] CHEMISTRY OF COSMETICS AND PERFUMES 07 Hrs.

A general study including preparation and uses of the following: Hair dye, hair spray, shampoo, suntan lotions, face powder, lipsticks, talcum powder, nail enamel, creams (cold, vanishing and shaving creams), antiperspirants and artificial flavours. Essential oils and their importance in cosmetic industries with reference to Eugenol, Geraniol, sandalwood oil, eucalyptus, rose oil, 2-phenyl ethyl alcohol, Jasmone, Civetone, Muscone.

UNIT- III **10 Hrs.**

UNITS OF SOLUTION AND STANDARD SOLUTION

Definitions of terms: Solute, Solvent, and Solution Composition of solution- normal solution, molar solution, molal solution, mole fraction, % solution, saturated, unsaturated and supersaturated solution and solubility. Effect of temp. on various units of concentration. Inter conversion of one unit into another unit. Preparation of solutions of some primary standard substances (e.g. Oxalic acid, succinic acid, KHP, $K_2Cr_2O_7$, As_2O_3)

Standardisation of the following solution using primary standard solutions/ standardised solution.

1. NaOH/KOH
2. I_2 solution
3. $KMnO_4$
4. Acids
5. $Na_2S_2O_3$ solution.

Reference books:

1) Elementary Organic Spectroscopy by Y.L.Sharma.
2) Organic Spectroscopy by K.K.Sharma.
3) Quantitative analysis by R.A. Day and A.L. Underwood.
4) Elements of Analytical Chemistry by R. Gopalan ; P. S. Subramanian and K. Rengarajan.
5) Vogel's qualitative inorganic analysis.
6) Vogel's qualitative organic analysis.
7) Industrial safety management, by L.M. Desmukh, Tata Mc Graw Hill, New Delhi, 2006. **(UNIT-II-[A]-4.)**
8) Industrial safety, Health & Environment management, Sunil S. Rao, R.K. Jain. Khanna Publishers, New Delhi, 2006. **(UNIT-II-[A]-4.)**
9) E. Stocchi: Industrial Chemistry, Vol -I, Ellis Horwood Ltd. UK. **(UNIT-II-[B])**
10) P.C. Jain, M. Jain: Engineering Chemistry, Dhanpat Rai & Sons, Delhi. **(UNIT-II-[B])**
11) Sharma, B.K. & Gaur, H. Industrial Chemistry, Goel Publishing House, Meerut (1996). **(UNIT-II-[B])**

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Third Year B. Sc. Semester -V
General elective subject (Petrochemicals)
Proposed syllabus from June 2021

50 Marks (External) **Total: 30 Hrs**
20 Marks (Internal) **Time: 2 Hrs. (Uni. Exam)**

UNIT – I

Topic-1: Source of Petrochemicals: **4 Hrs**

(a) Natural gas: Composition, Natural gas as Petrochemical feed stock.

(a) Crude oil: Composition, Distillation and Refining, Utilization of various fractions (oil product)

Topic-2: Classification of Petrochemicals: **6 Hrs**

First, Second and Third generation petrochemicals.

Conversion process: Cracking reforming, Isomerisation, Hydrogenation, Alkylation and Hydrodealkylation, Dehydrocyclisation of petroleum products, Polymerization of gaseous hydrocarbons.

UNIT – II

Topic-1: **5 Hrs**

Petrochemicals obtained from **C1** cut of petroleum manufacture and application of Methanol, Synthesis gas, Ammonia, HCN, Formaldehyde, Hexamethylene tetramine, Chlorinated methanes, Perchloro ethylene.

Topic-2: **5 Hrs**

Synthesis and uses of H-acid, J-acid, Neville Winther's acid, DASDA, **Procion Red, Cellitone Scarlet-B, Indanthrene Khakhi GG, Blankophor B, Sulphamylon, Chloramphenicol**

UNIT – III

Topic-1: **7 Hrs**

Petrochemicals obtained from **C2** cut of petroleum [Ethylene and Acetylene]

Manufacture and industrial applications of chemicals obtained from Ethylene: Ethanol, Acetaldehyde (Wacker-Chemie process), Ethylene Oxide, Ethylene Glycol, Ethanolamines, Acrylonitrile, Styrene, Vinyl acetate. Manufacture and industrial applications of chemicals obtained from Acetylene, Acrylic acid, Acrylonitrile, Vinylchloride, Vinylacetate, Acetaldehyde, Chloroprene, Trichloethylene, Methyl vinyl ether.

Topic-2: **3 Hrs**

Industrial Fuels: Natural fuels, Synthetic fuels, Hydrogen- Fuel of tomorrow, Fuel for rocket (Hydrazine)

Reference Books:

1) Introduction to petrochemicals by Sukumar Maiti oxford and IBH pubs co. New Delhi.
2) A text on petrochemicals by Dr. B. K. Bhaskar Rao, Khanna pubs. New Delhi.
3) Chemicals from petroleum by A. L. Wadams (ELBS and John Murray London)
4) Petrochemicals by S. L. Venkatewarn (Colour pubs. Pvt. Ltd. Bombay)
5) Petrochemicals digest by MGK Manon (Asia Publishing house Bombay)
6) Hand book of industrial chemicals Vol-I by K. M. Shah (Multi tech publishing co. 15 Yogesh, Hingwala lane, Ghatkoper (E) Bombay-400077)
7) Industrial chemistry including chemical engineering by B. K. Sharma, Goel pubs house, Meerut.
8) Hand Book of Synthetic Dyes and Pigments (Vol. II) By K. M. Shah, Multi-tech Publishing Co.
9) Synthetic dyes by G. R. Chatwal, Himalaya Publishers.
10) Synthetic Drugs by G. R. Chatwal, Himalaya Publishers.

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Third Year B. Sc. Semester -V
General elective subject (Dyes)
Proposed syllabus from June 2021

50 Marks (External) **Total: 30 Hrs**
20 Marks (Internal) **Time: 2 Hrs. (Uni. Exam)**

UNIT-I

Topic –1: Dyes intermediates: 4 Hrs

Name and structure of Benzene, naphthalene and anthraquinone intermediates useful in the dyestuff industry, synthesis of 4-amino-2-methoxy toluene, 2,3-diamino anthraquinone, Chromotropic acid, Bromamine acid.

Topic –2: Diazotisation and coupling: (Azo dyes) 6 Hrs

Definition and mechanism of diazotization, common method of diazotization, common and special coupling components, laws of coupling reaction with phenols and amines of benzene and naphthalene series, monoazo dyes, synthesis of Direct Black EW, Orange - II, Orange – IV, Orange – III, Eriochrome Black – A.

UNIT – II

Topic –1: Disperse Dyes: 5 Hrs

Definition, classification of disperse dyes with examples, application of disperse dyes, synthesis of Cellitone Scarlet B, Dispersol Blue, Golden Yellow VIII.

Topic –2: Dyes and pigments: 5 Hrs

Relation between colour and chemical constitution with reference to Witt's theory, definition of dyes & pigments, difference between dyes & pigments.

Classification of dyes based on,

(a) Chemical constitution with illustrative example.

(b) Methods of application to fibres, synthesis of Pigment Yellow G, Benzidine Orange, Pigments Orange VI.

UNIT – III

Vat dyes: 10 Hrs

(a) Definition and general account of vat dyes, Indigo obtained from natural source, Synthesis of Indigo by Heumann process and Sandmeyer process. Halogen derivatives of Indigo (Brilliant Indigo – 4B, Brilliant Indigo-4G, 5,5- dibromoindigo Vat Blue -35) Synthesis of thioindigo by anthranilic acid, halogen derivatives of Thioindigo, Indanthrene Red Violet RRN.

(b) Anthraquinone Vat dyes: Bohn's discovery of Anthraquinone Vat dyes, classification with reference to anthraquinone derivatives synthesis of Caledon Jade Green XBN, Indanthrene Yellow 5GK, Indanthrene Brilliant Scarlet –RK.

Reference books:

1) Synthetic organic chemistry by O.P. Agrawal
2) The chemistry of synthetic dyes and pigments by H. A. Lubes
3) Chemistry of synthetic dyes VOL I to VII by K. Venkatraman
4) An introduction to synthetic dyes by D. W. Ranghekar & P. P. Singh
5) A hand book of synthetic dyes and their application by C. T. Bhastana, V. H.Raichura & Others.
6) Chemistry of dyes & Principles of dyeing Vol II by V. A. Shehai
7) Chemistry of synthetic dyes by I. G. Vashi
8) Chemistry of dyes and pigments by K. M. Shah
9) Synthetic dyes by G. R. Chatwal
10) Synthetic dyes and pigments by E. N. Abrahart.
11) High tech Dyes by Smith.

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Third Year B. Sc. Semester -V
General elective subject (Drugs)
Proposed syllabus from June 2021

50 Marks (External) **Total: 30 Hrs**
20 Marks (Internal) **Time: 2 Hrs. (Uni. Exam)**

UNIT-I

Topic – 1: Drugs: Classifications-Terminology 05 Hrs

Definition of the term drug. Drugs obtained from plants. Different class of the drugs. Explanation of the following terms: Agonist, Antagonist, Receptors, Pharmacophore, Pro-drug, Soft-drug, CNS depressants, CNS stimulants, Mode of action. Brief accounts of the following agents giving the name and structures of two important drugs in each case (1) Antifungal agents (2) Antiviral agents (3) Anti-cancer or Cytotoxic drugs (4) Non-Steroidal Anti-Inflammatory Drugs (NSAIDS).

Topic – 2: Micro-organism and Diseases 05 Hrs

Brief account of microbes: Bacteria, Fungi, Protozoa, Virus. Classification of the bacteria based on shape, Gram staining and Ziehl–Neelsen staining. Names of at least two diseases in case of each of the following types of infection and also the name of microbes responsible for the same: (1) Respiratory tract infections (2) Gastro intestinal tract infections (3) Urinary tract infections (4) Urethritis and sexually transmitted diseases (5) Skin and soft tissue infections (6) Cardio vascular system infections (7) Central nervous system infections. Name of important drug for each of the following diseases: (1) Typhoid (2) Dysentery (3) Pneumonia (4) Meningitis (5) Gastroenteritis (6) Actinomycosis.

UNIT-II

Topic – 1: Antibiotics 05 Hrs

Definition. History of discovery of penicillin. Structural variations in penicillin. Broad spectrum antibiotics and their therapeutic uses. Sources, Structural formula and Therapeutic uses of Streptomycin, Tetracycline, Doxycycline, Cycloserine, Chloramphenicol and Some recent antibiotics. Synthesis of Ampicillin.

Topic – 2: Sulfa drugs 05 Hrs

History of discovery and development of sulfa drugs. Structural variations among sulfonamides. Mode of action of Sulfonamides. Therapeutics uses and antimicrobials activity of sulfonamides. Synthesis and uses of Sulpfadimidine, Sulfaguanidine, Sulfisoxazole (Sulfafurazole), Sulfacetamide, Succinyl sulfathiazole, Sulfanilamide, Sulfadiazine, Sulfapyridine.

UNIT-III

Topic – 1: Coagulants and Anti coagulants 05 Hrs

Definition, Fibrin-Fibrinogen, thrombin prothrombin role of calcium in blood clotting. Classification and structural variations. Blood coagulants, Vitamin K group as blood coagulants. Synthesis and uses of Warfarin, Dicoumarol, Bromindone.

Topic – 2: Analgesics 05 Hrs

Definition, classification and structural variations. Synthesis and uses of Meperidine (Pethidine), Ibuprofen, Aspirin, Meclofenamate sodium, Oxyphenbutazone, Paracetamol, Novalgin.

Reference Books:

1) May's Chemistry of synthetic Drugs by Dyson.
2) Chemistry of drugs, Ener and Caldwell.
3) Synthetic drugs by Tyagi and Yadav.
4) Synthetic Drugs by G. R. Chatwal, Himalaya Publishers.
5) The Organic Chemistry of Drug Synthesis by Daniel Lednicer & L.A.Mitscher.
6) Drugs by V.K.Ahluwalia Pub. Ane Books Pvt. Ltd.
7) Medicinal Chemistry by Balkishan Razdan, Pub. CBS Publishers.
8) Pharmaceutical Organic Chemistry by S.K.Dewan, Pub. Narosa.
9) Medicinal Chemistry - a Molecular and Biochemical Approach, by Thomas Nogrady & Donald F Weaver.
10) Pharmaceutical Organic Chemistry by Shyam Singh Pub. Himalaya Publishers.
11) Medicinal Chemistry by G Patrick. Pub. Viva Books.
12) Burger's Medicinal Chemistry & Drug Discovery. Ed. by D. J. Abraham.

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Third Year B. Sc. Semester -V
Chemistry Practical
Proposed syllabus from June 2021

120 Marks (External) **Total: 30 Hrs**
60 Marks (Internal) **Time: 7 Hrs. (Uni. Exam) Two days**

1. INORGANIC QUALITATIVE ANALYSIS

LIST OF INORGANIC CHEMICALS USED FOR INORGANIC QUALITATIVE ANALYSIS

CHLORIDES- Cu^{+2}, Cd^{+2}, Fe^{+3}, Mn^{+2}, Co^{+2}, Ni^{+2}, Ca^{+2}, Ba^{+2}, Sr^{+2}, Na^{+1}, K^{+1}, NH_4^{+1}.
BROMIDES- Sr^{+2}, Na^{+1}, K^{+1}, NH_4^{+1}
IODIDE – K^{+1}
NITRITE – Na^{+1}, K^{+1}
NITRATE – Co^{+2}, Ni^{+2}, Ba^{+2}, Sr^{+2}, Na^{+1}, K^{+1}, NH_4^{+1}
SULPHITE – Na^{+1}
SULPHIDE – Zn^{+2}, Sb^{+3}
SULPHATE – Cu^{+2}, Cd^{+2}, Al^{+3}, Fe^{+2}, Zn^{+2}, Mn^{+2}, Co^{+2}, Ni^{+2}, Mg^{+2}, Na^{+1}, K^{+1}, NH_4^{+1}
CARBONATE –Cu^{+2}, Cd^{+2}, Zn^{+2}, Mn^{+2}, Co^{+2}, Ni^{+2}, Ca^{+2}, Ba^{+2}, Sr^{+2}, Mg^{+2}, Na^{+1},K^{+1}, NH_4^{+1}
PHOSPHATE - Cu^{+2}, Al^{+3}, Fe^{+3}, Zn^{+2}, Mn^{+2}, Co^{+2}, Ni^{+2}, Ca^{+2}, Ba^{+2}, Sr^{+2}, Mg^{+2}, Na^{+1}, K^{+1}, NH_4^{+1}
BORATE- Boric Acid

Inorganic qualitative analysis of a mixture containing six radicals. The mixture may be soluble in water or dilute hydrochloric acid or concentrated hydrochloric acid including Chromate and Borate.
N. B. Candidate should perform the analysis of at least 08 mixtures.

2.ORGANIC ESTIMATIONS (Any Four)

1. Determination of amount of ketone (Acetone)
2. Determination of saponification value of an oil.
3. Determination of percentage purity of Aspirin
4. Determination of amount of Formaldehyde in given solution
5. Determination of amount of Ethyl acetate in the given solution
6. Determination of amount of Glycine in the given solution
   (Instead of sample weighing, solutions to be given)

3.CHROMATOGRAPHY

Chromatographic separation of amino acid mixture by ascending paper chromatography
1. Glycine + Methionine
2. Alanine + Methionine
3. Alanine + Valine

4. PHYSICAL EXERCISE

1. To investigate rate of reaction between $K_2S_2O_8$ and KI, $a = b$, $a \neq b$.
2. To investigate rate of reaction between H_2O_2 and KI, $a = b$.
3. Polarimetry: Determination of angle of rotation of given substance using three different dilutions and determination of concentration of unknown solution. Sugar, Glucose, Tartaric acid.
4. pH metry: To measure pH of different buffer solution and to study the buffer capacity.
5. pH metry: To determine the dissociation constant of weak acid (CH_3COOH) and weak base (NH_4OH) by different dilutions.
6. Conductometry: To determine the amount of $BaCl_2$ in the given solution using K_2CrO_4 solution.
7. Conductometry: To determine the amount of NaCl in the given solution using $AgNO_3$ solution.
8. Potentiometry: To determine the normality of given HCl solution using 0.5N NaOH.
9. Potentiometry: To determine the solubility and solubility product of sparingly soluble salt AgCl by the titration of $AgNO_3$ and NaCl.

   (Any SIX including one kinetic experiment should be performed.)

5. Viva Based on Above Practicals :

Day	Time	Group A	Group B
1st Day	10:00 A.M. to 1:30 P.M.	Inorganic Qualitative	Physical Exercise
	2.00 P.M. to 5.30 P.M.	Organic Estimation	Paper Chromatography & Viva-Voce
2nd Day	10.30 P.M to1.30 P.M.	Physical Exercise	Inorganic Qualitative
	2.00 P.M. to 5.30 P.M.	Paper Chromatography & Viva-Voce	Organic Estimation

No.	Exercise	Marks
1.	Inorganic Qualitative Analysis	35
2.	Organic Estimation	30
3.	Physical Exercise	35
4.	Paper Chromatography	10
5.	Viva-Voce	10
	Total Marks	120

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T. Y. B. Sc.
Health Science Semester - V
(Proposed New Syllabus)

Unit : I Introduction to Health.

- Concept of health, Definition, WHO definition.
- Dimension of health, Positive health.
- Determination of health, Responsibility for health.
- Health and development.

Unit : II Introduction to Diseases.

- Concept of disease, Germ theory, Causative factors.
- Changing pattern of disease, New immersing diseases..
- Types of infectious disease, Dynamics of disease transmission.
- Mode of transmission.

Unit : III Nutrition and health

- Nutritional requirement, Balance diet & RDA.
- Major & Minor food factor (Carbohydrates, Proteins, Fat, Vitamins & Minerals)
- Nutrition during Pregnancy & Lactation.
- Nutritional problems/Malnutrition, Low birth weight, Anemia, Protein malnutrition etc.

Unit : IV Health care & health education:

- Hygiene, sanitation, immunization.
- Communication Process.
- Types of communication.
- Aims and objectives of health education.

REFERENCE BOOKS

1. Park's Textbook of Preventive & Social Medicine by Park
2. Anatomy & Physiology for Nurses by Smith (ELBS)
3. Text book of Medical Biochemistry by Chatterjee (Jaypee)
4. Harper's illustrated Biochemistry 26th edition (MacGraw-Hill)
5. Food & Nutrition volume – I & II by Swaminathan (Bappco)
6. Anatomy, Physiology & Health education by Rahul Phate (Career)

Veer Narmad South Gujarat University, SURAT.

T. Y. B. Sc.
Health Science Semester - VI
(Proposed New Syllabus)

Unit : I Infectious disease.

(Causative agent, epidemiology, symptoms, treatment & prevention)

- Air borne infection – TB, Pneumonia, ARI, Chicken pox
- Food & Water borne infection – Cholera, Typhoid, Polio, Hepatitis
- Skin, STD & zoonosis – Gonorrhea, AIDS, Rabies
- Parasitic infection – Amoebiasis, Malaria, Ascariasis,Hook worm

Unit : II Non infectious disease.

(Definition, Classification or types, Risk factor or cause & prevention)

- Coronary heart disease.
- Diabetes.
- Hyper tension, obesity.
- Cancer.

Unit : III Environment and health:

- Water sources, pollution, purification.
- Water Quality and standards.
- Composition of air, Air pollution and control.
- Disposal of wastes - solid and liquid.

Unit : IV Occupational health:

- Occupational hazards.
- Occupational diseases due to physical agent.
- Occupational diseases due to chemical agent.
- Occupational diseases due to biological agent.

REFERENCE BOOKS

1. Park's Textbook of Preventive & Social Medicine by Park
2. Microbiology, sixth edition by Prescott, Harley & Klein (McGraw-Hill)
3. Microbiology by Pelzar, Chan & Kreig (Tata McGraw-Hill)
4. Anatomy & Physiology for Nurses by Smith (ELBS)
5. Review of Medical Microbiology by Jawetz & Melnick (Lange)
6. Anatomy, Physiology & Health education by Rahul Phate (Career)

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

CBCS Semester system

T. Y. B. Sc. BIOSCIENCE

Semester V & VI (New)

Title Summary for B. Sc. Bioscience Syllabus
(Effective from June 2021)

Semester	Paper	Title
V	BS 501	MICROBIAL TAXONOMY & VIROLOGY
	BS 502	BACTERIAL GENETICS & BIOTECHNOLOGY
	BS 503	MICROBIAL METABOLISM
	BS 504	MEDICAL PHYSIOLOGY
	BS 505	CLINICAL BIOCHEMISTRY
	BS 506	HEMATOLOGY & BLOOD BANKING
	BS 500P	PRACTICALS – SEMESTER V
VI	BS 601	MEDICAL MICROBIOLOGY & IMMUNOLOGY
	BS 602	CLINICAL MICROBIOLOGY
	BS 603	FOOD & DAIRY MICROBIOLOGY
	BS 604	ENVIRONMENTAL MICROBIOLOGY
	BS 605	FERMENTATION TECHNOLOGY
	BS 606	FUNDAMENTALS OF BIOINFORMATICS
	BS 600P	PRACTICALS – SEMESTER VI

T. Y. B. Sc. Semester - V
BIOSCIENCE
501: Microbial Taxonomy & Virology

Unit - I Microbial Taxonomy

- Introduction to Microbial Taxonomy.
- Phenetic, Genotypic, Phylogenetic classification & Taxonomic ranks.
- Classical Characteristics and Molecular Characteristics.
- Microbial phylogeny - Phylogenic tree.
- Major division of life, higher level of classification.

Unit - II Bacterial Diversity

- Introduction to Bergey's Manual of Systematic Bacteriology.
- Organization of Bergey's Manual of Systematic Bacteriology.
- Introduction to Archea.
- Characteristics of the major archael physiological groups.
- Characteristics of the major groups of gram negative Photosynthetic bacteria.

Unit - III Classification and Cultivation of Viruses

- Nucleic Acid classification.
- DNA & RNA Viruses: General properties and important Groups.
- Cultivation and Enumeration of Viruses.
- Emerging viruses, Satellites, Viroids and Prions.
- Viruses and cancer, Human cancer viruses.

Unit - IV Viral Replication

- General characteristics of Replication.
- Properties and Replication of Bacteriophage.
- Replication of T-Even phage, Lysogeny.
- Replication of Animal viruses.
- Latent viral infections.

References:

1. Prescott, Harley, and Klein's Microbiology by Wiley, J., & Sherwood, L. 9th Ed., (McGraw-Hill Science/Engineering/Math)
2. Microbiology by Black, J. G., 9th edition (Wiley, John Wiley and Sons , Inc.)
3. Microbiology an Introduction by Tortora G.J., and Funke B.R., 12th Ed., (Benjamin Cummings)
4. Microbiology-Concepts and Application by Pelczar, Chan and Krieg, 5th Ed (McGraw-Hill).

T. Y. B. Sc. Semester - V
BIOSCIENCE
502: Bacterial Genetics & Biotechnology

Unit - I Gene expression

- Gene expression: Translation in prokaryotes.
- Translation in eukaryotes.
- Level of Regulation of gene expression.
- Transcription regulation, Lac operon.
- Regulation of translation.

Unit - II Gene transfer and recombination

- Recombination: Homologous recombination, Site specific recombination.
- Transposable genetic elements.
- Transformation: Natural & Artificial transformation, DNA uptake, electroporation
- Transduction: Generalized, Specialized and Abortive transduction.
- Conjugation: Mechanism of DNA transfers in Gram + ve and Gram – ve bacteria.

Unit - III Introduction to Biotechnology

- Introduction to recombinant technology.
- Enzymes in rDNA technology: Restriction enzymes, DNA ligase.
- Cloning vectors – Plasmid, Phage, Cosmids, BAC & YAC.
- General methods & Screening for chimeric molecule.
- Application of rDNA technology, Transgenic organism.

Unit - IV Advanced techniques.

- Gel electrophoresis.
- DNA finger printing.
- Blot technique.
- DNA hybridization.
- Polymerase chain reaction.

References:

1. Molecular biology & Biotechnology by Walker (Panimas)
2. Text book of Medical Biochemistry by Chatterjee (Jaypee)
3. Harper's Review of Physiological Chemistry (Lange med. Pub)
4. Molecular Biotechnology by Bernrd, Pasterak & Cheryl, 4th ed.(ASM press W. DC)
5. Microbiology, 9th edition by Prescott, Harley & Klein (McGraw-Hill)

T. Y. B. Sc. Semester - V
BIOSCIENCE
503: Microbial Metabolism

Unit - I Introduction to Metabolism

- Fueling process, Chemoorganotrophic fueling.
- Anaerobic respiration.
- Fermentation.
- Aerobic respiration.
- Amphibolic pathway.

Unit - II Carbohydrate Catabolism.

- EM pathway, HMP shunts.
- Entner-Doudoroff pathway.
- Mitochondrion shuttle system, TCA.
- ETC & oxidative phosphorylation.
- Monosaccharide, disaccharide conversion, Glycogen breakdown.

Unit - III Lipid and Protein Catabolism.

- Overview of lipid metabolism, Oxidation of fatty acid, B-oxidation.
- Deamination, Transamination, Decarboxylation.
- Ammonia transport & Urea cycle.
- Chemolithotrophic & chemolithotrophic fueling process.
- Nitrification.

Unit – IV Biosynthesis.

- Principle and precursor metabolites of Anabolism.
- Organization of anabolism, Reductive TCA cycle.
- Gluconeogenesis, Glycogenesis.
- Peptidoglycan synthesis.
- Amino acid biosynthesis, Glyoxylate cycle.

References:

1. Microbial Biochemistry Second Edition by G.N. Cohen (Springer)
2. Text book of Medical Biochemistry by Chatterjee (Jaypee)
3. Harper's illustrated Biochemistry 26th edition (MacGraw-Hill)
4. Biochemistry by Campbell & Farrell 7th ed.
5. Microbial physiology, Fourth edition by Albert g. Moat, John w. Foster, Michael p. Spector. (A john wiley & sons, inc., publication)

T. Y. B. Sc. Semester - V
BIOSCIENCE
504: Medical Physiology

Unit - I Microscopic organization some organs of alimentary tract.

- Esophagus and Stomach.
- Intestine: Small & large.
- Salivary gland, Pancreas.
- Liver.
- Chemical composition & physiological function of some digestive Juice: Saliva, Gastric juice, Pancreatic juice and Bile.

Unit - II Microscopic organization some organs and Gonads.

- Lung
- Heart.
- Kidney.
- Hypothalamus.
- Gonads: Testis & ovary.

Unit - III Introduction to endocrinology.

- Introduction to endocrine glands.
- Hormones – General characteristics.
- Mechanism & Regulation of hormone.
- Hypothalamic hormones.
- Gonadal hormone.

Unit - IV Endocrine glands.

- Pituitary gland.
- Thyroid & parathyroid gland.
- Thyroid abnormalities.
- Adrenal gland.
- Abnormalities of adrenal gland.

References:

1. A Text book of Histology by Bloom (W. Saunder)
2. Text book of Human Anatomy by Hamilton
3. Atlas of Histology by Victor (Williams& Wilkins)
4. Essential of Medical Physiology by K Sembulingam (Jaypee)
5. Illustrated Physiology by Mackena & Callander (Churchill Livingston)
6. Physiological basis of Medical Practice by Best & Tailor (B.I.Waverly)

T. Y. B. Sc. Semester - V
BIOSCIENCE
505: Clinical Biochemistry

Unit - I Liver & Cardiac function tests

- Classification of Liver function tests.
- Bile pigment metabolism & Jaundice.
- Other liver function test.
- Cardiac profile test
- Enzymes in liver & cardiac abnormalities.

Unit - II Kidney, Pancreatic & Thyroid function test

- Classification of Kidney function test
- Glomerular filtration & Clearance test.
- Other kidney function test.
- Pancreatic function test.
- Introduction to thyroid function test

Unit - III Urine & Semen Analysis

- Collection, preservation & types of urine specimen.
- Physical, chemical & microscopic examination of urine.
- Urinary calculi.
- Physiology & collection of seminal fluid.
- Physical, chemical & microscopic examination of semen.

Unit - IV CSF, Sputum & Stool examination.

- Physiology & collection of CSF.
- Physical, chemical & microscopic examination of CSF.
- General Aspect & collection of sputum.
- Routine examination of Sputum.
- Collection & Routine examination of Stool.

References:

1. Medical Laboratory Technology by Praful Godkar (Bhalani pub.)
2. Medical Laboratory Science by Kolhatkar (Tata McGraw-Hill)
3. Clinical Laboratory Methods by Ackermann (Mosby pub.)
4. District Laboratory Practice in Tropical Countries Part I & II by Monika Cheesbraugh (Cambridge)
5. Microbiology, sixth edition by Prescott, Harley & Klein (McGraw-Hill)
6. Textbook of Medical Biochemistry by Chatterjee, 7th ed. (Jaypee)

T. Y. B. Sc. Semester - V
BIOSCIENCE
506: Hematology & Blood Banking

Unit - I Haematopoiesis & Clinical hematology

- Hematopoietic system of the body.
- Erythropoiesis, Leucopoiesis, Thrombopoiesis.
- Blood collection & preservation.
- Hb estimation, DC, ESR, PCV & Blood indices, Routine coagulation tests.
- Introduction to automation in hematology

Unit - II Disorders

- Disorders of RBC: Anemia – Nutritional.
- Anemia –Infection.
- Inherited hemoglobinopathies (SCA, thalassaemia).
- Disorders of WBC: Leukemia, lymphomas & multiple myelomas.
- Coagulation & bleeding disorder.

Unit - III Introduction to blood banking

- Blood transfusion practice.
- Documentation & QC in blood transfusion practice.
- Blood/blood component for transfusion.
- Blood donors, Types of donor, blood donor records.
- General history & screening of the donor.

Unit - IV Testing of blood & Transfusion reaction.

- Blood collection, Preservation & storage of blood/blood component.
- Testing of blood, Blood grouping - ABO (cell, serum, tile method) & Rh typing.
- Compatibility testing (slide, tube & AHG) & serological investigation.
- Introduction to transfusion complication.
- Types, Investigation & Prevention of transfusion reaction.

References:

1. Clinical Hematology by Wintrobe (K. M. Varghese)
2. Practical Hematology by Davis
3. District Laboratory Practice in Tropical Countries Part – I & II by Monika Cheesbraugh (Cambridge)
4. Medical laboratory science by Kolhatkar (Tata McGraw-Hill)
5. Handbook of Blood Banking and Transfusion Medicine by Rao (Jaypee)
6. Hematology - Blood Transfusion Practice (WHO)

T. Y. B. Sc. Semester - V
BIOSCIENCE
500P: BIOSCIENCE PRACTICAL

Practical based on paper 501, 502, 503, 504, 505 & 506
(Time duration: 9 hours/week)

1. Study of Digestive system of Rat. (dissected animal or model)
2. Study of Urinogenital system of Rat. (dissected animal or model) – Male & female
3. Study of Nervous system of Rat. (dissected animal or model)
4. Study of permanent histological section of some organs, endocrine glands & tissues.
5. Physical, chemical & microscopic examination of Urine.
6. Physical, chemical & microscopic examination of Cerebrospinal fluid.
7. Physical, chemical & microscopic examination of Semen.
8. Estimation of serum billirubin.
9. Estimation of serum total protein & albumin.
10. Estimation of serum creatinine.
11. Estimation of serum uric acid.
12. Estimation of serum urea & urea nitrogen.
13. Estimation of serum glucose.
14. Estimation of some serum enzymes
15. Estimation of serum cholesterol.
16. Collection & preservation of blood.
17. Hb estimation by cyanmethaemoglobin method.
18. Determination of Heamatocrite (PCV) & Blood indices.
19. Erythrocyte sediment rate
20. Differential WBC counts.
21. Absolute eosinophil counts & Reticulocyte counts
22. Screening of sickle cell anemia (Dithionate turbidity test)
23. Blood grouping techniques - ABO, Rh, Serum grouping & Tile method
24. Cross-matching (slide, albumin, AHG reagent)

25. Coomb's test
26. Introduction to principle & operational technique of electrophoresis.
27. Preparation of buffer solution. (phosphate, tris-EDTA)
28. Electrophoresis of serum protein.
29. Electrophoresis of haemoglobin for SCA.
30. Estimation of protein by Folin-lowery method.
31. Estimation of reducing sugar by Nelsen-Somogi method.
32. Determination of antibiotic resistant mutant by gradient plate method.
33. Isolation of inducible mutant by UV rays.

References:

1. Practical Biochemistry by Plummer (Tata MacGraw-Hill)
2. Laboratory manual in Biochemistry by Jayaraman (Wiley)
3. Practical Biochemistry by Tikekar
4. Medical Laboratory Technology by Praful Godkar (Bhalani pub.)
5. Medical Laboratory Science by Kolhatkar (Tata McGraw-Hill)
6. Clinical Laboratory Methods by Ackermann (Mosby pub.)
7. Experimental Microbiology, Vol. I & II by Rakesh Patel (Aaditya)
8. Practical Haematology by Davis
9. District Laboratory Practice in Tropical Countries Part – I & II by Monika Cheesbraugh (Cambridge)
10. Atlas of Histology by Victor (Williams& Wilkins)
11. Illustrated Physiology by Mackena & Callander (Churchill Livingston)

T. Y. B. Sc. Semester - VI
BIOSCIENCE
601: Medical Microbiology & Immunology

Unit - I Bacterial diseases

- Air borne disease – Tuberculosis, Pneumonia.
- Food & water borne disease – Cholera, Enteric fever.
- STD - Syphilis, Gonorrhea.
- Soil born disease – Tetanus and Zoonosis – Leptospirosis.
- Nosocomial infection, UTI.

Unit - II Viral & Fungal diseases

- Polio & Rabies.
- Mumps & chicken pox.
- Hepatitis – Hepatitis A & B.
- AIDS and immerging viral infection.
- Candidiasis, Superficial dermatomycosis.

Unit - III Parasitic diseases

- Introduction to Parasitology.
- Protozoan diseases: Amoebiasis, Balantidiasis, Giardiasis & Malaria.
- Introduction to Helminthology, Tape worm infection – Taeniasis.
- Ascariasis & Hookworm infection.
- Filariasis, Threadworm infection & Pin worm infection.

Unit - IV Immunology

- Cytokines: Chemical messenger of immune system.
- Ag –Ab reaction, Opsonization, Neutralization, Compliment system & CFT.
- Agglutination (Direct & indirect), Precipitation, Gel precipitation.
- Introduction to allergic reaction: Ab & Cell mediated allergic reaction.
- Introduction to autoimmune diseases.

References:

1. Medical Microbiology by Dey & Dey (Allied agency)
2. Microbiology, 9th edition by Prescott, Harley & Klein (McGraw-Hill)
3. Text book of Medical Microbiology by Anantnarayan
4. Medical Parasitology by Chaterjee
5. An Introduction to Immunology by Rao
6. Immunology by Nandini Shetty 2nd ed. (New Age Pub)
7. Clinical aspect of Immunology by Gell & Coombs (Blackwell oxford)

T. Y. B. Sc. Semester - VI
BIOSCIENCE
602: Clinical Microbiology

Unit - I. Epidemiology

- Introduction to epidemiology.
- Epidemiological tools.
- Patterns of infectious diseases.
- Emerging and re-emerging infectious diseases and pathways
- Epidemics: Prevention and control.

Unit - II Clinical Microbiology

- Introduction to clinical microbiology
- Collection & aseptic handling of clinical specimen.
- Transport of clinical specimen.
- Microbiological examination of clinical sample.
- Identification of pathogen – rapid method for identification.

Unit - III Antimicrobial chemotherapy

- Chemotherapeutic agent, General characteristics.
- Types & mode of action of drugs.
- Microbial susceptibility testing.
- Antimicrobial sensitivity test - MIC, MBC.
- Diffusion & Tube dilution test.

Unit - IV Advanced techniques.

- Microscopy: Immunofluorescence.
- Automation in Microbiology.
- Polyclonal & Monoclonal antibody, Hybridoma.
- Immunoassay: ELISA & RIA,
- Immunochromatographic & Immunoblot technique.

References:

1. Text book of Medical Microbiology by Anantnarayan.
2. Microbiology, 9th edition by Prescott, Harley & Klein (McGraw-Hill)
3. Immunology by Nandini Shetty 2nd ed. (New Age Pub)
4. District Laboratory Practice in Tropical Countries Part I & II by Monika Cheesbraugh (Cambridge)
5. Medical Microbiology by Dey & Dey (Allied agency)
6. Review of Medical Microbiology by Jawetz & Melnick (Lange)

T. Y. B. Sc. Semester - VI
BIOSCIENCE
603: Food & Dairy Microbiology

Unit - I Introduction to food microbiology

- Food as a substrate for microorganisms
- Principles of food preservation, Asepsis
- Removal of microorganisms, Heat treatments, drying.
- Chemical preservatives.
- Preservation by radiation

Unit - II Food Spoilage

- Contamination and Spoilage of food
- Spoilage of Bread, Vegetables and fruits, Heated canned foods
- Food borne diseases
- Detection of food-borne pathogens
- Food intoxication

Unit - III Microbiology of Fermented Foods

- Chocolate fermentation.
- Production of alcoholic beverages.
- Production of breads.
- Other fermented foods.
- Mushroom Culture

Unit - IV Microbiology of Milk & Milk products.

- Introduction to milk, sources of contamination,
- Pasteurization - principle & types.
- Normal fermentation (curdling), Spoilage of milk.
- Microbiological analysis of milk. (SPC, DCT, MPN, and reduction test)
- Milk products – Cheese & fermented milk & probiotics.

REFERENCES:

1. Applied Microbiology by Vinita Kale (Himalaya)
2. Food Microbiology by Frazier (Tata McGraw-Hill)
3. Food Microbiology by Adams
4. Dairy Microbiology by Mahanta
5. Fundamental of Dairy Microbiology by Prajapati (Ekta prakasan)
6. Microbiology, sixth edition by Prescott, Harley & Klein (McGraw-Hill)

T. Y. B. Sc. Semester - VI
BIOSCIENCE
604: Environmental Microbiology

Unit – I Microbiology of water.

- Introduction, sources of water.
- Purification of water, water quality & standard.
- Collection of water sample, fecal indicator.
- Coliforms & Detection of coliforms – Multiple tube fermentation test, PA - test.
- Membrane filtration technique, defined substrate test.

Unit - II Microbiology of waste water.

- Introduction to sewage, characteristics of sewage.
- Water quality – TOC, COD & BOD.
- Municipal waste water treatment.
- Anaerobic sludge digestion, Disposal of solid waste.
- Wetland treatment, Septic tank home treatment system.

Unit - III Agricultural Microbiology

- Microorganisms in the rhizosphere and their significance, Mycorrhiza
- Soil fertility and phenomenon of mineralization & immobilization of elements. Role of nitrogen fixers, nitrifying, ammonifying, denitrifying, phosphate solubilizing and plant growth promoting bacteria
- Biofertilizers: Innoculants of Rhizobium Azobacter Phosphate Solubilizer
- Biopesticide and Bioinsecticides (Production and Formulation)
- Bioenergy: Liquid Fuel & Gaseous Fuels – Alcohols, Biogas and Hydrogen

Unit - IV Biodegradation & Bioremediation

- Introduction to biodegradation process & types.
- Biodegradation impacts on environment.
- Bioremediation: General Aspects.
- Bioremediation of Hydrocarbons, industrial Wastes & xenobiotics.
- Phytoremediation & types.

References:

1. Applied Microbiology by Vinita Kale (Himalaya)
2. Microbiology, by Prescott, Harley & Klein, 9th ed. (McGraw-Hill)
3. Fundamental Microbiology by Frobisher (W. B. Saunder)
4. Microbiology, fifth edition by Pelzar, Chan & Kreig (Tata McGraw-Hill)
5. Microbial Ecology by Atlas, R.M. and Bartha, R. 4th Ed

T. Y. B. Sc. Semester - VI
BIOSCIENCE
605: Fermentation Technology

Unit - I Introduction to fermentation technology

- Concept of fermentation and fermentation process.
- Screening & strain improvement of industrially important organisms.
- Characteristics of an industrially ideal organism.
- Screening techniques: Primary screening for metabolites.
- Introduction to secondary screening for new metabolites.

Unit - II Fermentation media

- Principles of media formulation.
- Media ingredients: Water, carbon sources, nitrogen sources, minerals, growth factors, buffers, precursors, inducers, inhibitors, antifoam agents.
- Sterilization of media, high-pressure steam continuous sterilization.
- Batch and continuous sterilization.
- Use of filtration: Principle, types of filters.

Unit - III Bioreactor

- Essential features of a bioreactor.
- Stirred tank Bioreactor: Body construction & basic functions.
- Devices for aeration and agitation, pH, temperature, foam & dissolved oxygen
- Bioreactor for specialized purposes: (Alternate methods of mass culture)
- Reactors design for batch fermenter and continuous fermenter.

Unit - IV Downstream Processing

- Introduction
- Cell harvesting, Cell disruption
- Product recovery, finishing step.
- Major industrial products – Antibiotics, Organic acids, Enzymes
- Major industrial products – Enzymes, vitamins & biopolymers.

References:

1. Industrial Microbiology: An Introduction by Waites & Morgam. (Blackwell Science)
2. Biotechnology: The Biological Principles by Trevan (Tata McGraw-Hill, New Delhi)
3. Industrial Microbiology by Patel, A.H., 2nd Ed. (Macmillan, India)
4. Principles of Fermentation Technology by Stanbury, 2nd Ed., (Elsevier Science Ltd.)
5. Biotechnology: A textbook of industrial microbiology Creuger, W., 2nd Ed.,(Panima)
6. Fermentation technology, by Srivastva M. L., 1st ed. (Narosa pub. House)

T. Y. B. Sc. Semester - VI
BIOSCIENCE
606: Fundamentals of Bioinformatics

Unit - 1 Microbial genomics

- Introduction to Genomics.
- Determining DNA Sequences.
- Whole Genome Shotgun Sequencing.
- Single Cell Genomic Sequence.
- Functional genomics and Comparative genomics.

Unit - 2 Proteomics:

- Introduction to Proteomics.
- Introduction to two dimensional gel electrophoresis technique.
- Structural & function proteomics.
- Introduction to Mass spectrometry.
- Amino acid sequencing.

Unit - 3 Databases in bioinformatics

- Introduction to bioinformatics, Present bioinformatics scenario.
- Applications and research in bioinformatics
- Characteristics of bioinformatics database, Types of data
- Sequence database , Nucleotide – EMBL, Protein –DDBJ
- Structural database – PDB, CATH, Other database –Enzyme database

Unit - 4 Bioalgorithms tools and Phylogenetic

- Introduction And Concepts of Alignment (except gap penalty)
- Introduction to scoring matrices
- Pairwise Alignment & Multiple Sequence Alignment
- Molecular evolution and molecular phylogenetics terminology
- Forms of tree representation, Phylogenetic tree evaluation

References:

1. Prescott, Harley and Klein's Microbiology by Willey J., Sherwood L.,9th ed.
2. Essential Bioinformatics by Xiong, J.,(Cambridge University press)
3. Bioinformatics: Principles and Applications by Ghosh & Mallick, Oxford University
4. Bioinformatics: Databases, Tools and Algorithms by Orpita Bosu and Thukral S. K.,
5. Principles of Gene Manipulation & Genomics by Primrose S. and Twyman R. 7th edition. (Black well Publishing, Malden).

T. Y. B. Sc. Semester - VI
BIOSCIENCE
600P: BIOSCIENCE PRACTICAL

Practical based on paper 601, 602, 603, 604, 605 & 606
(Time duration: 9 hours/week)

1. Widal slide agglutination test, Screening test for enteric fever
2. Identification of unknown culture by Widal test.
3. Rapid plasma reagin test
4. Rheumatoid arthritis test
5. Demonstration of gel precipitate.
6. Introduction to some advanced serological technique.
7. Demonstration of ELISA.
8. Introduction & demonstration of Immunochromatographic test.
9. Introduction & demonstration of immunodot test.
10. Standard plate counts of water &milk sample.
11. Detection & enumeration of coliform (MPN & DCT)
12. Study of fecal indicator bacteria by membrane tech.
13. PA Test, Defined substrate test.
14. Bacteriological examination of sewage.
15. Gradation of milk. (MBRT)
16. Isolation & identification of microorganism from curd
17. Diagnostic medical problem: Collection of clinical sample - Blood / Urine / Stool & Wound/Abscess/ Purulent exudates.
18. Pure culture study of Salmonella group
19. Pure culture study of UTI pathogen.
20. Pure culture study of Staphylococci.
21. Routine examination of stool & sputum.
22. Antibiotic sensitivity testing. Paper disc method & combi disc.
23. Determination of MIC of antibiotics
24. Study of permanent slide & specimens as per theory.
25. Primary screening of amylase producers
26. Primary screening of organic acid producers

27. Primary screening of antibiotic producers by crowded plate method
28. Fermentative production of amylase and its activity check
29. Demonstration of recovery of crude protein / amylase from fermentation broth
30. either by salting out (ammonium sulfate) or by using isopropyl alcohol
31. Bioassay of penicillin using Bacillus subtilis
32. Separation of nucleic acid by agarose gel electrophoresis

REFERENCES:

1. Experimental Microbiology, Vol. I & II by Rakesh Patel (Aaditya)
2. Microbiology of water & waste water by Gainy (Prentice-Hall)
3. Experimental Microbiology.....by K.R.Aneja
4. Practical hand book of microbiology by Goldman &green (CRC Press)
5. District Laboratory Practice in Tropical Countries Part - I & II by Monika Cheesbraugh (Cambridge)
6. International student edition: Microbiology- A laboratory Manual 4th edition. By
7. James G. Chappuccino & Natalie Sherman
8. Bacteriological Techniques By F.J. Baker
9. Introduction to Microbial Techniques By Gunasekaran

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y.B. Sc. Semester-V

Zoology Paper – Z - 501

(Non chordates Taxonomy, Animal type)

(Effective from June-2021)

Unit - 1: Taxonomy of non-chordates phyla to be studied up to order. (07 **Hours)**
Structural organization of different classes of non-chordates.
(Protozoa to Annelida)

Unit - 2: Study of the following animal types with reference to the **(08 Hours)**
Structure and functions of various organs of all systems:
Leech

Unit - 3: Amplification of non-chordate phyla **(08 Hours)**

- Protozoa: Nutrition, Economic Importance
- Porifera: Skeletal system, Reproduction
- Cnidaria: Coral and coral reefs, Mesentries
- Helminthes: Ascariasis
- Annelida: Asexual Reproduction in Polychaeta, Coelomoducts and nephridia

Unit - 4: Phyllogenetic relationships of the following minor phyla and
General organization: **(07 Hours)**

- Ctenophora
- Chaetognatha

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y.B. Sc. Semester-V

Zoology Practicals (Based on paper Z - 501)

(Effective from June-2021)

1 – <u>Classification of following animals upto order.</u>

Volvox, Ceratium, Entamoeba, Polystomella, Plasmodium, Opalina, Balantidium, Leucosolenia, Pheronema, Euspongia, Obelia, Millipora, Physalia, Valella, Rhizostoma, Tubipora, Alcyonium, Cerianthus, Pennatula, Virgularia, Adamsia, Zoanthus, Favia, Fungia, Astrea, Opisthorchis, Trichinella, Sabella, Serpula, Arenicola, Polynoe, Acanthobdella, Sagitta and Pleurobranchia

2 – Study of some aquatic invertebrates like Euglena**,** Paramoecium, Vorticella, Hydra, Daphnia and Cyclops from the culture.

3 – <u>Study of permanent slides :</u>

- Sponge spicules and gemmules
- Life cycle of Ascaris

4- The following practicals of **Leech** to be studied/taught **<u>only</u>** with the help of charts, models, videos, photographs, permanent slides, working models, simulators etc.

- **Systems**: Digestive system, Nervous system and Reproductive system
- **Mountings**: Jaws, Salivary glands, Ovaries and Testicular nephridia

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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y.B. Sc. Semester-VI

Zoology Paper – Z - 601

(Non chordates Taxonomy, Animal type)

(Effective from June-2021)

Unit - 1: Taxonomy of non-chordates phyla to be studied up to order. **(07 Hours)**
Structural organization of different classes of non-chordates.
(Arthropoda, Mollusca, Echinodermata, Hemichordata)

Unit - 2: Study of the following animal types with reference to the **(08 Hours)**
structure and functions of various organs of all systems : **Sepia**

Unit - 3: Amplification of non-chordate phyla. **(08 Hours)**

- Arthropoda: Respiration, Excretion, Crustacean larvae
- Mollusca: Torsion and detorsion in Gastropods, Economic Importance
- Echinodermata: Autotomy and regeneration, larval forms and evolutionary significance
- Hemichordata: Reproduction

Unit - 4: Phyllogenetic relationships of the following minor phyla and General organization:

- Endoprocta **(07 hours)**
- Ectoprocta

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y.B. Sc. Semester-VI

Zoology Practicals (Based on paper Z - 601)

(Effective from June-2021)

1 - <u>Classification of following animals upto order.</u>

Apus, Daphnia, Cyclops, Cypris, Squilla, Hippa, Sacculina, Mantis, Dragon fly, Ear-wig, Mosquito, Ant, Bettle, Tick, Mite, Heliotis, Patella, Nautilus, Oyster, Mytilus, Doris, Cyprea, Teredo, Solen, Octopus, Loligo, Astropecten, Strongylocentrotus, Synapta, Sand-dollar, Holothuria, Pedicellina and Bugula avicularia

2- The following practicals of **Sepia** to be studied/taught **<u>only</u>** with the help of charts, models, videos, photographs, permanent slides, working models, simulators etc.

- **Systems**: Digestive system, Nervous system
- **Mountings**: Jaws, Radula, Chromatophores and Spermatophores

3 - <u>Study of permanent slides :</u>

Crustacean larvae, Echinoderm larvae and Hemichordata larva

Reference books: Z-501 and Z-601

(1) Invertebrate Zoology- E. L. Jordan and P.S.Verma.

(2) A Text book of Invertebrate Zoology - S. N. Prasad.

(3) A Text book of Invertebrate Zoology - R. L. Kotpal.

(4) Invertebrates Zoology - R. W. Hegner.

(5) A manual of Zoology vol. I - E. Ayyer.

(6) The Invertebrates (only) - Bora dale & Potts.

(7) Invertebrate Zoology - Arumugum.

(8) A Text book of Zoology - Arumugum & Narayanan.

(9) A Text book of Zoology Vol. I - Parker & Haswell.

(10) Invertebrate Structure & Function - E. J. W. Barrington.

(11) A Textbook of Practical Zoology Invertebrate -S.S.Lal

(12) A Textbook of Practical Zoology- Ghosh & Manna.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y.B. Sc. Semester-V

Zoology Paper – Z - 502

(Chordates Taxonomy, Animal type and Comparative Anatomy)

(Effective from JUNE-2021)

Unit – 1: Taxonomy of chordate to be studied up to order, including Protochordata, Cyclostomata, Pisces and Amphibia. **(07 Hours)**

Unit – 2: Study of the following animal types with reference to the Structure and functions of various organs of all systems: **Scoliodon** **(08 Hours)**

Unit – 3: Amplifications **(08 Hours)**

- Geological time scale
- Origin of chordates
- Pisces: Dipnoi, Types of scales and Parental care in fishes
- Amphibia: Origin and evolution, Neoteny and Apoda (Gymnophiona)

Unit – 4: Comparative Anatomy **(07 Hours)**

- Aortic arches
- Vertebral column
- Skull

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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y.B. Sc. Semester-V

Zoology Practicals (Based on Paper- Z - 502)

(Effective from June-2021)

1. Classification of following animals up to order.

Amphioxus, Ascidian, Doliolum, Lamprey, Myxine, Tiger shark, Raja (Skates), Anabas, Harpodon, Clarius, Syngnathus, Ichthyophis, Necturus, Ambystoma, Alytes and Pipa

2. The following practicals of **Scoliodon** to be taught/studied **only** with the help of Charts/models/videos/photographs/permanent slides, working models, simulators etc.

- **Systems**: Digestive system, Urinogenital system, Arterial system, Venous system and Brain
- **Mounting**: Eye muscles, Membranous labyrinth and Ampulla of Lorenzini

3. Parental care in fishes

4. Types of scales

5. Comparative study of Vertebral column and Skulls (Scoliodon, Frog, Varanus, Pigeon and Rabbit)

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y.B. Sc. Semester-VI

Zoology Paper – Z - 602

(Chordates Taxonomy, Animal type and Histology)

(Effective from June-2021)

Unit – 1: Taxonomy of chordate to be studied up to order, including Reptilia, Aves and Mammalia **(07 Hours)**

Unit – 2: Study of the following animal types with reference to the Structure and functions of various organs of all systems: **Pigeon** **(08 Hours)**

Unit – 3: Amplifications **(08 Hours)**

- Reptilia: Mesozoic reptiles, Rhyncocephalia and its phylogenetic importance, Temporal fossae and Arcades, Carapace and Plastron
- Aves: Bird migration, Flight adaptations in birds, Ratitae
- Mammals: Dentition, Prototheria, Metatheria, Cetacea and Primates

UNIT – 4: Mammalian Histology: **(07 Hours)**

- Pituitary
- Thyroid
- Parathyroid
- Adrenal
- Thymus

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y.B. Sc. Semester-VI

Zoology Practicals (Based on Paper- Z - 602)

(Effective from June-2021)

1. Classification of following animals up to order:

Trionyx, Sphenodon, Varanus, Dhaman, Russel's viper, Sea snake, Great Indian Bustard, Horned owl, Kiwi, Flamingo, Ornithorhynchus, Koala, Erinaceas, Seal, Leopard and Rhesus monkey

2. The following practicals of **Pigeon** to be taught/studied **only** with the help of Charts/models/videos/photographs/permanent slides, working models, simulators etc.

- **Systems**: Digestive system, Urinogenital system, Circulatory system and Brain
- **Mountings**: Pecten and Hyoid apparatus

3. Study of Mesozoic reptiles (by Models/charts/photographs etc.) like Brontosaurus, Stegosaurus, Ichthyosaurus, Dimetrodon, Allosaurus and Rhamphorhynchus

4. Types of feathers

5. Dentition in Dog, Cat, Horse, Rabbit, Rat and Man

6. Mammalian histology: Pituitary, Thyroid, Thymus, Parathyroid, Adrenal

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Reference books: Z-502 and Z-602

(1) Young, J. Z. (2004). *The Life of Vertebrates*. III Edition. Oxford university press.

(2) Pough H. *Vertebrate life*, VIII Edition, Pearson International.

(3) Hall B.K. and Hallgrimsson B. (2008). *Strickberger's Evolution*. IV Edition. Jones and Bartlett Publishers Inc.

(4) Outline of comparative anatomy of vertebrate Kingsley J.S.Central book depot.Allahabad

(5) Kardong, K.V. (2005) *Vertebrates' Comparative Anatomy, Function and Evolution*. IV Edition. McGraw-Hill Higher Education.

(6) Kent, G.C. and Carr R.K. (2000). *Comparative Anatomy of the Vertebrates*. IX Edition. The McGraw-Hill Companies.

(7) Hilderbrand, M and Gaslow G.E. *Analysis of Vertebrate Structure*, John Wiley and Sons.

(8) Walter, H.E. and Sayles, L.P; *Biology of Vertebrates*, Khosla Publishing House.

(9) JUNQEIRA'S Basic Histology Text & Atlas by Anthony L. Mescher

(10) Histology: Arthiur W. Ham, M. B.

(11) Vertebrate Zoology: An Experimental Field Approach-Nelson G.Hairston. Cambridge University Press, 1994

(12) Chordate Zoology E.L Jordan & P. S. Verma. S.Chand

(13) Vertebrate Zoology: An Experimental Field Approach-Nelson G.Hairston. Cambridge University Press, 1994

(14) Text Book of Zoology - Dalela and Verma. JayPrash Nath & co. Meerut

(15) Text Book of Zoology - S.N. Prasad. Vikas Publishing House pvt.ltd. Delhi

(16) Chordate Zoology - Agrawal and Dalela. JayPrash Nath & co. Meerut

(17) Text book of Zoology - R. D. Vidyarthi. S.Chand

(18) Jiv Vignan-2 (Gujarati) - Nirav Prakashan.

(19) A Text Book of General Biology - Tomer & Singh. Rastogi Publication,Meerut

(20) Text Book of Chordates - A. Thangamani, S. Prasanna Kumar

(21) Prushthvanshi Praniyo ane Garbhvidya - A.B.Vyas. Guj.Granth nirman Board.

(22) Utkrushtha Aprushthvanshi Praniyo - U.M.Rawal. Guj.Granth nirman Board.

(23) Chordate Zoology - Majupuria.

(24) A Manual of Zoology Vol. I & II - Ekambernath Ayar. S. Vishwanathan Chennai.

(25) Histology by Majumadar
(26) Histology by Shivaji Deshmukh
(27) Text book of Human histology with colour atlas and practical guide by Inderbir Singh.
(28) Prani Autikee . Gujarat granth nirman board
(29) Practical zoology Vertebrate By S. S. Lal., Rastogi publications Meerut.
(30) A manual zoology Practical zoology Chordates By Dr. P. S. Verma., S. Chand publications
(31) Practical Vertebrate zoology By Agrawal & Jindal., Pragati Prakashan
(32) Manual of prac. zoology vol.- I,II,III - P.K.G.Nair, Himalaya Publishing House.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T. Y. B. Sc. Semester-V

Zoology Paper – Z - 503

(Enzymology and Biochemistry)

(Effective from June-2021)

Unit - 1: Enzymology (08 Hours)

- Definition and chemical nature
- Properties
- Holoenzyme
- Nomenclature and classification
- Enzyme activation: Activation energy
- Mechanism of enzyme action
- Factors affecting on enzyme action
- Enzyme inhibition
- Enzyme kinetics
- Derivation of Michaelis-Menten equation
- Lineweaver-Burk plot
- Enzyme regulation

Unit - 2: Biophysical Chemistry (07 Hours)

- pH
- Buffer
- Reaction kinetics
- Thermodynamics
- Solution and Colligative properties

Unit - 3: Nucleic acid and Vitamins (07 Hours)

- **Nucleic acid :** Composition, types, Structure and function of DNA, Composition, types, Structure and function of RNA
- **Vitamins** : Composition, Structure and Formation

Unit - 4: Metabolism: (08 Hours)

(With structures)

- Glycolysis
- TCA and oxidative phosphorylation (ETS or Biological oxidation)
- Gluconeogenesis
- Glycogenesis
- Glycogenolysis
- Deamination
- Transamination
- Ornithine cycle
- β-oxidation and synthesis of long chain fatty acids
- Glycerol metabolism

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y.B. Sc. Semester-V

Zoology Practicals (Based on Paper- Z - 503)

(Enzymology and Biochemistry)

(Effective from June-2021)

(1) Activation of salivary amylase under optimum condition
(2) Factors affecting enzymes activity (temperature and pH)
(3) To study the digestive enzymes from Human Saliva
(4) Preparation of pH, buffer or different solution as per theory
(5) Study of vitamins structure through model or chart
(6) Structure of DNA with the help of model / chart
(7) Structure of RNA with the help of model / chart
(8) Preparation of A___, T___, G___, C___ by models
(9) Preparation of water soluble vitamins and fat soluble vitamins

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Reference books: Z-503

(1) J.L. Jain – Biochemistry
(2) Lehninger - Biochemistry
(3) Stryer-Biochemistry
(4) Granner and Rodwell - Harper's Illustrated Biochemistry
(5) J H Wet - General Biochemistry
(6) Rangnatha Rao K-Text Book of Biochemistry
(7) C. B. Powar - Biochemistry
(8) Das.-Biochemistry
(9) Fundamentals of Biochemistry - Dr. A. C. Deb
(10) Fundamentals of Biochemistry - David T. Plummer
(11) Biochemistry - N. Arumugum

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y.B. Sc. Semester-VI

Zoology Paper – Z - 603

(Animal Physiology and Endocrinology)

(Effective from June-2021)

Unit - 1: Respiration (08 Hours)

- Aquatic & terrestrial respiratory mechanism
- Hypoxia
- O2 dissociation Curve
- Respiratory quotients
- BMR
- Transport of gases
- Exchange of gases
- Respiratory pigments
- Neural and chemical regulation of respiration.

Unit - 2: Circulation (08 Hours)

- Structure of mammalian heart
- Properties of cardiac muscles
- Internal circulation (systematic, pulmonary and coronary) Cardiac-cycle and cardiac output Stroke volume
- Blood pressure
- ECG
- Blood coagulation
- Hormonal, Ionic and Nervous regulation of heart beat.

Unit - 3: Mammalian Endocrinology (07 Hours)

Hormones:

- Pineal Gland
- Hypothalamus
- Pituitary Gland

- Thyroid Gland
- Parathyroid Gland
- Thymus
- Pancreas
- Adrenal Gland
- Ovary and Testes

Unit - 4: Chemical coordination of Hormone (07 Hours)

- Chemical nature of hormones
- Mechanism of hormonal action

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y.B. Sc. Semester-VI

Zoology Practicals (Based on Paper- Z - 603)

(Animal Physiology and Endocrinology)

(Effective from June-2021)

1. Study of analytical instrument principle and applications.
    - pH meter
    - Sphygmomanometer
    - Stethoscope
    - Thoma pipette of haemocytometer
2. Study of total RBC count in human blood
3. Study of WBC differential count
4. Measurement of systolic blood pressure, diastolic pressure, pulse pressure, mean pressure of an individual with the help of sphygmomanometer and stethoscope
5. Study of Electrocardiogram (ECG)
6. Study of hormonal control and regulation of glands:
    - Pituitary Gland
    - Thyroid Gland
    - Parathyroid Gland
    - Pancreas
    - Adrenal Gland
    - Ovary and Testes

Reference books: Z-603

(1) General and Comparative Endocrinology - Barrington,

(2) Textbook of Endocrinology - R.H. Williams

(3) A Text book of Biochemistry - A. K. Berry.

(4) Text book of medical Physiology - Guyton.

(5) A Text of Animal Physiology - Nagabhushanam.

(6) A Text of Animal Physiology - A. K. Berry.

(7) Comparative animal Physiology - Proser& Brown.

(8) Animal Physiology -M. P. Arora

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T. Y. B. Sc. Semester–V

Zoology Paper – Z – 504

(Embryology and Wild life Biology)

Unit – 1: Introduction to Embryology and Gametogenesis (07 Hours)

- Introduction
- The Programme of Development
- Scope and Branches of embryology
- Spermatogenesis: Formation of spermatids, Spermiogenesis, Factors controlling spermatogenesis, Structure of a typical sperm and Significance of spermatogenesis

  Oogenesis: Formation of egg (ovum) - Multiplication phase, growth phase (Previtellogenesis and Vitellogenesis) and Maturation phase

Unit – 2: Fertilization and Sexual cycles (07 Hours)

- Fertilization : External and internal fertilization - mechanism of Fertilization - capacitation and contact – acrosomal reaction and penetration – activation of ovum migration of pronuclei and amphimixis - theories of fertilization - significance of fertilization
- Estrous and Menstruous cycles, Pregnancy, Parturition, Placenta and placentation

Unit – 3: Chick Embryology (07 Hours)

- Sperm, Egg, Fertilization, cleavage, blastulation, gastrulation, formation of germ layers and primitive streak
- Development of chick embryo of 8, 16, 21, 24, 33, 48 and 72 hours

Unit – 4: Wild life Biology (07 Hours)

- Introduction to wild life Endangered, vulnerable, threatened species National parks and Sanctuaries
- Causes of depletion, conservation and management
- Wild life in Gujarat
- Wild life trades and its legal provisions
- CITES (Convention on International Trade in Endangered Species)
- Conservation projects: Wild ass, Tiger, Crocodile and Black buck

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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T. Y. B. Sc. Semester–V

Zoology Practicals (Based on paper Z - 504)

(Embryology and Wild life Biology)

1. Different types of mammalian placenta

2. Chick embryology: Unfertilized egg, different stages cleavage, morula, blastula, gastrula, development of Structure of 8, 16, 21, 24, 33,48 and 72 hrs

3. Study of projects – Wild ass, Tiger, Crocodile and Black buck-their locations in map of India, present status and significance

4. Wild life Illegal trades, practices and its control measures of following

- Tiger (Claws, Bones, Skins and Whiskers)
- Rhino (Horns)
- Elephant (Tusks)
- Musk Deer (musk)
- Turtle (Shells)

5. The students are supposed to attend all the Industrial Workshops/Laboratory Workshops/ Training Programme/Symposia/Seminar/Field visit/Educational Excursion organized by the department/college. The students shall attend these programmes at their own cost.

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Reference books: Z-504

(1) Austin, C.R. and Short, R.V. reproduction in Mammals. Cambridge University Press.

(2) Degroot, L.J. and Jameson, J.L. (eds). Endocrinology. W.B. Saunders and Company.

(3) Knobil, E. et al. (eds). The Physiology of Reproduction. Raven Press Ltd.

(4) Hatcher, R.A. et al. The Essentials of Contraceptive Technology. Population Information Programme.

(5) Balinsky, B.I. (2008). An introduction to Embryology, International Thomson Computer Press.

(6) Carlson, Bruce M (1996). Patten's Foundations of Embryology, McGraw Hill, Inc.

(7) Chordate Embryology - P S Verma S.Chand Delhi.

(8) Embryology - N. Arumugam , Saras Publication, KanyaKumari

(9) Embryology A. K. Berry

(10) A Textbook of Embryology By G. S. Sandhu, Sharad Srivastava and C. K. Arora

(11) Wild life Protection Act(1972) - Publish by Wildlife Trust of India

(12) Remote Sensing – Schowengerdt

(13) The Wild Life of India By E. P. Gee An imprint of Harper Collins publishers india

(14) Call of the wild by B. Seshadri

(15) The wild animals of India by B. N. H. S.

(16) Vanya jeev vigyan by Gujarat Granth nirman board, Gujarat

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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y. B. Sc. Semester-VI

Zoology Paper – Z - 604

(Entomology)

(Effective from June-2021)

Unit – 1: Introduction to Entomology **(08 Hours)**

- History, Development, Scope and Applications of Entomology
- Branches of Entomology
- General characteristics of class Insecta

U nit – 2: Agricultural Entomology **(08 Hours)**

- Pests of field crops and their management:
- **Sugarcane** – Stem borer, Leaf aphids and Shoot borer
- **Cotton** – Spotted ball worm, Leaf roller, Red cotton bug and Jassids
- Pests of Horticultural crops and their management:
- **Vegetables:** Brinjal (Shoot and Fruit borer, Leaf eating beetles, Jassids, Leaf roller), Cabbage (moth and maggot fly)
- Insect pests of stored grains and their management (Rice weevil, Saw Toothed Grain beetle, Khapra beetle, Rice moth and lesser grain borer)

U nit – 3: Medical Entomology **(07 Hours)**

- Morphology, Vectorship, Pathogenicity and Control of: Mosquito, Housefly, Rat fleas and Head louse
- Morphology, Vectorship, Pathogenicity and Control of: Pests of domestic animals - Dogs, Cats and Cattles

U nit – 4: Economic Entomology **(07 Hours)**

- **Beneficial Insects** (Economic importance of Honey bee, Silkworm, Lac insect, Pollinators, Scavengers, Insect as a source of drugs and dyes)
- **Household pests:** Morphology, Damage caused and Control measure of: Cockroach, Ants and Termites and Bed bugs

- **Insect pest control methods:** Bio control, Integrated pest management, Insecticides and Pesticides
- Appliances used for pest management (Hydraulic Sprayers: Hand, Knapsack and Foot., Pneumatic Sprayers: Hand and Knapsack)

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y. B.Sc. Semester-VI

Zoology Practicals (Based on paper Z - 604)

(Entomology)

(Effective from June-2021)

To study the following practicals with the help of charts/models/photographs/ specimens/slides etc.

1. Branches of Entomology, Its scope, Applications, Development

2. Identification, Pathogenicity and Control of pests

- Cereals - Khapra beetle (*Trogoderma granarium*), Locust
- Cotton - Spotted ball worm
- Sugarcane (*Saccharum officinarum*) – Stem (node-internode) borer
- Vegetables - *Hellula undalis*

3. Morphology, Vectorship, pathogenicity and control of – Anopheles (male – female), Culex (male-female) and Aedes (male-female)

4. Pests of domestic animals: Dogs- Dog flea (*Ctenocephalidies canis*), *Trichodectes canis*, Cats- Cat flea (*Ctenoce felis*), Cattles – Cattle tick (*Boophilus microplus*), *Haemaphysalis cuspidate, H.minuta*

5. Economic importance of arthropods /insects – Silk worm, Lac insects, Honey bees and Butterflys **as Pollinators**; Lady bug and Dermestid beetle **as Scavengers**; Cochinial insects and Kermes insects(of oak tree) **as Dyes**; Honey bees, Blow fly maggots, Centipedes and Cantharis fly (*Canth vesictoria*) **as Drugs /Medicine**s; Ants, Termites, Dermestid beetles and Bed bugs as **Harmful insects**

6. Pests management appliances- Insect repellents, Hydraulic Sprayers: Hand, Knapsack and Foot; Pneumatic Sprayers: Hand and Knapsack), Traps (electric and chemical).
Biological pests controller- Spiders, Lizards, Frogs, Green bee-eater, Lady bug beetle and Bats

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Reference books: Z-604

(1) General and Applied Entomology- Nayer, K.K. , T. Anant Krishnan and B.W. David

(2) Metcalf, G.L. and W.P. Fling : Destructive and Useful Insects

(3) Hemsingh Pruthi : A Text Book of Agricultural Entomology

(4) Wigglesworth : Principles of Insect Physiology

(5) ESSIG : College Entomology

(6) M.S. Mani : A Text Book of General Entomology

(7) Fradt, R.E. : Fundamentals of Applied Entomology

(8) Smith, K.G.V.: Insects and Other Arthropods of Medical Importance

(9) Ray, D.N. and A.W.A. Brown: Entomology Medical & Veterinary

(10) Shrivastava, K.P.: A Text Book of Applied Entomology (Vol.I–H)

(11) Ross, H.A.: Text Book of Entomology

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y. B. Sc. Semester-V

Zoology Paper – Z - 505

(Forensic science and Toxicology)

(Effective from June-2021)

Unit – 1: Definition, Scope, History and Development of Forensic science, Basic principles, Forensic science in international perspectives including RFSL, CFSL and INTERPOL, Dactylography, Foot prints, Tattoo marks, Occupational marks, Speech and Voice **(07Hours)**

Unit – 2: Morphology and Structure of hair: Human and other animals (Dog, Cat, Cow, Buffalo, Horse, Goat), DNA Fingerprinting, Wildlife and forensic science **(08 Hours)**

Unit – 3: Concept and Scope of Toxicology: Introduction, History, Disciplines of toxicology, Toxicants and their classification, Toxicity **(07 Hours)**

Unit – 4: Food-Additives: General account, Incidental (indirect) additives, Intentional (direct) additives, Terms related to adverse reactions to food, Food-borne molds and Mycotoxins (food contaminants), Testing of food additives **(08 Hours)**

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y. B. Sc. Semester-V

Zoology Practicals (Based on paper – Z - 505)

(Forensic science and Toxicology)

(Effective from June-2021)

To study the following practical with the help of charts/models/photographs/ specimens/slides/simple methods without using live animals.

1. Study of different types of Finger prints and Tattoo marks

2. Study the morphology of different hairs- Man, Dog, Cat, Cow, Buffalo, Horse, Goat

3. Study of various samples of food additives/preservatives and their usages (Vinegar, Benzoic acid, Formic acid, Citric acid and Gelatin)

4. Study of food contaminants on - Bread, Chapati, Curd and Fruits

5. Tests (only two tests to be performed) of adulterated milk, black pepper, khoya (maava of milk), edible oil, coconut oil, ghee, rabdi

6. To study DNA finger printing method

Reference books: Z-505

(1) Fundamentals of Toxicology-K.Pandey,J.P.Shukla and S.P.Trivedi.

(2) Environmental Biology and Toxicology-P.D.Sharma.

(3) Aquatic Pollution and Toxicology-R.K. Trivedi.

(4) Toxicology-P.D. Sharma.

(5) Introduction to General Toxicology-E.J.Ariens, A.M.Simonis and J.Offermerier.

(6) Modern Toxicology,vol.I,II,III - P.K.Gupta and D.K.Salunkhe.

(7) Basic Toxicology- C.Lu Frank

(8) Toxicology, A Basic Science of Poisons,2nd edition- L.J.Casarett and J.Doull

(9)Text book of forensic science and toxicology- Narayan Reddy

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y. B. Sc. Semester-VI

Zoology Paper – Z - 605

(Cell Biology and Bioinstrumentation)

(Effective from June-2021)

Unit – 1: Microscopy **(08 Hours)**

- Introduction
- Magnification, Resolution
- Light microscope (Simple and Compounding Microscope)
- Electron microscope
- Phase Contrast microscope

Unit – 2: Cytological Techniques **(08 Hours)**

- Examination of living cells (Teasing, Smear preparation, Squash preparation, Whole mount and Microtomy)
- Fixation
- Cytological staining

Unit – 3: Biochemical techniques **(07 Hours)**

- Paper chromatography
- Centrifugation
- Electrophoresis
- PCR
- Spectrophotometry

Unit – 4: Cell cycle and Cellular transportation **(07 Hours)**

- Cell Cycle
- Interphase
- Mitosis
- Meiosis
- Cell membrane structure and function: Structure of cell membrane, Lipid bilayer and membrane protein diffusion, Osmosis, Ion channels, Active transport, Ion pumps, Mechanism of sorting and regulation of intracellular transport

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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y. B. Sc. Semester-VI

Zoology Practicals (Based on paper Z - 605)

(Cell Biology and Bio instrumentation)

(Effective from June-2021)

1. Types of microscope
2. Micro technique preparation of permanent slides of different organs
3. To perform paper chromatography for separation of amino acids
4. Permanent slides of mitosis and meiosis
5. To prepare different stages of mitosis from onion root tip
6. To study electrophoresis, Centrifuge machine, PCR and Spectrophotometry through charts/models

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Reference books: Z-605

(1) Basic Separation Techniques in Biochemistry, 1998, Okotore R. O., New Age International, New Delhi.

(2) Cytological techniques: The Principles Underlying Routine Methods, 1963, Baker J.R, Methuen & Co, London

(3) Davenport H. A.: Histological and Histochemical techniques.

(4) Handbook of basic Microtechnique, 1958, 2nd Edn., Gray P., McGraw-Hill, USA

(5) The microscope and how to use it, 1970, George Stehli, Dover Publications Inc., New York.

(6) Histopathological technique and Practical Histochemistry, 1976, 4th Edn, Lillie R.D McGraw-Hill, USA

(7) Notes on Microscopical Techniques for Zoologist, 1964, Pantin C. F.A.: Cambridge University Press

(8) Elementary Microtechnique, 1973, 4th Edn., Peacock H.A., Edward Arnold Publ. Ltd., UK

(9) Histochemistry, 1968, Pearse A.G.E., Vol. I & II., W.B. Saunders Company (WBS) of Philadelphia

(10) Microscope and microscopic life, 1979, 2nd Edn., Peter Healey, Hamlyn, UK

(11) Biological Instrumentation and methodology, 2008, 2nd Revised Edition, P.K. Bajpai, S. Chand and Co. Ltd., New Delhi

(12) Cell and molecular biology By P. K. Gupta., Rastogipublication, Meerut, New Delhi

(13) Cell biology A laboratory handbook Volume 2., Edited by Julio E. Celis

(14) Fundamentals of Biochemistry By Dr. A. C. Deb.

(15) Biochemistry By. Geoffrey L. Zubay

(16) Text book of Biochemistry By A. K. Berry

(17) Cell biology Genetics Molecular Biology Evolution and Ecology By P. S. Verma and V. K. Agrawal., S. Chand publicationMeerut.

(18) Handbook of Exprerimental Physiology and Biochemistry By Dr. P. V. Chadha., Jaypee publication

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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T. Y. B. Sc. Semester–V

Zoology Paper – Z - 506

(Genetics and Molecular Biology)

(Effective from June-2021)

Unit – 1: Gene Structure and Functions **(08 Hours)**

Gene concept, Location of and size of genes, Role of genes, Chemical composition and numbers of genes, Ultra structure of genes, Jumping genes, Split genes and Sex chromatin

Unit – 2: Central Dogma and Biotechnology **(08 Hours)**

Genetic code, DNA replication, Transcription and Protein synthesis, DNA Repair, Recombinant DNA technology

Unit – 3: Human Cytogenetics and Mutation **(07 Hours)**

Karyotyping, Chromosomal banding techniques – G, Q, C and R banding, Chromosomal aberrations and syndromes, Gene mutations

Unit – 4: Oncology **(07 Hours)**

Cancer: Overview of Tumour growth and development, Metastasis

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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T. Y. B. Sc. Semester–V

Zoology Practicals (Based on paper Z - 506)

(Genetics and Molecular Biology)

(Effective from June-2021)

1. To study Barr body (dosage compensation) from cheek epithelial cells
2. Preparation of DNA, RNA by models
3. To study DNA replication using photographs or charts
4. Normal human karyotype and syndromes (Down syndrome, Patau, Edward, Cri du chat, Jacob's, Klinefelter, Turner, Super female, Philadelphia)
5. To study types of cancer – Blood cancer, Skin cancer with charts/photos
6. Study of Transgenic animal (Dolly sheep)

Reference books: Z-506

(1) Principles of Genetics- F.J. Gardner.

(2) Molecular cell biology- H.S. Bhamra and KavitaJuneja,

(3) Fundamental molecular biology- Lizabethallison.

(4) Thomas A. P (Editor), (2012). *Genetics and Biotechnology- The Fundamentals. Green Leaf Publications*, TIES, Kottayam.

(5) Vijayakumaran Nair K. (2012). *Genetics and Biotechnology*. Academica, Trivandrum.

(6) Robert A. – Biology of Cancer Weinberg. 2nd edition

(7) Weinberg R A. 2014. Biology of Cancer. 2nd edition. Garland Science, Taylor & Francis

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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y.B. Sc. Semester-VI

Zoology Paper – Z - 606

(Ecology, Ethology and Evolution)

(Effective from June-2021)

Unit – 1: (A) Animal Inter relationship: **(08 Hours)**

- Species interactions
- Types of interactions

(B) Biogeography:

- Zoogeography
- Zoogeographical Regions of world
- Diverse fauna of India

Unit – 2: Social behaviour: **(07 Hours)**

- Costs and Benefits of group living
- Evolutionary Advantages and disadvantages of group living
- Characteristics of Social Insect

Unit – 3: Bioluminescence, Biological Clock and Insect Pheromones **(08 Hours)**

Unit – 4: Direct Evidences of Evolution: **(07 Hours)**

- Fossils:
  - Introduction
  - Branches of Palaeontology
  - Fossils formation
  - Conditions of Fossilisation
  - Determination of age of Fossils
  - Nature of Fossils
  - Types of Fossils
  - Significance of Fossils
  - Conclusions drawn From Fossil record
  - Imperfection of Fossil record

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y.B. Sc. Semester-VI

Zoology Practicals (Based on paper Z - 606)

(Ecology, Ethology and Evolution)

(Effective from June-2021)

1. Estimation of Alkalinity and Hardness
2. Estimation of free CO_2 and dissolved O_2
3. Study of Habituation of mosquito larva
4. Study of Antennal grooming behavior (Chemotoxis)
5. Study of alarming, attractant, aggression behavior
6. Types of Fossils by photo graphs/charts

Reference books: Z-606

(1) Ecology and Environment- P.D.Sharma

(2) Modern concepts of Ecology- H.D.Kumar

(3) Fundamentals of Ecology- E.P.Odum

(4) Animal Ecology- S.P.Singh

(5) Cytology, Genetics and Evolution-P.K.Gupta.

(6) Cell Biology, Genetics and Evolution-N.Arumugam.

(7) Cell biology, Genetics, Molecular Biology, Evolution and Ecology. – P.S. Verma, and V.K.Agarwal

(8) Animal Behaviour-M.P.Arora

(9) Animal Behaviour-E.G.Boulenger

(10) Animal Behaviour-Vinod Kumar

(11) A Textbook of Animal Behaviour-H.S.Gundevia &H.G.Singh

(12) Insect Behaviour-M.Prakash.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T. Y. B. Sc. Semester-V

Zoology - Fisheries – E.G.

(Effective from June-2021)

Unit- 1: Natural and cultivated ponds-construction, layout, Management and productivity **(05 Hours)**

Unit- 2: Induced breeding methods in major carp **(05 Hours)**

Unit- 3: Fish seed collection and transportation **(05 Hours)**

Unit- 4: Study of aquarium fishes and its management **(05 Hours)**

Unit- 5: Crafts and Gears used in fresh and marine water fisheries **(05 Hours)**

Unit- 6: Larvivorous Fishes **(05 Hours)**

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T. Y. B. Sc. Semester-VI

Zoology – Fisheries – E.G.

(Effective from June-2021)

Unit -1: Fish migration **(05 Hours)**

Unit- 2: Schooling of fish **(05 Hours)**

Unit- 3: Electric organs in fishes **(05 Hours)**

Unit- 4: Preservation, processing and by-products of fishes **(05 Hours)**

Unit -5: Fish pathology: bacterial, fungal, ectoparasitic and protozoan diseases of fishes **(05 Hours)**

Unit- 6: Global warming and its effects on Fisheries **(05 Hours)**

Reference books: Fisheries – E. G. (Semester – 5 and 6)

(1) An Introduction to fishes-S.S.Khanna.

(2) Fish and Fisheries of India-V.G.Jhingran.

(3) Fish and Fisheries –A.R.Shukla

(4) Fish and Fisheries-B.N.Yadav.

(5) Ichthyology-Lagler,Bardach,Passino & Miller

(6) Fundamentals of Ichthyology-Gupta,Guhalwat,Yadav,Jain

(7) Fundamentals of Ichthyology-S.P.Biswas

(8) General and Applied Ichthyology-S.K.Gupta,P.C.Gupta.

(9) An Introduction to fishes-G.S.Sandhu.

(10) Fish Biology-C.B.L.Srivastava

(11) A Textbook of Fish Biology and Fisheries- S.S.Khanna and H.R.Singh

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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T. Y. B. Sc. Semester-V

Zoology- Food Hygiene and Sanitation – E.G.

(Effective from June-2021)

UNIT – 1: **(08 H0urs)**

- Definition of Public Health and Hygiene
- Social and preventive medicine
- Basic aspects of personal hygiene
- Epidemiology methods
- Introduction to Analytical
- Experimental and Descriptive methods
- Diseases transmission

UNIT – 2: **(08 Hours)**

- Food Borne Disorders:
- Food borne infections-
- Typhoid
- Para typhoid,
- Cholera
- Infective hepatitis
- Amoebiasis

- Food borne intoxications:
- Disorders caused by-
- Natural toxins
- Chemical toxins
- Microbiological toxins in food- Staphylococcal intoxication
- Botulism
- Clostridium
- Perfringens
- Mycotoxins.

UNIT – 3: **(08 Hours)**

- Food handling and Public Health:
- Preventing food borne illness and the speed of communicable disease
- Sanitation of food serving institution
- Environmental sanitation
- hygiene in food handling and personal hygiene of food handler
- Water- sources, Impurities- Principles of water purification- commercial and domestic

UNIT – 4: **(06 Hours)**

- Food adulteration:
- Common, adulterants, and health hazards

- Food standards and food laws - National and International;
- PFA, FPO, FAO, MMPO, Agmark, Codex, FSSAI, HACCP, ISO Certification;
- Consumer guidance society
- Consumer rights
- Consumer court
- Central facilities for assessing food adulteration
- Role of food inspectors

Reference Books: Food Hygiene and Sanitation – E.G.
(Semester – V)

(1) Food hygiene & sanitation- Roday.S ,tataMcGraw hill publishing company ltd.

(2) Food science- B.Srilakshmi.

(3) MohiniSethi, catering management, New age international publishers.

(4) Sri Lakshmi.B – Food science, New Age International Publishers.

(5) Park K (2011). Park's Textbook of Preventive and Social Medicine, 21st EditionM/sBanarasidasBhanot Publishers, Jabalpur, India.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T. Y. B. Sc. Semester-VI

Zoology- Public Health – E.G.

(Effective from June-2021)

UNIT – 1: **(08 Hours)**

- Health and Nutrition:
- Education-definition
- Components
- Principles of health education

- Methodology:
- Individual
- Group and mass methods use of audio visual aids

UNIT – 2: **(08 Hours)**

- Medical entomology
- Control of household pest with special reference to Mosquito and Housefly
- Environmental, chemical, biological and generic control

UNIT – 3: **(07 Hours)**

- Immunity:
- Classification, specific and non-specific immunity
- Immunoglobulins
- Cellular and hormonal, immune response
- Immunization active and passive immunization schedule
- Immunizing agents
- Hazards of immunization

UNIT – 4: **(07 Hours)**

- Primary health care system with special reference to Maternal and Child Health care
- Primary health system functioning in rural areas, health indicators mortality (Infant and Maternal), morbidity, disability and various health organizations
- Malaria and AIDS Control-NHP, WHO, UNICEF

Reference Books: Public Health – E.G. (Sem – VI)

(1) Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite Publishing House Pvt. Ltd. New Delhi.

(2) Park K (2011). Park's Textbook of Preventive and Social Medicine, 21st Edition. M/sBanarasidas Bhanot Publishers, Jabalpur, India.

(3) Mahtab S. Bamji, Kamala Krishnaswamy and G.N.V. Brahmam, Human Nutrition 4th edition. Oxford and IBH Publishing Co., P. Ltd. New Delhi.

(4) McLaren D.S .Nutrition in the Community, John Wiley and Sons.

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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
F.Y.B.Sc. SEMESTER- I
ZOOLOGY: Z – 101
(Effective from JUNE-2019)
(Systematics and Animal Diversity)

UNIT- I: Systematics

Scope and branches Zoology,Salient features of Non-chordates, structural organization in different phylum of Non-chordates with examples.

Kingdom – Animalia

Phylum – Protozoa- Locomotory Organelles and locomotion

Porifera-Canal System in Sycon

Cnidaria-Polymorphism in Hydrozoa

Platyhelminthes, Nemathelminthes-Parasitic adaptations

Annelida-Metamerism

Arthropoda -Metamorphosis in Insects

Mollusca-Shell in Mollusca

Echinodermata-Water-vascular system in Asteroidea

Protochordata- General features and Phylogeny

UNIT- II: Non-Chordate Animal Diversity

Type study– *Fasciola hepatica* (Liver fluke)

- Systematic position, Habit and habitat
- External features, Body wall
- Digestive system, Respiratory System, Excretory system, Nervous system
- Reproductive system, Life cycle and development
- Pathogenesis, Parasitic Adaptations

UNIT-III: Systematics

Salient features of Chordate classes with examples.

Agnatha, Pisces, Amphibia, Reptiles, Aves, Mammals

UNIT- IV: Chordate Animal Diversity

Pisces-Difference between Osteichthyes and Chondrichthyes

Amphibia- Parental care

Reptiles- Poisonous and non-poisonous snakes

Aves-Types of beak and feet in birds

Mammals-Proboscidia

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
F.Y.B.Sc. SEMESTER-I
ZOOLOGY PRACTICALS (Based on Paper-Z – 101)
(Effective from JUNE-2019)
(Systematics and Animal Diversity)

The following practicals are to be taught/studied **only** with the help of charts, models, videos, photographs, permanent slides, working models etc.

1. Study of the following specimens:
Amoeba, Euglena, Paramecium, Sycon, Hyalonema, Physalia, Aurelia, Metridium, Taenia solium, Male and female Ascaris lumbricoides, Nereis, Pheretima, Hirudinaria

2. Carcinus, Scolopendra, Limulus, Lepisma,Periplaneta,Butterfy Chiton, Dentalium, Pila,Ostrea, Octopus,Pentaceros, Ophioderma,Echinus, Cucumaria.

3. Balanoglossus, Herdmania, Branchiostoma, Petromyzon, Sphyrna, Pristis, Torpedo, Labeo, Exocoetus, Ichthyophis, Salamandra, Bufo, Hyla,

4. Chelone,Hemidactylus, Chamaeleon, Vipera, Naja, Crocodylus, Gavialis, Koel, Peacock,Sparrow, Ornithorhynchus, Macropus, Bat,Dolphin

5. Study of the following permanent slides:
T.S. and L.S. of *Sycon*, **Liver fluke:** Larva stages.miracidium, sporocyst, redia, cercaria

6. Key for Identification of poisonous and non-poisonous snakes

7. An "**animal album**" containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
F.Y.B.Sc. SEMESTER- I
ZOOLOGY: Z – 102
(Effective from JUNE-2019)
(Cytogenetic, Ecology and Ethology)

UNIT-I: Cytology

- Structural organization of cells- Prokaryotes and Eukaryotes

Introduction to cell organelles (Golgi body, E.R., Mitochondria, Nucleus, Lysosome, Ribosome, Nucleolus, Cell wall) and cell inclusions.

UNIT-II : Genetics

Types,structures and functions of chromosomes

- Principles of inheritance, Mendel's law, deviation from Mendelian inheritance, incomplete dominance and co-dominance, Complementary genes, Supplementary genes. multiple alleles (ABO blood groups)

UNIT-III : Ecology

- Introduction to Ecology
- Marine Ecosystem
- Fresh water – Pond Ecosystem
- Desert ecosystem

Ecological Adaptations

- Aquatic, Arboreal, Volant, Desert

UNIT- IV :Ethology

- Introduction, Scope and patterns of behavior.
- Nesting behavior (Weaver bird, Horn bill) and social behavior (honeybee)
- Behavioral disorders- Alzheimer's and Dementia

VEER NARMADSOUTH GUJARAT UNIVERSITY, SURAT.
F.Y.B.Sc. SEMESTER- I
ZOOLOGY-PRACTICALS (Based on Z-102)
(Effective from JUNE-2019)
(Cytogenetic, Ecology and Ethology)

The following practicals are to be taught/studied **only** with the help of charts, models, videos, photographs, permanent slides, working models etc.

1. Ecological adaptations
(a) Aquatic: Catla, Dolphin
(b) Arboreal: Chameleon, Squirrel
(c) Volant: Flying fish,Bat
(d) Dessert: Camel, Phrynosoma

2. To study structure of typical animal cell and cell organelles: Golgi body, E.R., Mitochondria, Nucleus, Lysosome, Ribosome, Nucleolus, Cell wall.

3. To study nesting behaviour (Weaver bird, Horn bill) and social behaviour (Honey bees).

4. To prepare blood smear to observe R.B.C.s and W.B.C.s from human blood.

5. To study Blood groups and Rh factor in human blood.

6. Complementary genes, Suplemetary genes.

Reference Books:

(1) Ruppert and Barnes, R.D. (2006). *Invertebrate Zoology*, VIII Edition. Holt Saunders International Edition.
(2) Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). *The Invertebrates: A New Synthesis*, III Edition, Blackwell Science
(3)Kardong, K.V. (2005) *Vertebrates' Comparative Anatomy, Function and Evolution*. IV
Edition.McGraw-Hill Higher Education.
(4) Kent, G.C. and Carr R.K. (2000). *Comparative Anatomy of the Vertebrates*.IX Edition.
The McGraw-Hill Companies.
(5) Young, J. Z. (2004). *The Life of Vertebrates*.III Edition.Oxford University press.
(6) Modern Text Book of Zoology (vertebrate) R.L.Kotpal, Rastogi Publication, Meerut, India.
(7) Modern Text Book of Zoology (invertebrate) R.L.Kotpal,Rastogi Publication, Meerut, India.
(8) Invertebrate Zoology- E.L.Jordan & P.S.Verma
(9) Invertebrate Zoology- T.C. Majupuria, Pradeep Publication, Jalandhar, India.
(10) Intruduction to Chordates- T.C. Majupuria, Pradeep Publication, Jalandhar, India.
(9) A manual of Practical Zoology Invertebrates- P.S.Verma, S. Chand & Co. Ltd. New Delhi, India.
(10) A manual of Practical Zoology Chordates- P.S.Verma, S. Chand & Co. Ltd. New Delhi, India.
(11) Cell biology, Genetics and Molecular Biology- V.B. Rastogi, Rastogi Publi. Meerut- India
(12) Modern zoology –Dr. Ramesh Gupta,Prakash Publication,12th Edition,Muzaffarnagar(UP)

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
F.Y.B.Sc. SEMESTER- II
ZOOLOGY: Z – 201
(Effective from JUNE-2019)
(COMPARATIVE ANATOMY, APPLIED ZOOLOGY, WILDLIFE BIOLOGY)

Unit-1: Integumentary System

Derivatives of integument w.r.t. glands and digital tips

Digestive System

Brief comparative account of alimentary canal and digestive glands of vertebrates (Pisces to mammals).

Unit-2: Respiratory System

Brief account of Gills, Lungs, Air sacs and Swim bladder

Receptor Organs : Cutaneous receptors, Chemo receptors and Internal receptors

Unit-3: Applied Zoology:

- **Poultry Farming**-Importance of Poultry Farming, Breeds of poultry, Cage system and deep litter system of bird keeping, Egg as food, Care of egg laying hen, poultry appliances and excreta as manure.
- **Fisheries**-Prawn fishery,Pearl Oyster fishery and Bombay duck fishery

Unit-4:Wildlife Biology

- Introduction, causes of depletion of wild life, Importance of conservation of wild life
- Difference between National Parks and Sanctuaries
- **Wildlife in Gujarat:**

National Parks

(1) Gir National Park (2) Marine National Park

Sanctuaries

(1)Wild ass sanctuary (2) Thol wildlife sanctuary (3)Velavadar black buck sanctuary

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
F.Y.B.Sc. SEMESTER- II
ZOOLOGY PRACTICALS (Based on Z- 201)
(Effective from JUNE-2019)

(COMPARATIVE ANATOMY, APPLIED ZOOLOGY, WILDLIFE BIOLOGY)

The following practicals are to be taught/studied **only** with the help of charts, models, videos, photographs, permanent slides, working models etc.

1. Integumentary System: Derivatives of integument w.r.t. glands and Digital tips

2. Digestive System: Brief account of alimentary canal and digestive glands

3. Respiratory System: Brief account of Gills, lungs, air sacs and swim bladder

4. Receptor Organs : Cutaneous receptors: Free nerve endings, Tectile corpuscles
Chemo receptors:Taste buds,Organ of Jacobson

5. Study of national parks and Sanctuaries
Gir N.P., Marine N.P., Wild ass W.L.S.,
Thol W.L.S.and Velavadar W.L.S

6. To study Prawn fishery,Pearl Oyster fishery and Bombayduck fishery

7. To study poultry appliances- hover canopy type brooder, modern hanging feeder (plastic), modern hanging water appliance (plastic) and box type candling appliance.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
F.Y.B.Sc SEMESTER- II
ZOOLOGY : Z- 202
(Effective from JUNE-2019)

(LIFE PROCESSES, BIOCHEMISTRY, IMMUNOLOGY AND TISSUE SYSTEM)

UNIT-I Life Processes

Nutrition/ Digestion in Human

- Buccal digestion: Salivary secretion and digestion.
- Gastric digestion: Gastric secretion and digestion
- Intestinal digestion: Pancreatic secretion, bile secretion, digestion in small intestine, digestion and absorption in large intestine

Reproduction and its types

UNIT-II Biological Chemistry

- pH and Buffers in Biological Systems
- Introduction to constituents of balanced diet-Sources, functions and deficiency status
- Diseases due to vitamin deficiency: Xerophthalmia, Nyctalopia (Night blindness),Rickets, Scurvy, Beriberi, Pellagra

UNIT-III Immunology

- Introduction and basic concepts of immunology
- Cells and organs of immune system
- Humoral and cellular immune response
- Innate and acquired immunity

UNIT-IV Tissue systems

To Study various types, their structure and functions.
Epithelial,Connective,Nervous and Muscular tissue

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
F.Y.B.Sc. SEMESTER- II
ZOOLOGY PRACTICALS (Based on Z-202)
(Effective from JUNE-2019)
(LIFE PROCESSES, BIOCHEMISTRY, IMMUNOLOGY AND TISSUE SYSTEM)

The following practicals are to be taught/studied **only** with the help of charts, models, videos, photographs, permanent slides, working models etc.

1. To study the control of food ingestion in animals and T.S. of intestine of mammals to show villi for absorption.

2. To study different salivary glands and their functions in human.

3. Diseases due to vitamin deficiency: Xerophthalmia, nyctalopia (Night blindness),rickets, scurvy, beriberi, pellagra

4. To study Different types of reproduction.

5. Tissue System: Study of various types of tissues with the help of permanent slides- areolar tissue, adipose tissue, Hyaline Cartilage, Mammalian bone, Medulated and non Medulated nerve fiber.

Reference Books :

(1) Shukla, G.S. & Upadhyay, V.B. Economic Zoology. Rastogi Publi. 2005, 487 pages.(For Poultry)
(2) JawaidAhsan, Sinha, S. P. 2008. A Handbook of Economic Zoology. S. Chand and Co. Publ. 272 pages.(For Poultry)
(3) Ruppert and Barnes, R.D. (2006). *Invertebrate Zoology*, VIII Edition. Holt Saunders International Edition.
(4)Kardong, K.V. (2005) *Vertebrates' Comparative Anatomy, Function and Evolution*.IVthEdition.McGraw-Hill Higher Education.
(5) Kent, G.C. and Carr R.K. (2000). *Comparative Anatomy of the Vertebrates*. IX Edition.The McGraw-Hill Companies
(6) Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). *The Invertebrates: A New Synthesis*, III Edition, Blackwell Science
(7) Young, J. Z. (2004). *The Life of Vertebrates*.III Edition.Oxford University press.
(8) Modern Text Book of Zoology (vertebrate) R.L. Kotpal, Rastogi Publication, Meerut, India.
(9) Modern Text Book of Zoology (invertebrate) R.L. Kotpal, Rastogi Publication, Meerut, India.
(10) Invertebrate Zoology- E.L. Jordan & P.S.Verma
(11) Invertebrate Zoology- T.C. Majupuria, Pradeep Publication, Jalandhar, India.
(12) A Text Book of Histology – Leslie P. Gartner-4thedi.-Amazone
(13) Intruduction to Chordates- T.C. Majupuria, Pradeep Publication, Jalandhar, India.
(14) A manual of Practical Zoology Invertebrates- P.S.Verma, S. Chand & Co. Ltd. New Delhi, India.
(15) A manual of Practical Zoology Chordates- P.S.Verma, S. Chand & Co. Ltd. New Delhi, India.
(16)Prani Auotiki (Gujarati)- Desai and Akhunji – University Granth nirman Board- Ahmedabad- India.
(17) Poultry vigyan- Mehta and Ghasura- University Granth nirman Board- Ahmedabad- India.
(18) Vanyajiv Vidya ane Vanyajiv Vyavasthapan- Prof, V.C.Soni - University Granth nirman Board- Ahmedabad- India.
(19) Ecology, Cell biology, Genetics, Animal diversity, Animal Physiology, Immunology, Chordates and Invertebrates- Titles by N.Arumugam, Saras Publi., Kanyakumari, India.

Web references:

(1) Comparative Anatomy - Digestive System
https://www.slideshare.net/emsicipriano/comparative-anatomy-digestive-system
(2)Comparative Anatomy - Respiratory System
https://www.slideshare.net/emsicipriano/comparative-anatomy-respiratory-system
(3)Urogenital system chap
https://www.slideshare.net/CharmHernandez/urogenital-system-chap

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
S.Y.B. Sc. SEM – III
ZOOLOGY PAPER - Z – 301
(Effective from June 2020)
(Non-chordates, Evolution and Economic Zoology)

UNIT – I Classification:

Introduction to classification:

- General study of Non-Chordate Phyla up to Subclass with examples:

- Protozoa
- Porifera
- Coelenterata (Cnidaria)
- Helminthes
- Annelida

UNIT - II Type study: Earthworm:

- Study of the following animal type with reference to the structure and functions of various organs of all systems of **Earthworm**:

- Systematic position
- Habit and Habitat
- External features
- Body wall and its function
- Coelom – composition and function
- Food and feeding mechanism
- Digestive system and digestion
- Circulatory system
- Excretory system and excretion
- Nervous system-(central, peripheral and sympathetic)
- Sense organs- Epidermal receptors, Buccal receptors and photoreceptors
- Reproductive system-copulation, cocoon formation and development

UNIT - 3 Evolution and Adaptations:

- Variation
- Deep sea & Cave Dwelling Adaptations

UNIT – 4 Economic Zoology:

➢ Vermi culture:

- Definition of Vermiculture,Vermicomposting and Vermibed
- Limitations of traditional agricultural system
- Role of earthworm in saving environment
- Vermibreeds
- Earthworm-The Cinderella of Vermiculture
- Ecology of earthworm
- Physical, Chemical and biological parameters of Vermicast
- Vermiculture process
- Advantages and disadvantages of Vermicomposting
- Prospects of Vermiculture and Vermicomposting

➢ **Sericulture:**

- Life-History of Indian species of Mulberry silk-worm (Bombyx mori)
- Management of Silk industry including rearing
- Spinning and reeling
- Types and Economic importance of silk

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
S.Y.B. Sc. SEM – III
ZOOLOGY PRACTICAL (Based on Paper - Z – 301)
(Non-chordates, Evolution and Economic Zoology)

The following practicals are to be taught/studied **only** with the help of charts, models, videos, photographs, permanent slides, working models etc.

1 - Classification of following animals upto sub-class.

- Trypanosoma
- Monocystis
- Vorticella
- Grantia
- Euplectella
- Spongilla
- Hydra
- Cyanea
- Gorgonia
- Planaria
- Taenia
- Ascaris
- Aphrodite
- Tubifex
- Hirudo medicinalis

2 - Earthworm:

- External features
- Digestive System
- Mounting of setae
- Reproductive system
- Mounting of Septal nephridia
- Nervous system Spermatheca
- Blood glands

3 - Permanent Slides of earthworm:

- T.S.passing through pharynx
- T.S.passing through gizzard
- T.S. passing through typhlosolar region
- T.S.passing through testis
- T.S.passing through ovary

4– Evolution and Adaptations:

- Variation:
  - Digits in man
  - Giraffe
- Deep sea adaptations:
  - Euplectella
  - Limulus
  - Feather star
  - Flat fish
- Cave dwelling adaptations:
  - True spiders
  - Proteus anguinus

5 – Economic Zoology:

- Life history of Indian mulberry silk worm (Bombyx mori)
- Vermiculture (with the help of charts/ photographs/ models etc.)
- Vermibreeds, Vermiculture process(Vermicompost practices)

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
S.Y.B. Sc. SEM – III
ZOOLOGY PAPER – IV (Z – 302)
(Effective from June 2020)
(Chordates, Histology and Osteology)

UNIT – 1 Classification:

- General study of the following protochordates and chordates up to subclass with examples:
  - Urochordata
  - Cephalochordate
  - Cyclostomes
  - Pisces
  - Amphibia.

UNIT – 2 Type study:

- Study the ***Labeo rohita*** as an animal type with reference to their structure and functions of various organs of all systems.
  - External characters
  - Digestive system
  - Circulatory systems
  - Urinogenital system
  - Brain

UNIT – 3 Histology:

- Study the Ultra structure following mammalian tissues:
  - Salivary gland
  - Stomach
  - Liver
  - Intestine
  - Pancreas
  - Kidney
  - Ovary

- Testis

UNIT – 4 Osteology:

- Comparative study of girdles in:
  - Scoliodon
  - Frog
  - Varanus
  - Pigeon
  - Rabbit

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
S.Y.B. Sc. SEM – III
ZOOLOGY PRACTICAL (Based on Paper - Z – 302)
(Chordates, Histology and Osteology)

The following practicals are to be taught/studied **only** with the help of charts, models, videos, photographs, permanent slides, working models etc.

1 - Classification of following animals upto sub-class.

- Ascidian
- Salpa
- Oikopleura
- Amphioxus
- Lamprey
- Scoliodon
- Chimaera
- Protopterus
- Eel
- Hilsa
- Pterois
- Frog
- Uruaeotyphlus
- Siren
- Rhacophorus

2 - Labeo rohita

- Digestive system
- Urinogenital system
- Brain-dorsal and ventral view

3 - To study the permanent mammalian histological slides:

- Salivary gland
- Stomach

- Liver
- Pancreas
- Intestine
- Kidney
- Ovary
- Testis

4 - Osteology:

- To study the pectoral girdles and pelvic girdles in:
  - Scoliodon
  - Frog
  - Varanus
  - Pigeon
  - Rabbit

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
S.Y.B. Sc. SEM – III
ZOOLOGY PAPER – V (Z – 303)
(Effective from June 2020)
(Biochemistry, Genetics and Physiology)

UNIT – 1 Biochemistry:

- Introduction and structure of:
  - Carbohydrates
  - Proteins
  - Lipids

UNIT – 2 Genetics:

- Structure and function of genetic material
- Types of RNA

UNIT – 3 Physiology:

- **Muscle coordination:**
  - Types and structure of muscle fibres
  - Physiology of muscle contraction and energetic

UNIT – 4 Hematology:

- Composition of blood
- Haemopoiesis
- Blood groups

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
S.Y.B. Sc. SEM – III
ZOOLOGY PRACTICAL (Based on Paper - Z – 303)
(Biochemistry, Genetics and Physiology)

The following practicals are to be taught/studied **only** with the help of charts, models, videos, photographs, permanent slides, working models etc.

1- Preparation of atomic models:

- Glucose
- Fructose
- Galactose
- Maltose
- Lactose
- Sucrose
- Valine
- Threonine
- Glycine
- Alanine
- Glycerol

2 - Genetics:

- To study Structure of genetic material
- Types of RNA

3 – Haematology:

- To study clotting time of human blood
- Estimation of Haemoglobin from human blood
- To study Haemin crystals from human blood

4 - Physiology

To study different types of muscle fibres and nerve fibres:

- Striated muscle fibre
- Nonstriated muscle fibre
- Cardiac muscle fibre

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
S.Y.B. Sc. SEM – III
MARINE SCIENCE (E. G.)
(Effective from June 2020)

UNIT - 1 Scope of marine science:

- Introduction to marine science and career
- Classification :
    - Prokaryotes
    - Eukaryotes - Fungi, Protista, Plant, Animalia – Five Kingdoms

UNIT – 2 Geology of the ocean:

- Physico-chemical properties of Marine Environment
- Zonations of ocean

UNIT - 3 Marine Biology:

- Adaptations:
    - Bony fish surviving in near freezing water (or adaptations in deep sea fishes)
    - Sea birds
    - Whales and their relations
- General characters of bony and cartilaginous fishes.

UNIT - 4 Marine organisms:

- Microorganisms:
    - Phytoplanktons
    - Zooplanktons
    - Red algae
    - Brown algae
    - Green algae
    - Multicellular algae

- Economic importance of algae

- Macro organisms:
  - Invertebrates-Economic importance
    - Marine sponges
    - Molluscs
    - Arthropods (crab and prawns).
  - Vertebrate: Economic importance
    - Scoliodon (sharks)
    - Marine mammals (whales and dolphins)

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
S.Y.B. Sc. SEM – IV
ZOOLOGY PAPER – III (Z – 401)
(Effective from June 2020)
(Non-chordates, Evolution and Economic Zoology)

UNIT - 1 Classification:

- General study of Non-Chordate Phyla up to Subclass with examples:
  - Arthropoda
  - Mollusca
  - Echinodermata
  - Hemichordata.

UNIT – 2 Type study:

- Study of the following animal types with reference to the structure and functions of various organs of all systems of **Pila**:
  - Classification and external characters
  - Digestive system
  - Respiratory system
  - Blood vascular system
  - Excretory system
  - Nervous system
  - Reproductive system

UNIT – 3 Evolution and adaptations:

- Evidence of evolution from comparative functional anatomy:
  - Homologous
  - Analogous and vestigial organs
  - connecting link
  - Atavism (Reversion)
  - Protective coloration and mimicry

UNIT - 4 Economic Zoology:

- Dairy Farming:
  - Definition of Dairy and other allied aspects, Indian breeds of cows and buffaloes,
  - Milk and milk by-products
- Apiculture:
  - Life-history of Honey-bees
  - Types
  - Castes
  - Structure of honeycomb
  - Economic importance of honey and wax

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
S.Y.B. Sc. SEM – IV
ZOOLOGY PRACTICAL (Based on Paper - Z – 401)
(Non-chordates, Evolution and Economic Zoology)

The following practicals are to be taught/studied **only** with the help of charts, models, videos, photographs, permanent slides, working models etc.

1 - **Classification** of following animals upto sub-class. (with the help of specimens, photographs, charts, models etc.)

- Peripetus
- Crab
- Julus
- Palaemon
- Silverfish
- Termite
- Butterfly
- Chaetoderma
- Unio
- Aplysia
- Sepia
- Starfish
- Brittle star
- Sea cucumber
- Feather star
- Balanoglossus

2 - **Pila** to be taught/studied only with the help of charts, models, videos, photographs, permanent slides, working models, simulators etc.

- External features
- Digestive system
- Reproductive system
- Nervous system
- Mountings:

- Osphradium
- Radula
- Statocyst

3 - **Evolution**

- Homologous organs-Forelimbs and hind limbs of chordates
- Analogous organs-Wings of butterfly, birds and bats
- Vestigial organs-Caecum and vermiform appendix in man ,hindlimbs in python, leg bones in whale
- connecting link-Archaeopteryx,Ornithorhyncus,Peripatus
- Atavism (Reversion)- Human babies with a tail, Dolphins with legs, Iris dogman

4 - **Protective coloration and mimicry**

- Leaf insect
- Stick insect
- Lantern fly
- Eye spot Butterfly
- Australian seahorse
- Rattle snake

4 - **Economic Zoology:**

- Dairy Farming:
  - Indian breeds of cows and buffaloes
- Apiculture:
  - To study Life history of Honey bee
  - Queen
  - Drones
  - Workers
  - Honey and Wax
  - Modern movable beehive

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
S.Y. B.Sc. SEM – IV
ZOOLOGY PAPER – IV (Z – 402)
(Effective from June 2020)
(Chordates, Embryology and Osteology)

UNIT – 1 Classification:

- Introduction to classification: General study of the following chordates up to subclass with examples:
  - Reptilians
  - Aves
  - Mammals

UNIT – 2 Animal Type Study:

- Study of the **Uromastix** with reference to their structure and functions of various organs of all systems:
  - External characters
  - Digestive system
  - Circulatory systems
  - Urinogenital system
  - Brain

UNIT – 3 Embryology:

- Different types of eggs
- Cleavage patterns
- Development of frog (up to neurulation)
- Metamorphosis

UNIT – 4 Osteology:

- Comparative Study in frog, varanus, pigeon and rabbit
  - Fore limbs
  - Hind limbs

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
S.Y.B. Sc. SEM – IV
ZOOLOGY PRACTICAL (Based on Paper - Z – 402)
(Chordates, Embryology and Osteology)

The following practicals are to be taught/studied **only** with the help of charts, models, videos, photographs, permanent slides, working models etc.

1 - Classification of following animals upto sub-class. (with the help of specimens, photographs, charts, models etc.)

- Calotes
- Draco
- Testudo
- Python
- Krait
- Aligator
- Pigeon
- Wood packer
- Vulture
- King fisher
- Echidna
- Kangaroo
- Loris
- Porcupine
- Squirrel
- Dolphin

2 - The following practicals of **Uromastrix** to be taught/studied only with the help of charts, models, videos, photographs, permanent slides, working models, simulators etc.:

- Digestive system
- Circulatory system
- Urinogenital system
- Dorsal and ventral view of brain

3 – Study of frog embryology (with the help of models /charts /specimens /photographs /permanent slides etc).

- Uncleaved egg
- 2 cell stage
- 4 cell stage
- 8 cell stage
- 16 cell stage
- Blastula
- Gastrula
- Metamorphosis (Tadpole larva)

4 - Osteology:

- Comparative Study in frog, varanus, pigeon and rabbit
  - Fore limbs
  - Hind limbs

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
S.Y. B.Sc. SEM – IV
ZOOLOGY PAPER – III (Z – 403)
(Biochemistry, Genetics and Animal Physiology)

UNIT – 1 Biochemistry

- Classification of
  - Carbohydrates
  - Proteins
  - Lipids

UNIT – 2 Genetics:

- Epistasis genes
- Concept of lethal alleles and pseudo alleles

UNIT – 3 Physiology:

- **Nervous coordination:**
  - Synapse and mechanism of nerve impulse conduction
  - Structure and function of sense organs (human) eye & ear

UNIT – 4 Physiology:

- **Excretion and osmoregulation:**
  - Structure of uriniferous tubule
  - Physiological process of excretion (including counter current mechanism) and urine formation; hormonal control (rennin angiotensin system and ADH); Osmoregulation in fresh and marine waters
  - Osmosis, diffusion and Donnan's equilibrium

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
S.Y. B. Sc. SEM – IV
ZOOLOGY PRACTICAL (Based on Paper - Z – 403)
(Biochemistry, Genetics and Animal Physiology)

The following practicals are to be taught/studied **only** with the help of charts, models, videos, photographs, permanent slides, working models etc.

1. Qualitative test for organic compound:

- Carbohydrates:
  - Glucose
  - Fructose
  - Maltose
  - Lactose
  - Sucrose
- Proteins:
  - Albumin
  - Casein

2. Genetics:

- To study Epistasis genes, lethal alleles, pseudo alleles by chart.

3. Physiology:

- To determine normal constituents of urine.
- To determine abnormal constituents of urine.

4. Physiology:

- To study different types of Sensory organs –human eye and ear.
  Different types of nerve cells.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
S.Y. B.Sc. SEM – IV
MARINE SCIENCE (EG)

UNIT-1

- Types of seashores and their fauna:
  - Sandy shore
  - Rocky shore
  - Estuaries

UNIT-2

- Coral and coral reefs:
  - Types
  - Economic importance and threats.
- Voyage of green sea turtle.

UNIT- 3

- Introduction to aqua culture:
  - History
  - Scope
  - Present status

General idea of different aquaculture practices:

- Monoculture
- Polyculture
- Extensive culture
- Intensive culture

UNIT-4

- Marine Pollution:
  - Causative factors and impacts

Reference Books for Z-301 & 401

1. Living Invertebrates, 1987: Pearse, Buchsbaum, Blackwell Scientific Publication, California.
2. A Text book of Zoology Invertebrates, Vol. I 1992, 7th Edn. Parker and Haswell edited by Marshall William, C B S publishers and distributors, New Delhi.
3. Invertebrate Zoology, 1992; S. N. Prasad, Vikas Publishing House, New Delhi.
4. Life of Invertebrates, 1992; S.N. Prasad, Vikas Publishing House, New Delhi.
5. Invertebrate Zoology, 1992 4th Edn., reprint, P.S. Dhami and J. K. Dhami, R. Chand and Co., New Delhi.
6. Modern text book of Zoology, Invertebrates 10th Edn., 2009, R.L. Kotpal, Rastogi publ., Meerut.
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13.A text book of Zoology, Vol.II, 1990, T. J. Parker and W. A. Haswell, Low price Publication, Delhi.
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15.Economic Zoology,Biostatistics and Animal Behaviour,2005-2006,Rastogi Publication,Shukla,Mathur,Upadhyay,Prasad

Reference Books for Z-302 & 402

1. A text book of Zoology, Vol.II, 1990, T. J. Parker and W. A. Haswell, Low price Publication, Delhi.
2. Modern Text Book of Zoology, 1992, R. L. Kotpal, Rastogi Publication, Meerut.
3. Chordate Zoology, 1982, P. S. Dhami and J. K. Dhami, R. Chand and Co., New Delhi.
4. The life of Vertebrates, 3rd edn.1993, J. Z. Young, Oxford University Press, USA.
5. The Phylum Chordata: Biology of Vertebrates and their Kin, 1987, H. H. Newman, Distributor Satish book enterprise, Agra.
6. A text book of Zoology, 1984, R. D. Vidyarthi, S. Chand and Co., New Delhi.
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9. Vertebrate Practical Zoology, 11th revised Edition, 2014, S. S. Lal, Rastogi publ.,Meerut.
10. Practical Zoology, 2004, Vijay Laxmi Sharma, Paragon International Publishers.
11. The anatomy of Garden Lizard, 1974, S.Y. Paranjape, Pune University Publication,Pune.
12. Chordate Zoology, 2009 reprint, E. L. Jorden, S. Chand and Co., New Delhi.
13. Text book of Zoology, Vertebrates, Vol. II, T.J. Parker and W.A. Haswell, edited by Marshall and Williams, CBS Publications, New Delhi.
14. An Introduction to Embryology 2012, 5thEdn., Balinsky B. L., Fabian B. C. Brooks Cole Pub. Co., USA.
15. Developmental Biology: Patterns**,** principle and problems, 1982, Saunders J. W., Prentice Hall Coll Div.
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CBH Publisher and distributors, Delhi.
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3. Harpers Biochemistry ,1996 ,26 th Edn., Murray R.k.,Granner D.K. ,Mayes P.A. &Rodwell
V.W. Prentice Hall international USA.
4. Outline of biochemistry, 1995 5th Edn, Conn E.E., Stumph P.K. Bruening G &Doi R.H.John Wiley & Sons, USA
5. Principals of Biochemistry, 1993, 1st Edn., Pattabhiraman T.N.,Gajanan Book publisher s and distributors Bangalore.
6. Clinical Biochemistry, 1994, B. P. Godkar, Bhalini Publishing house, Mumbai.
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10. Introduction of Medical Laboratory Technique,1998, 7th Edn., Baker F. J., Silverton R.
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21. Elementary Microtechnique, 1973, 4th Edn., Peacock H.A., Edward Arnold Publ. Ltd., UK
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24. Biological Instrumentation and methodology, 2008, 2nd Revised Edition, P.K. Bajpai, S. Chand and Co. Ltd., New Delhi.
Textbook of Medical Physiology, Guyton A.C. & Hall J.E., 2006, 11th Edition, Hercourt Asia Pvt. Ltd. / W.B. Saunders Company
25. Principles of Anatomy & Physiology, 2006, 11th Edition, Tortora G.J. & Grabowski S., John Wiley & sons, Inc.
26. Human physiology, Vol. I & II, 1980, 12th Edn. Dr. C. C. Chatterjee, Medical applied agency, Kolkata
27. Text book of Animal Physiology, 2008, 2nd Edn. Nagabhushanam, S. V. S. Rana, S. Kalavathy, Oxford University Press, India.
28. Animal Physiology: Adaptation and Environment, 1997, Schmidt-Nielsen, Knut, Cambridge University Press,
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31. Endocrinology, 2005, Lohar P. S., M J P Publishers, Chennai
32. Vander, Sherman, Luciano's Human Physiology: The Mechanisms of Body Function, 2003, 9th Edn., Eric P. Widmaier, Hershel Raff , Kevin T. Strang , Mc Graw Hill
33.Textbook of Practical Physiology,2001,G.K.Pal,Pravati Pal:Orient Longman
34.Experimental Physiology,2005,S.C.Rastogi:New AgeInternational Publishers.

Reference Books For Marine Science:

1) Fundamentals of Ecology- E.P.Odum
2) Marine biology and Ecology-N.K.Pillai
3) Fishes-Mary Chandy
4) Fish and Fisheries of India-V.G. Jhingran
5) Fish and Fisheries-S.S.Khanna.
6) Marine Fish Farming for India-James Hornell
7) Introduction to Marine Biology-Karleskint
8) Marine fisheries Extension-P.N.Ananth
9) General and Applied Ichthyology(fish and fisheries)-S.K.Gupta & P.C.Gupta.:S.Chand and Co.NewDelhi.
10) Aquaculture Technology & Environment-Ujwala Jadhav.
11) Economic Zoology- Dr.G.S.Shukla &Dr.V.B.Upadhyay
12) Fish and Fisheries,2013,Dr.Arvind N.Shukla,D.P.H.Pvt.Ltd.New Delhi
13) Economic Importance of Fisheries and Aquaculture,2013,S.K.Rao & S.Rawat,Campus Books, New Delhi

Page 1 of 2

Veer Narmad South Gujarat University, Surat

M. Sc. Biotechnology Semester-X

List of Research Papers: 2020-2021

BT: R-4002 Review of Published Research Paper/Article

Sr. No.	Title
1.	A liposomal formulation of.... Journal of Nanobiotechnology
2.	Non-invasive early detection of cancer.... Nature Communications
3.	Au-Ag assembled on silica.... Journal of Nanobiotechnology
4.	Characterization and Engineering of.... PNAS
5.	Plant-associated bacteria mitigate.... Environmental Sc. and Pollution Research
6.	Entry of Human Coronavirus NL63.... Journal of Virology
7.	Aerobic microbial life persists... Nature Communications
8.	Genome-wide identification, expression.... Journal of Plant Biology
9.	Identification of differently expressed.... Current Genomics
10.	Potential of Bacillus pumilus.... Biotecnologia Vegetal

26/03/2021 26/3/21 26.3.2021

P.G.DIPLOMA

IN

MEDICAL LABORATORY TECHNOLOGY

Post Graduate Diploma in Medical Laboratory Technology (PGDMLT) is a one year Post-Graduate (Post B.Sc.) course.

1. Title of the Course: P.G. Diploma in Medical Laboratory Technology (PGDMLT)

2. Eligibility: Candidate should have a B.Sc. degree of Veer Narmad South Gujarat University, Surat with (A) or (B) or equivalent qualification of other recognized University.

(A)Microbiology, Chemistry (Biology at F.Y. B.Sc. level), Botany, Zoology, Medical Technology, MLT, Environment , Biochemistry, Biosciences, Life sciences or Biotechnology as the principal subjects

(B) M.B.B.S, BDS, BAMS, BHMS, B.sc Nursing, B.sc Optometry, B. Pharmacy, B. Physiotherapy

3. Admission: Admission to the course should be done once in a year. The course will begin in the month of July, each year (After declaration of B.Sc. results of Universities) and will extend over two academic terms – July to October and November to April.

4. Learning objectives:

1. To have theoretical and practical knowledge about principles, procedures, interpretation and preparation of reagents for routine clinical laboratory investigations performed for laboratory diagnosis of various human diseases, so that after completion of the course the candidate may be able to perform routine clinical laboratory investigations in any clinical laboratory.

2. To have theoretical and practical know-how in advanced newer techniques so that trained personnel can apply these wherever facilities exist.

The learner at the end of the course will –

- Be able to work as technician in laboratories attached to hospitals under the supervisions of senior officers like Biochemist, Microbiologist or Pathologist.
- They may be employed in a small laboratory functioning independently or attached to a doctor's clinic. Nature of the job dictates that the candidate should give more emphasis on learning of practical skills along with a basic knowledge of the subject.
- Be able to carry out the routine tests in all these fields personally. He / She will maintain effective quality control and provide the patient with reliable reports.
- Will acquire the necessary oriental knowledge and practical skill expected of him for the fulfillment of above objectives.
- Aacquire theoretical knowledge and practical skill leading to further specialization in the elective field.
- Process information and ensure quality control as appropriate to routine laboratories
- Upgrade knowledge and skills in a changing healthcare scenario
- Appreciate and follow the ethical standards of the profession and will demonstrate qualities of honesty and accuracy towards his work and sympathy towards the suffering patients.

5. Duration: One Year (Full Time)

6. Pattern: Annual

7. Medium of Instruction: English

8. Structure of the Course:

i. Total number of papers: THEORY: 4; PRACTICAL: 4

A student offering this course will study Papers I, II, III, IV & Practicals based on these papers.The teaching per week for 4 papers is 16 hours & there are 16 hours per week for practicals.

ii. Pattern of Examination: The examination shall be held for 700 marks.

The total marks of papers are 280 for University examination, distributed as 70 of each paper of 3 hours duration & the internal evaluation is of 120 marks distributed as 30 of each paper. The total marks of practicals are 210 for University examination, distributed as 54 for practical paper-I & practicals papers II, III, & IV are each of 52 marks. The internal evaluation for practical is of 90 marks distributed as 24, 22, 22, & 22 for practical based on Paper I, II, III & IV respectively. The University examination for practicals based on paper I is of 12 hours distributed over a period of 2 days & for practicals based on paper II, III, & IV are of one day each & 6 hours per day.

Theory examination for four subjects shall be conducted on separate days. Practical examination for four subjects will be conducted on five consecutive days.

University examination for DMLT will be conducted at the end of the course i.e. after completion of two academic terms. For failed candidates, midterm examination will be conducted in month of October or November.

iii. Nature of Question Paper (Theory): For university examination there shall be a question paper of 70 marks and three hours duration, for each subject. The paper shall be of following nature –PAPER STYLE

Paper No (Code) & Name of Paper; Section: Name of subject (35 Marks)

Q-1. Objective type Question (Multiple Choice/True or False/Short Answer type from all 6 Units(5 out of 6) 05 Mark.

Q-2. Descriptive Questions from Unit 1& 2(2 out of 3) 10 Marks

Q-3. Descriptive Questions from Unit 3& 4 (2 out of 3) 10 Marks

Q-4. Descriptive Questions from Unit 5& 6 (2 out of 3) 10 Marks

iv. Teaching and Examination hours break up:

PAPER NO.	**PAPER CODE**	**TITLE OF THE PAPER/NAME OF THE SUBJECT**	**TOTAL MARKS**			**UNIVERSITY EXAM DURATION (HRS)**	**NO. OF LECTURES (1 HOUR DURATION) PER WEEK**
			External	Internal	Total		
1	DMLT 1	Medical Microbiology & Immunology	70	30	100	3	4
		Practical in Medical Microbiology & Immunology	54	24	78	6X2=12	4
2	DMLT 2	Clinical Pathology & Parasitology	70	30	100	3	4
		Practical in Clinical Pathology & Parasitology	52	22	74	6	4
3	DMLT 3	Haematology & Blood Banking	70	30	100	3	4
		Practical in Haematology & Blood Banking	52	22	74	6	4
4	DMLT 4	Fundamentals in Medical Laboratory Technology & Clinical Biochemistry	70	30	100	3	4
		Practical in Fundamentals in Medical Laboratory Technology & Clinical Biochemistry	52	22	74	6	4
Total			490	210	700		32

v. Standard of Passing:

a. Candidate must obtain 40 % marks in theory papers and practical papers separately.

b. There will be a separate head of passing for theory papers and practical. If candidate fails in one of the heads, he / she has to reappear only for the failed head.

c. Training – The candidate has to complete the training in any recognized clinical laboratory or institute or hospital, of a period of minimum 30 days in each of the practical subject.

vi. Qualification of the Examiners:

All examiners on the University panel for theory and practical should have Master degree in the subject/ relevant subject. There will be two examiners (Preferably one internal and one external) for practical examination in each subject.

Introduction:

Medical Laboratory Technology/Medical Technology is the branch of science which deals with all the clinical laboratory investigations on clinical samples for laboratory diagnosis of various diseases. Blood, tissue and body fluids are analyzed and examined for various types of foreign organisms and abnormalities. This information is then used by the medical team to make decisions regarding a patient's medical care. 85% of all medical decisions are based on the results of clinical laboratory investigation reports.

Medical Laboratory Science is an important subject in the field of Medicine. In each system of Medicine, diagnosis of disease is a primary step because no treatment is possible without a proper diagnosis. It is the Medical Laboratory Technocrat, who performs this important task by various scientific tools and techniques. In today‘s modern world of technology, the diagnosis, treatment & prognosis of various diseases depends upon the results of investigations carried out in a clinical laboratory. Thus, these professionals play a key role in the field of health care. Medical Laboratory Science has played a significant role in the advancement in the field of Medicine, especially in past few decades. As modern medicine becomes more of a team effort, the Medical Laboratory Scientist/Technologist is an important member and integral part of the Medical team.

Definition of Medical Laboratory Technology/Science:

“A medical laboratory professional (also referred to as a Medical Laboratory Technologist, a Clinical Laboratory Scientist or Clinical Laboratory Technologist) is a healthcare professional who performs chemical, hematological, immunologic, microscopic and microbiological diagnostic analyses on body fluids such as blood, urine, sputum, stool, cerebrospinal fluid (CSF), peritoneal fluid, pericardial fluid, and synovial fluid, as well as other specimens. Medical laboratory scientists work in clinical laboratories at hospitals, reference laboratories, biotechnology laboratories and non-clinical industrial labs.”

Education of the medical laboratory professional

When developing any education programme, it is necessary that programme planning should be outcome-based and should meet local and national manpower requirements. It should also provide personal satisfaction and career potential for the professionals with supporting pathway in the development of the profession. One of the major changes is the shift from a focus based on traditional theoretical knowledge, to a skills-and competencies-based education and training. Optimal education/training requires that the student is able to integrate knowledge, skills and attitude in order to be able to perform a professional act adequately in a given situation. Thus, the following curriculum is prescriptive, aims to focus on a skills-and competencies-based approach for learning and is designed accordingly to standardize the content across the nation.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
REVISED SYLLABUS FOR P.G.DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY
SUBJECT CODE: DMLT 1: PAPER – I: MEDICAL MICROBIOLOGY & IMMUNOLOGY
SECTION – I: MEDICAL MICROBIOLOGY

Rationale: The Medical Microbiology course has been formulated to impart basic and medically relevant information on the microbes. The microbial structure, growth and development, methods and role of sterilization in the context of study of microbes are included. The pathogenic microbes and the diseases caused by them are included to broaden the perspective of the subject. This course will also focus on mechanisms of microbial pathogenesis and the host response, and the scientific approaches that are used to investigate these processes. Lastly the course deals with the problem of emerging antimicrobial resistance with reference to known pathogens.

Unit	Topics	Content/ Fundamental Concepts
1.	INTRODUCTION TO CLINICAL MICROBIOLOGY	1.1 EVOLUTION AND HISTORY OF MICROBIOLOGY: a) Definition b) History c) Discovery of microorganisms d) Contributions of Louis Pasteur and Robert Koch in Medical Microbiology. 1.2 CLASSIFICATION OF MICROORGANISMS: a) General characteristics of prokaryotes & eukaryotes b) Morphological classification of bacteria c) Introduction to Bacterial cell structures 1.3 MICROSCOPY a) Introduction and history b) Types of microscopes: Principles & Components i. Light microscope ii. Dark field microscope iii. Fluorescent iv. Phase contrast v. Electron microscope: Transmission/ Scanning c) Importance and applications of dyes, stains, fixatives, mordent and intensifiers.

2.	PURE CULTURE STUDY	2.1Types of media: Principle, composition and use a) Nutrient Agar b) Mac Conkey Agar c) Eosin Methylene Agar d) CLED Agar e) W B Agar f) Kings Agar g) MSA h) PSA 2.2 Methods of Cultivation a) Broth, slant and Stab b) Enrichment technique 2.3 Methods of Isolation 2.4 Preservation
3.	STERILIZATION AND DISINFECTION	3.1 Sterilization a) Introduction and Definition b) Principles and applications 3.2 Physical Methods a) Heat b) Radiation c) Filtration 3.3 Chemical methods a) Alcohol b) Phenol & Phenolic compounds c) Hypochlorite d) ETO e) β- propionolactone 3.4 Ideal characteristics and mode of action of Disinfectants 3.5 Antibiotic susceptibility test by disk diffusion technique
4.	LABORATORY DIAGNOSIS OF INFECTIOUS DISEASES	4.1 Collection, preservation, transport, processing and disposal of following clinical samples for culture a) Blood b) Throat c) Sputum d) Pus e) Urine f) Stool g) C.S.F h) Other body fluids
5.	CLINICAL BACTERIOLOGY	5.1 Identification of microorganisms by morphological, cultural and biochemical characteristics *a) Staphylococcus aureus* *b) Bacillus cereus* *c) Escherichia coli* *d) Klebsiella spp.* *e) Enterobacter aerogenes*

		f) Proteus vulgaris *g) Salmonella spp.* h) *Pseudomonas aeruginosa* 5.2 Pathogenesis and laboratory diagnosis of microbial disease a) TB b) Syphilis c) Diphtheria d) Food poisoning e) Typhoid f) Leptospirosis 5.3 Nosocomial Infections 5.4 Automation a) BACTEK b) VITEK
6	CLINICAL MYCOLOGY & VIROLOGY	6.1 Mycology a) Introduction of Mycosis b) Morphology of fungi c) Specimen collection & diagnostic methods of fungal infection 6.2 Virology: Morphology, Pathogenesis and Laboratory diagnosis of a) Hepatitis b) AIDS c) Dengue d) Chikungunya

REFERENCE BOOKS:

1. Godkar P B.Text book of Medical Laboratory Technology, 2nd Edn.2003 Bhalani Publication.
2. Ananthnarayan R. and Jayram Paniker C.K. Text book of Medical Microiology,5th Edn. Orient Longman, Madras.
3. Mackie and McCartney Medical Microbiology. A Guide to Laboratory Diagnosis and control of Infection.13th ed., J.P.Duguid, B.P.Marmion and R.H.A.Swain, The English Language Book Society and Churchil Company.
4. Cheesbrough Monica ,District laboratory practice in tropical countries VOL-1 & 2, , Cambridge University Press.
5. Prescott M,Harley John P., Microbiology, 8th edition, Lansing, Donald A. Klein, McGraw Hill.
6. A text book of Microbiology and immunology, 2nd Edition, Subhash Chandra Parija, ELSEVIER, a division of Reed Elsevier India Private Ltd.
7. Modi H.A.,Elementary Microbiology,Fundamentals of Microbiology,Vol-1,Akta Prakashan,Nadiad
8. Mukharjee K.L. (1999),*Medical Laboratory Technology*,Vol II, 2nd ed .,Tata MacGraw Hill.

SECTION – II: IMMUNOLOGY

Rationale: The students will learn how to analyze various clinical patients samples, for estimation of different components which are the cause of the immune disease or are the diagnostic/prognostic markers. This subject gives information about various clinically important cells of immune system, lymphoid organs, antigen, antibody, Ag-Ab. reactions, transplant immunology etc. & automation techniques.

Unit	Topics	Content/ Fundamental Concepts
1.	IMMUNITY	1.1 Introduction 1.2 Classification of immunity a) Innate immunity b) Acquired immunity c) Active & Passive immunity d) Cell mediated immunity e) Humoral immunity 1.3 Organs and cells of immune system
2.	ANTIGEN & ANTIBODY	2.1 Antigens a) Defination, Characterstics ,Properties of antigen b) Classification of antigens. c) Types of Antigen- Haptens and Epitopes 2.2 Antibodies/ Immunoglobulins a) Defination, Characterstics,properties,Structure & Types of immunoglobulins b) Monoclonal Antibodies and their production c) Polyclonal antibody
3.	ANTIGEN-ANTIBODY REACTION	3.1 Defination, Mechanism and Factors affecting antigen –antibody reactions. 3.2 Principle, procedure and applications of various antigen antibody reactions a) Precipitation b) Agglutination c) Fluorescent – antibody technique d) RIA e) Enzyme linked immunosorbent assay (ELISA) f) Complement fixation test 3.3 Immunochromatograghy
4.	COMPLEMENT & VACCINES	4.1 Introduction, types & functions of complement system. 4.2 Introduction & types of vaccine. 4.3 Vaccination Schedule in India
5.	IMMUNOLOGICAL DISORDER	5.1 Hypersensitivity: Classification and Immunological basis 5.2 Auto-immunity: Mechanisms and classification of auto immune disorders 5.3Immunodeficiency: Immunological basis of Primary and secondary Immunodeficiency Diseases

6.	ADVANCED DIAGNOSTIC TECHNIQUES	6.1Blotting Techniques 6.2 Nucleic acid amplification test(NAT) 6.3 Chemilumenescence.

REFERENCE BOOKS:

1. Ananthnarayan R.and Jayram Paniker C.K. Text book of Medical Microiology,5th Edn. Orient Longman, Madras.
2. Godkar P B.Text book of Medical Laboratory Technology, 2nd Edn.2003 Bhalani Publication.
3. Roitt I.M.,Essential Immunology, 6 th Edn. ELBS, London
4. Talwar G. P., A Hand book of Practical Immunology,1st Edn. Vikas Publishing House.
5. Owen,Judith A. ,PuntStanford,Sharon A.,Jones,Patricia P., Kuby Immunology.,7th ed.Macmillan Higher education Pub.

PRACTICAL BASE ON PAPER-1

SECTION-I:MEDICAL MICROBIOLOGY

1. Study of Compound Microscope.
2. Cleaning, Neutralization and preparation of glassware for sterilization.
3. Examination of living Bacteria.
    a) Wet mount preparation
    b) Hanging – drop technique.
    c) Semisolid stab agar test.
4. (A) Staining of the bacterial cell
    a) The Simple Stain
    b) The Negative Stain.

   (B) Differential Staining
    a) The Gram Stain
    b) The Acid fast Staining.

   (C) Special Staining
    a) The Spirocheate Stain
    b) The Metachromatic Granules Stain.
    c) The spore Stain
    d) The Capsule Stain
5. Study of some important biochemical reactions.
    a) Indole Test.
    b) Methyl red Test.
    c) V.P. Test.
    d) Citrate Utilization Test.
    e) H_2S Production (2% peptone)
    f) Study of TSI slants with different
    g) Fermentation of Sugars
    h) Test for enzyme activity-Oxidase, Catalase, Coagulase, Urease,
6. Preparation of media, pH adjustment and preparation of buffers

   (A) Bacteriological Media
    a) Nutrient agar
    b) MacConkey' agar
    c) EMB agar

d) Wilson & Blair's agar for Salmonella sp.
e) CLED medium for Urinary Tract Infection.
f) King's medium for Pseudomonas sp.
g) Manitol Salt agar for *Staphylococcus* sp.

(B) Mycological Media

a) Potato – dextrose agar.
b) Glucose Yeast Extract agar.
c) Sabouraud's agar

7. Pure culture study of the following cultures.

(i) *Bacillus cereus*
(ii) Staphylococcus aureus
(iii) Escherichia coli
(iv) Enterobacter aerogenes(Klebsiella mobillis)
(v) Klebseilla pneumoniae
(vi) Proteus vulgaris
(viii) Salmonella typhi / paratyphi A / paratyphi B
(ix) Pseudomonas aerugenosa

7. Demonstration of common fungi - Penicillin, Aspergillus, Rhizopus, Mucar, Yeast.
8. Schematic Processing/Methods of Isolation and identification of aerobic and anaerobic bacteria/pathogens from pathological specimens- Blood; Urine; Stool; Pus; CSF; Sputum; Body Fluid; Ear Swab; Eye Swab; Nasopharyngeal Swab; Throat Swab
9. Antimicrobial susceptibility testing by Kirby-Bauer disc diffusion method

SECTION-II: IMMUNOLOGY

Diagnostic tests:

1. ICT/Dot immunoassay/ Flow through assay for HIV Ab
2. ICT/Dot immunoassay/ Flow through assay for HBs Ag
3. ICT/Dot immunoassay/ Flow through assay for HCV Ab
4. Slide / Tube/ Strip / Cassette, Dot immunoassay test for typhoid
5. Slide test for syphilis/Flow through /Spot/ Immunodot for Syphillis
7. Slide / Strip / Cassette test for Pregnancy
8. Latex test for Rheumatoid arthritis
9. Latex test for C-Reactive protein
10. Latex test for Anti Streptolysin O (ASO).
11. Leptospirosis ICT (Demonstration)
12. Chickungunya ICT (IgG,IgM) (Demonstration)

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

REVISED SYLLABUS FOR P.G.DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY

SUBJECT CODE: DMLT 2: PAPER – II: CLINICAL PATHOLOGY & PARASITOLOGY

SECTION – I: CLINICAL PATHOLOGY

Rationale: The candidates are imparted basic training of theoretical and practical in the field of clinical pathology.The training in this subject enables the students to carry out routine clinical laboratory

investigation (urine, stool, sputum etc.). The candidates are made to learn collection of clinical samples and their processing along with basic histopathological technique and recording of data.

Unit	Topics	Content/ Fundamental Concepts
1.	URINE ANALYSIS	1.1 Formation of urine and its composition 1.2 Indications,Collection, Preservation & Transportation of Urine specimen. 1.3 Routine Examination -Physical, Chemical & Microscopic. 1.4 Correlation of urinary findings in various diseases. 1.5 Automated Urine Analysis & Reagent Strip Method 1.6 Pregnancy Test
2.	STOOL ANALYSIS	2.1 Indication, Collection, Preservation, Transportation of stool 2.2 Routine - Physical, Chemical & Microscopic Examination of stool 2.3 Significance of presence of blood and excess fat in stool. 2.4 Occult blood – Detection 2.5 Concentration methods for detection of intestinal parasites
3.	SEMEN ANALYSIS	3.1 Formation of semen 3.2 Indication, Collection, Preservation, Transportation of semen specimen 3.3 Physical, Chemical & Microscopic Examination as per WHO Recommendation. 3.4 Medico – legal significance of Semen examination.
4.	CEREBROSPINAL FLUID	4.1 Formation of C.S.F. 4.2 Composition of CSF. 4.3 Collection, Preservation & Transportation of C.S.F. 4.4 Physical, Chemical & Microscopic Examination. 4.5 Correlation of Abnormal C.S.F. findings in various diseases.
5.	EXAMINATION OF BODY FLUIDS & SPUTUM	Formation ,Composition, Indications, Significance, Collection, Preservation, Transport and Routine Examination of 5.1 Pleural 5.2 Peritoneal 5.3 Pericardial 5.4Synovial fluid 5.5 Gastric Juice 5.6 Sputum
6.	HISTOPATHOLOGY TECHNIQUES	6.1Introduction to Histotechnology 6.2 Types of fixatives uses. 6.3 Decalcification 6.4 Basic concept of tissue processing. 6.5 Microtomy & Types of Microtome 6.6 Principle & Procedure of Staining techniques: H &E, PAP 6.7 Automated tissue processing 6.8 Museum- Technique & Specimen preservation. 6.9 FNAC

REFERENCE BOOKS:
1. Godkar P. B. (2014). *Textbook of Medical Laboratory Technology*, 3rd ed., Bhalani Publishing house.
2. Ochei J. & Kolhatkar A. 2000, *Medical Laboratory Science: Theory & Practice,* Tata McGraw Hill Pub.
3. Mukharjee K.L. (1999),*Medical Laboratory Technology*,Vol II, 2nd ed .,Tata MacGraw Hill.
4. Mohan H. (2005). *Textbook of Pathology*, 5th ed., Jaypee Brothers Medical publishers (P) LTD.
5. Sood R. (1994) *Medical Laboratory Technology*, 4th ed., Jaypee Brothers.
6. Kawthalkar S M, Essential of Clinical Pathology,2nd ed., Jaypee Brothers.

SECTION – II: PARASITOLOGY

Rationale: The candidates undergoing training medical laboratory technology are made to learn the techniques of collection of samples, their processing and identification of various parasitic pathogens, using different procedures with special reference to their habitat, morphology, life cycle and their isolation, identification for diagnostic purpose.

Unit	Topics	Content/ Fundamental Concepts
1.	GENERAL PARASITOLOGY	1.1 Introduction to Medical Parasitology with respect to terms used in Parasitology 1.2 General characteristics and Classification of Parasite 1.3 Types of Parasite and Types of Host 1.4 Host –Parasite Relationship 1.5 Mode of transmission 1.6 Laboratory Diagnosis of Parasitic Infection
2.	PROTOZOOLOGY I	Morphology, Life cycle,Mode of infection and Laboratory diagnosis 2.1 *Entamoeba histolytica* 2.2 *Trichomonas vaginalis* 2.3 *Naegleria fowleri* 2.4 *Acanthamoeba* species
3.	PROTOZOOLOGY II	Morphology, Life cycle ,Mode of infection and Laboratory diagnosis 3.1 *Leishmania donovani* 3.2 *Giardia lamblia* 3.3 *Plasmodium falciparum & Plasmodium vivax* 3.4 *Toxoplasma gondii*
4.	CESTODES	Morphology, Life cycle , Mode of infection and Laboratory diagnosis 4.1 General characteristics of Cestodes 4.2 *Taenia saginata* 4.3 *Taenia solium* 4.4 *Echinococcus granulosus*
5	TREMATODES	Morphology, Life cycle , Mode of infection and Laboratory diagnosis 5.1 General characteristics of Trematodes 5.2 *Schistosoma haematobium* 5.3 *Schistosoma mansoni* 5.4 *Schistosoma japonicum*
6	NEMATODES	Morphology, Life cycle,Mode of Transmission and Laboratory diagnosis 6.1 General characteristics of Nematodes 6.2 *Trichuris trichiura*

		6.3	*Strongiloides stercoralis*
		6.4	*Anchylostoma duodenale*
		6.5	*Enterobius vermicularis*
		6.6	*Ascaris lumbricoides*
		6.7	*Wuchereris bancrofti and Brugiya malayi.*

REFERENCE BOOKS:

1. Chatterjee K.D. (2009). *Parastology: Protozoology and Helthminthology in Relation to Clinical Medicine,* 13th ed., CBC Publishers & Distributors Pvt Ltd
2. Arora D.R. and Arora B. (2004). *Medical Parasitology,* 2nd ed., CBC Publishers & Distributors Pvt Ltd.
3. Godkar P. B. (2014). *Textbook of Medical Laboratory Technology*, 3rd ed., Bhalani Publishing house.
4. Ichhpujani RL and Bhatia Rajesh. *Medical parasitology*.3rd ed., JP
5. Chakraborty P. *Text book of Medical Parasitology*, 2nd ed., JP

PRACTICAL BASE ON PAPER-II

SECTION-I:CLINICAL PATHOLOGY

1. Routine Urine Analysis: Physical, Chemical, Microscopic examination & Reagent Strip Method
2. Routine Stool Analysis: Physical, Chemical, Microscopic examination.
3. Routine Cerebrospinal Fluid Analysis: Physical, Chemical, Microscopic examination.
4. Routine Sputum examination: Physical, Microscopic
5. Routine Gastric Juice Analysis: Chemical examination of gastric juice.
6. Routine Semen Analysis: Physical, Chemical, Microscopic examination.
7. Routine Body fluids - Peritoneal, Pleural, Pericardial, Synovial (each separately): Physical, Chemical, Microscopic examination.
8. Cutting, Fixation and processing of tissues (Demonstration).
   Staining – (i) Haematoxylin and Eosin for paraffin sections.
   (ii) PAP Stain for cytology.

SECTION-II:PARASITOLOGY

1 Routine stool examination for detection of intestinal parasites with concentration methods: (Demonstration)

a) Saline preparation
b) Iodine preparation
c) Floatation method
d) Centrifugation method
e) Formal ether method
f) Zinc sulphate method

2. Identification of adult worms, Tapeworm segments ,ova, cysts, and larvae of parasite from charts/photographs/models/slides
3. Malarial Parasite Microscopy:
   i. Preparation of thin and thick blood smears
   ii. Staining of smears
   iii. Examination of smears for malarial parasites (*P. vivax* and *P. falciparum*)
   iv. Demonstration of various stages of life cycle of malarial parasites from stained slides
4. Malaria Rapid diagnostic test (RDT/ICT)

5.Test for Filarial parasite: (slide/demonstration)

REVISED SYLLABUS FOR P.G.DIPLOMA OF MEDICAL LABORATORY TECHNOLOGY
SUBJECT CODE: DMLT 3: PAPER – III: HAEMATOLOGY & BLOOD BANKING
SECTION – I HAEMATOLOGY

Rationale: The training in this subject is imparted to enable the students to carry out routine clinical laboratory investigation in haematology or related to blood. They should be able to provide technical help for selected sophisticated hematological techniques with adequate knowledge of various principles.

Unit	Topics	Content/ Fundamental Concepts
1.	INTRODUCTION TO HAEMATOLOGY	1.1 Definition, composition and functions of blood. 1.2 Collection & Storage of blood :venous and capillary. 1.3 Various equipment used for collection of blood samples 1.4 Anticoagulants: Definition and various types along with their mode of action, uses, methods of preparation merits and demerits of each. 1.5 Formation of blood: Erythropoiesis, Leucopoiesis, Thrombopoiesis.
2.	HAEMOGLOBIN & HAEMOGLOBIN OPATHIES	2.1 Definition, types, structure of Hb 2.2 Hb Estimation: Different methods-(a) Colorimetric Method, (b) Sahli's Method, and (c) Specific Gravity Method. 2.3 Clinical importance, Normal ,abnormal values and Physiological variations 2.4 Haemoglobinopathies: Abnormalities of Haemoglobin Molecule. Sickle Cell Anaemia &Thalassemia 2.5 Tests for Haemoglobinopathies: Screening test : Sickling test, DTT, NESTROF Confirmative test: Electrophoresis & HPLC
3.	RED BLOOD CELLS & ANAEMIAS	3.1 RBC count: Normal, abnormal values, and Physiological variations 3.2 Morphology of normal and abnormal Red Blood Cells. 3.3 Reticulocyte count 3.4 Erythrocyte Sedimentation Rate (ESR), 3.5 Haematocrit: Pack Cell Volume(PCV) and Various Blood indices; their brief description 3.6 Anemia: Definition and classification of anemia; factor causing anemia a) Iron & B-12 deficiency anaemia. b) Aplastic anaemia c) Haemolytic anaemia & Sideroblastic anaemia. d) G-6PD deficiency anaemia.
4.	WHITE BLOOD CELLS & LEUKAEMIAS	4.1 Total White Blood Cell Count : Normal and abnormal values 4.2 Differential WBC Count :- Normal, abnormal values and physiological variation; Preparation of peripheral blood smear, Staining by different methods. 4.3 Introduction and general Classification of Leukaemias. Acute & Chronic Myeloid Leukaemias.

5.	HAEMOSTASIS & BLOOD COAGULATION	5.1 Coagulation Factors, Mechanism of Blood Coagulation. 5.2 Coagulation disorders, Haemophilia A & Haemophilia B 5.3 Platelet disorders and Platelet count. 5.4 Coagulation defect test – a) Bleeding time (BT), b) Clotting time(CT), c) Prothrombin time (PT), d) Activated Partial Thromo Plastin time (APTT), e) Thrombin time f) Fibrinogen g) D- dimer h) Fibrin degradation product.
6.	AUTOMATION & QUALITY CONTROL IN HEMATOLOGY	6.1 Basic concepts of automation in Haematology with special reference to: a) Blood cell counter b) Coagulometer 6.2 Quality control in Hematology.

REFERENCE BOOKS:

1. Godkar P.B, Textbook of MLT, 3rd edition, Bhalani Publications.
2. Mukherjee .L. K , Medical Laboratory Technology,Vol.1-3, 3rd edition, Tata McGraw Hill
3. Wintrobe's Clinical Haematology, 14th edition, Lippincott Williams & Wilkins
4. De Gruchy's Clinical Haematology in Medical Practice, Sixth edition, Wiley Publications
5. Sood Ramnik, Text book of Medical Laboratory Technology, 5th edition, Jaypee Publications
6. Dacie & Lewis Practical Haematology, 12th edition, Elsevier Publications
7. Kawthalkar S M, Essential of Clinical Pathology,2nd ed., Jaypee Brothers.

SECTION – II: BLOOD BANKING

Rationale: The candidates are taught the skill of blood collection from donors and preventive measures against communicable diseases. They should be able to perform different investigations, preservation and interpretation.

Unit	Topics	Content/ Fundamental Concepts
1.	BLOOD GROUP SYSTEM –I & II	1.1 ABO blood Group system, subgroup of ABO, Variants of ABO blood group system. 1.2 Rh blood group system. 1.3 Serological techniques for detection of ABO & Rh antigens. 1.4 Gel technique for blood grouping and serological Techniques. 1.5 AHG test. 1.6 Other Blood Group systems 1.7 Importance of Atypical antibodies, their detection and clinical significance
2.	BLOOD COLLECTION &COMPONENT PREPARATION	2.1 Screening of Donor 2.2 Phlebotomy of Blood Donor 2.3 Storage and transportation of blood 2.4 Mandatory screening tests-HIV1&HIV2, HBsAg, HCV, RPR & Malaria.

		2.5 Component preparation: a) Red cell concentrate b) Fresh Frozen Plasma c) Cryoprecipitate d) Platelet concentrate 2.6 Introduction of apheresis and Single donor platelet (SDP)
3.	COMPATIBILITY TESTING AND ISSUE OF BLOOD FOR TRANSFUSION	3.1 Compatibility testing and special methods of routine and emergency cross match 3.2 Problems and Trouble shooting in grouping and Cross matching 3.3 Discrepancies in ABO grouping 3.4 Selection of Blood/Blood Components for Transfusion
4.	TRANSFUSION REACTION AND HDN	4.1 Types of Transfusion reaction 4.2 Investigation of Transfusion reaction. 4.3 Hemolytic disease of Newborn due to ABO, Rh or Other blood group incompatibility
5.	AUTOMATION AND BIOSAFETY IN BLOOD BANKING	5.1 Automation in Blood collection 5.2 Automation in blood grouping , Cross matching 5.2 Bio safety and Biomedical waste management
6.	QUALITY CONTROL IN BLOOD BANKING	6.1 QC of reagents-Parameters, Quality Requirements and frequency 6.2 QC of Blood Components- Parameters, Quality Requirements and frequency

REFERENCE BOOKS:

1. Denise Harmening ,Modern Blood banking and Transfusion Practices, 6th Edition 2012.
2. Saran RK., Transfusion Medicine Technical Manual, ed, 2nd ed, Directorate General of Health Service (DGHS), Ministry of Health & Family Welfare, 2003.
3. Mollison PL,Engelfriet CP and Marcela Contreras: Blood Transfusion in Clinical Medicine. 12th edition, Blackwell Science, 2014
4. Makroo R.N., Compendium of Transfusion Medicine, Practice of Safe Blood Transfusion,
5. Technical Manual, American Association of Blood Banks, 1996.
6. Technical Manual, American Association of Blood Banks, 2014
7. Wintrobe.M.M.,Clinical Haematology, Kothari's Indian Edition.
8. Dacei J.A & Lewis S.M. Practical Haematology. The English Language Book Society. 8th ed., ELBS
9. Mark K Fung, Brenda J. Grossman, Christopher D. Hillyer, Connie M Westhoff. Technical Manual. 18th ed.,AABB

PRACTICAL BASED ON PAPER III
SECTION-I:HAEMATOLOGY
1. Methods of Blood Collection and Anticoagulants 2. Haemoglobin estimation: Sahli's method and Cyanmethaemoglobin method. 3. Total R.B.C. 4. Total W.B.C. Count.

5. Differential Count. 6. Platelet Count. 7. Reticulocyte Count 8. E.S.R. 9. Packed cell volume/ Determination of Haematocrit. 10. Bleeding time, Whole Blood Coagulation time and Prothrombin time. 11. Osmotic fragility test –single tube test. 12. Sickling test.- Slide Test, Solubility Test
SECTION – II : BLOOD BANKING.
1. ABO (Forward) and RH grouping by slide method. 2. ABO (Forward) and RH grouping by Tube method. 3. ABO Reverse grouping 4. Direct Antiglobulin Test (DAT) 5. Indirect antiglobulin test (IAT) 6. Tests for Weak D testing by albumin and indirect antiglobulin technique 7. Anti A/ Anti B titer 8. Anti D titration by albumin and indirect antiglobulin technique 9. Cross matching by saline, albumin and IAT 10. Test for HBsAg (Hepatitis B surface Antigen) ELISA and Rapid Test. 11. Test for HIV / HCV Antibodies (ELISA and Rapid Test) 12. Visit to a Blood Bank.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
REVISED SYLLABUS FOR P.G.DIPLOMA OF MEDICAL LABORATORY TECHNOLOGY
SUBJECT CODE: DMLT 4: PAPER – IV: FUNDAMENTALS IN MEDICAL LABORATORY TECHNOLOGY & CLINICAL BIOCHEMISTRY
SECTION – I: FUNDAMENTALS IN MEDICAL LABORATORY TECHNOLOGY

Rationale: The main objective of the subject is to impart the knowledge of apparatus, units, equipment, and volumetric analysis in the laboratory of clinical Biochemistry. The students are also given basic training in safety measures quality control and automation.

Unit	Topics	Content/ Fundamental Concepts
1.	BASICS OF CLINICAL LABORATORY	1.1 Introduction to Medical Laboratory Technology a) Role of Medical lab Technologist b) Ethics and responsibility 1.2 Safety measures for Mechanical, Electrical, Chemical, Radioactive and Biological hazards; Universal safety precautions. 1.3 First aid 1.4 Units of Measurements 1.5 Reagent Grade Water 1.6 Types and Preparation of Solutions 1.7 Acid, Base, p^H, Indicators, Buffer and Buffering action 1.8 Introduction to laboratory accreditation (NABL)

2.	LABORATORY INSTRUMENTS- I	Principle, Component, Operations , Maintenance and Applications of 2.1 Balance 2.2 P^H Meter 2.3 Centrifuge 2.4 Water Distillation Apparatus
3.	LABORATORY INSTRUMENTS- II	Principle, Component, Operations , Maintenance and Applications of 3.1 Colorimeter 3.2 Spectrophotometer 3.3 Flame Photometer 3.4 Turbidiometer
4.	ELECTROPHORESIS & CHROMATOGRAPHY	4.1 Electrophoresis: a) Principle b) Factors Affecting Electrophoresis c) Support Media d) Types Of Electrophoresis: PAGE & SDS 4.2 Chromatography a) Principle b) Types c) Applications
5.	AUTOMATION IN BIOCHEMISTRY	5.1 Types Of Biochemistry Analyzer a) Continuous Flow Analysers b) Discrete Chemistry Analysers c) Centrifugal Analysers d) Dry Chemistry Analysers 5.2 Advantages and Disadvantages Of Automation 5.3 Blood Gas Analysers
6.	QUALITY CONTROL	6.1 Analytical Variables: a) Accuracy, Precission and Reliability b) Standard and Control c) Sensitivity and Specificity d) Types of Error e) Mean, Standard Deviation, Co-Efficient Of Variation and Central Tendency 6.2 Internal and External Quality Control 6.3 Preparation Of Quality Control Charts a) Levy-Jenning Chart and Gaussian Curve b) Cusum Chart 6.4 Westguard Multirule Chart 6.5 Various Ways of Maintaining Quality Control

REFERENCE BOOK

1. P.B. Godkar, 2014, *Textbook of Medical Laboratory Technology*, 3rd ed., Bhalani Publishering House, Mumbai, India.
2. Ochei J. & Kolhatkar A. 2000, *Medical Laboratory Science: Theory & Practice,* Tata McGraw Hill Pub.
3. Wilson K. & Walker J., *Practical Biochemistry: Principles & Technique,* 5 ed., Cambridge University Press.
4. Tambwekar S., Handbook of Quality Assurance in Laboratory medicine., BI
5. Veerakumari L., Bio Instrumentation., MJP

SECTION – II CLINICAL BIOCHEMISTRY

Rationale: The candidates are imparted specialized training of theory and practical in the field of clinical biochemistry. The students will learn how to analyze various clinical patients samples, for estimation of different components which are the cause of the disease or are the diagnostic/prognostic markers. This subject gives information about various clinically important enzymes & learn special biochemical investigations e.g. LFT, RFT, etc.

Unit	Topics	Content/ Fundamental Concepts
1.	CARBOHYDRATES	1.1 Definition, Classification, Functions of Carbohydrates. 1.2 Digestion, absorption of Carbohydrates. 1.3 Regulation of blood glucose & its importance, 1.4 Hyperglycemia, Hypoglycemia 1.5 Diabetes & Diabetic Profile. 1.6 Blood Glucose estimation & Glucose Tolerance Test Glucocylated Hb
2.	PLASMA PROTEINS	2.1 Definition, Classification , Functions of Plasma Proteins 2.3 Plasma Proteins estimations. 2.4 Clinical significance plasma protein; Bence-Jones' Proteins and Cryoglobulins.
3.	LIPIDS AND LIPOPROTEINS	3.1 Lipid: Definition, Classification , Functions, Essential Fatty Acids 3.2 Lipoproteins: Classification and its Separation methods 3.3Important Lipid Profile Tests- cholesterol, triglyceride, Lipoproteins, phospholipids and its significance in various disorders.
4.	CLINICAL ENZYMOLOGY AND ENDOCRINOLOGY	4.1 Definition, Classification, Factors affecting enzyme activity, Isoenzymes and Coenzymes. 4.2 Clinical Enzymology: Therapeutic, diagnostic and analytical uses of enzymes 4.3 Estimation Methods and Diagostic Importance of Enzymes & Isoenzymes: a) Phosphatases b) Transaminases c) Lactate Dehydrogenases d) Creatine Kinase e) Amylase

		f) Lipase g) Gama Glutamyl Transferase 4.4 HORMONES: a) Types and biochemical functions. b) Determination of T3, T4, TSH.
5.	FUNCTION TESTS	5.1 Liver Function Tests 5.2 Renal Function Tests 5.3 Cardiac Function Tests
6.	ELECTROLYTES AND VITAMINS	6.1 Minerals and Electrolytes determination and clinical Significance a) Sodium b) Potassium c) Chloride d) Calcium e) Phosphorus f) Iron & TIBC 6.2 Vitamins a) Brief Classification and Clinical Significance b) Determination of Vitamin B_{12} and D_3.

REFERENCE BOOK

1. P.B. Godkar, 2014, *Textbook of Medical Laboratory Technology,* 3rd ed., Bhalani Publishering House, Mumbai, India.
2. Ochei J. & Kolhatkar A. 2000, *Medical Laboratory Science: Theory & Practice,* Tata McGraw Hill Pub.
3. Wilson K. & Walker J., *Practical Biochemistry: Principles & Technique,* 5 ed., Cambridge University Press.
4. Chatterjea M. N. and Shinde R. 2007. *Textbook of Medical Biochemistry*, 8th ed., Jaypee Brothers Publishers.
5. Vasudevan D. & Sreekumari S. 2005. *Textbook of Biochemistry*; 4th ed, Jaypee Publishers.
6. Harold Varley, 1990, *Practical Clinical Biochemistry* , Indian Edition, Anold Heinemann.
7. Satyanarayan, U. Chakrapani, Biochemistry, 3rd edition, Books & Allied Pvt Ltd Kolkatta.

PRACTICAL BASED ON PAPER IV

SECTION – I : FUNDAMENTALS IN MEDICAL LABORATORY TECHNOLOGY

1. Operation of - pH meter, Single pan Balance, Spectrophotometer, Colorimeter, Autoanalyzer, ,Centrifuge.

SECTION – 1I : CLINICAL BIOCHEMISTRY

Preferably all the test should be done on semi Auto analyser.

1. Blood Glucose/Sugar estimation and GTT.
2. Blood Cholesterol – Free & Total HDL Cholesterol, LDL Cholesterol.
3. Serum Triglyceride
4. Serum Total Protein and Serum Albumin and A/G ratio
5. Microalbumin test
6. Blood/Urine Urea.
7. Blood /Urine Creatinine.
8. Blood /Urine Uric Acid
9. Serum Calcium / Ionized Calcium

10. Serum Phosphorus
11. Serum Potassium
12. Serum Sodium
13. Serum Chloride
14. Serum Iron, and TIBC (Total Iron Binding Capacity)
15. Serum Bilirubin.
16. Serum Alkaline Phosphatase.
17. Serum Acid Phosphatase.
18. S.G.O.T
19. S.G.P.T.
20. LDH
21. CPK
22. Serum Amylase.
23. Serum Lipase
24. Serum Protein Electrophoresis and Lipoprotein electrophoresis (Demonstration).
25. Cardiac Troponin T (Demonstration)
26. Cardiac Troponin I (Demonstration)
27. T3 ,T4, TSH ELISA (Demonstration)



Veer Narmad South Gujarat University, Surat

M.Sc. (Microbiology) Syllabus

(Effective from June, 2021)

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.Sc. MICROBIOLOGY

Teaching & Evaluation Scheme

Semester III

Paper No.	Paper Title	Theory (Hrs/Week)	Practical (Hrs/Week)	External	Internal	Total	Credit
MB 3001	Fermentation technology	4	-	70	30	100	**4**
MB 3002	Microbial products	4	-	70	30	100	**4**
MB 3003	Biochemical engineering	4	-	70	30	100	**4**
MB 3004	Pharmaceutical microbiology	4	-	70	30	100	**4**
MBP 3005	Practical	-	16	140	60	200	**8**
Total		**16**	**16**	**420**	**180**	**600**	**24**

M.Sc.SEMESTER III

MB 3001: FERMENTATION TECHNOLOGY

Student Learning Objective: The objective of this paper is to introduce students to fermentation process and impart knowledge required for fermentation. The paper also provides the information about the industrial applications and recent technological advances in fermentation technology.

UNIT 1	**THE ISOLATION AND IMPROVEMENT OF INDUSTRIALLY IMPORTANT MICROORGANISMS**
	Teaching Duration: Lectures 09
1.1	Isolation methods utilizing selection
1.2	Isolation methods not utilizing selection of the desired characteristic—from the "waksman platform" to the 1990s of the desired characteristics
1.3	Screening methods and high throughput screening
1.4	Broadening the base of the discovery process and maximizing gene expression
1.5	Improvement of strains producing primary biosynthetic products
1.6	Improvement of strains producing secondary biosynthetic products

UNIT 2	**MEDIA FOR INDUSTRIAL FERMENTATIONS**
	Teaching Duration: Lectures 09
2.1	Introduction
2.2	Typical media
2.3	Medium formulation
2.4	Water
2.5	Energy sources
2.6	Carbon sources
2.7	Nitrogen sources
2.8	Minerals
2.9	Growth factors
2.10	Nutrient recycle
2.11	Buffers
2.12	The addition of precursors and metabolic regulators to media
2.13	Oxygen requirement and antifoams
2.14	Medium optimization

UNIT 3	**FERMENTORS: DESIGN, OPERATION, AND APPLICATIONS**
	Teaching Duration: Lectures 09
3.1	Bioreactors: an overview
3.2	Component parts of bioreactors
3.3	Component parts of a "typical" vessel
3.4	Peripheral parts and accessories
3.5	Alternative vessel designs
3.6	Bioreactor instrumentation
3.7	Common measurement and control systems
3.8	Additional sensors
3.9	"Substrate sensors"
3.10	Bioreactor preparation and use
3.11	Examples of common bioreactor applications

3.12	Current trends and future prospects in fermenter design and applications

UNIT 4	THE RECOVERY AND PURIFICATION OF FERMENTATION PRODUCTS
	Teaching Duration: Lectures 09
4.1	Introduction
4.2	Removal of microbial cells and other solid matters
4.3	Foam separation (floatation)
4.4	Precipitation
4.5	Filtration
4.6	Centrifugation
4.7	Cell disruption
4.8	Liquid–liquid extraction
4.9	Solvent recovery
4.10	Two-phase aqueous extraction
4.11	Reversed micelle extraction and supercritical fluid extraction
4.12	Adsorption
4.13	Removal of volatile products
4.14	Chromatography
4.15	Membrane processes
4.16	Drying
4.17	Crystallization
4.18	Whole broth processing

References:

- Creuger W,Crueger A. and Aneja K. R., (2000) Biotechnology: A textbook of industrial microbiology, 3rd Edition, Panima, New Delhi, (ISBN: 978-93-85998-63-8)
- E.M.T. El-Mansi, Bryce C.F.A., Demain A. L. and Allman A. R., (2012) Fermentation Microbiology and Biotechnology, 3rd Edition, , Taylor & Francis, (ISBN: 978-1-4398-5581-2)
- Okafor N., (2017), Modern industrial microbiology and biotechnology, 2nd edition, Science publishers, USA., (ISBN: 978-1-1385-5018-6)
- Stanbury P. F., Whitaker A. and Hall S. J., (2016), Principles of Fermentation Technology, 3th Edition, , Elsevier, (ISBN: 978-0-08-099953-1)
- Waites, M.J., (2001) Industrial microbiology: An Introduction, 1st Edition, Blackwell publishing, (ISBN: 0-632-05307-0)

MB 3002: MICROBIAL PRODUCTS

Student Learning Objective: Industrial microbiology is a branch of applied microbiology in which microorganisms are used in industrial processes which includes production of high-value products such as drugs, chemicals, fuels and food product. This paper includes the production and processes of various microbial metabolites at industrial scale by use of microbes.

UNIT 1	**FERMENTED FOOD AND DAIRY**
	Teaching Duration: Lectures 09
1.1	Fungal biomass production: Bakers' yeast
1.2	Milk based fermented foods: Yogurt and Cheese
1.3	Grain based fermented foods: Soy sauce, Soy paste
1.4	Alcohol based fermented products: Beer and Wine
1.5	Vegetable based fermented foods: Sauerkraut and Olives
1.6	Fermented sausages and fish
1.7	Mushroom production

UNIT 2	**MICROBIAL FERMENTATIONS**
	Teaching Duration: Lectures 09
2.1	Antibiotics: Cephalosporin
2.2	Hormones: Insulin
2.3	Anticancer agents: Anthracyclines
2.4	Organic acids: Citric acid
2.5	Amino acids: L-Lysine
2.6	Enzymes: Cellulase and Protease
2.7	Vitamins: B12

UNIT 3	**MODERN TRENDS IN MICROBIAL PRODUCTION - I**
	Teaching Duration: Lectures 09
3.1	Biosurfactants
3.2	PHA: Separation, purification and manufacturing methods
3.3	Carotenoids: β carotene
3.5	Microbial polysaccharides: Dextran
3.6	Microbial flavors: Vanillin, Terpenes
3.7	Microbial biotransformation of steroids and sterols

UNIT 4	**MODERN TRENDS IN MICROBIAL PRODUCTION - II**
	Teaching Duration: Lectures 09
4.1	Techniques and technologies to produce biomass of cyanobacteria and microalgae
4.2	Single Cell Protein (SCP)
4.3	Bioinsecticides
4.4	Rhizobium inoculants
4.5	Monoclonal antibodies: Production and recovery
4.6	Bacterial siderophores
4.7	Ergot alkaloids

References:

- Adam M. and Dick M., (2014), Food Microbiology: An introduction, 1st edition, Medtec Publication, (ISBN: 978-93-81714-61-4)
- Clarke W., (2016), Biotechnology: Industrial Microbiology, 1st edition, CBS Publishers, (ISBN: 978-81-239-2864-7)
- Flickinger M. C. and Drew S. W., (1999), Encyclopedia of Bioprocess Technology, Volumes 1-5, Wiley-Inter-science, (ISBN: 978-0471138228)
- Okafor N., (2017), Modern Industrial Microbiology and Biotechnology, 2nd edition, Science Publishers, (ISBN: 978-1-138-03614-7)
- Peppler H. J. and Perlman D., (2004), Microbial Biotechnology, Volume 1 and Volume 2, 2ndedition, Academic press, (ISBN: 978-81-8147-495-7/978-81-8147-496-1)
- Ratledge C. and Kristiansen B., (2006), Basic Biotechnology, 3rd edition, Cambridge University Press, (ISBN: 978-0-521-72947-5)
- Reed G., (2004), Prescott & Dunn's Industrial Microbiology, 4th edition, CBS Publishers, (ISBN: 81-239-1001-0)
- Rehm H. J. and Reed G., (2010), Biotechnology, Vol. 10, Wiley India Pvt. Ltd., (ISBN: 978-3527283200)
- Rehm H. J. and Reed G., (2010), Biotechnology, Vol. 7, Wiley India Pvt. Ltd., (ISBN: 978-81-265-2535-5)

MB 3003: BIOCHEMICAL ENGINEERING

Student Learning Objective: This course is designed to impart the knowledge of principle of fermenters and its configuration. Students shall gain knowledge to design, develop and operate industrial level fermentation process and would learn rheological behavior of fluids and mass transfer and population dynamics in a fermentor.

UNIT 1	**REACTOR ENGINEERING**
	Teaching Duration: Lectures 09
1.1	Bioreactor configurations: Overview
1.2	Monitoring and control of bioreactors
1.3	Bioprocess control
1.4	Sterilization
1.5	Microtiter Plate fermentation: Introduction, Routine and next generation MTP fermenter, Impact on bioprocessing and synthetic biology
1.6	Statistical optimization of fermentation

UNIT 2	**FLUID FLOW AND MIXING**
	Teaching Duration: Lectures 09
2.1	Classification of fluids
2.2	Fluids in motion
2.3	Factors affecting broth viscosity
2.4	Viscosity measurement
2.5	Non-Newtonian fluids
2.6	Mixing
2.7	Role of shear in stirred fermenters
2.8	Rheological properties of fermentation broths

UNIT 3	**HEAT AND MASS TRANSFER**
	Teaching Duration: Lectures 09
3.1	Heat transfer equipment
3.2	Mechanisms of heat transfer and conduction
3.3	Heat transfer between fluids
3.4	Relationship between heat transfer, cell concentration and stirring conditions
3.5	Convective mass transfer
3.6	Oxygen uptake in cell cultures
3.7	Oxygen transfer in fermenters
3.8	Measurement of *kLa*

UNIT 4	**MULTIPLE INTERACTING MICROBIAL POPULATIONS**
	Teaching Duration: Lectures 09
4.1	Classification of interactions between two species
4.2	Competition
4.3	Predation and parasitism
4.4	Spoilage and product manufacture by spontaneous mixed cultures

References:

- Doran P. M., (2013),Bioprocess Engineering Principles,2nd Edition, Academic Press, (ISBN 9780122208515)
- E.M.T. El-Mansi, Bryce C.F.A., Demain A. L. and Allman A. R., (2012) Fermentation Microbiology and Biotechnology, 3rd Edition, Taylor & Francis, (ISBN: 978-1-4398-5581-2)
- Ollis D. F. and Bailey J. E., (2010), Biochemical Engineering Fundamentals. 2nd edition McGraw-Hill Education (India) Private Limited, (ISBN: 978-0070701236)
- Vogel H. C and Todaro C. M., (2014), Fermentation and biochemical engineering handbook. 3rd edition, William Andrew publisher, (ISBN: 978-1-4557-2553-3)

MB 3004: PHARMACEUTICAL MICROBIOLOGY

Student Learning Objective: This paper gives insight of microbiological analysis and quality control in pharmaceutical industries. It includes the learning of good manufacturing practices and its monitoring in pharmaceutical companies. The students would also learn quality check and quality maintenance of pharmaceutical products and microbiological auditing.

UNIT 1	**BIOPHARMACEUTICAL: INTRODUCTION AND MICROBIOLOGICAL ASSAY**
	Teaching Duration: Lectures 09
1.1	Introduction to pharmaceuticals: Microorganisms and medicines
1.2	The agar diffusion assay: Its quantitative basis
1.3	The theory and practice of tube assays for growth promoting substances
1.4	The theory and practice of tube assays for growth inhibiting substances
1.5	Standard reference materials

UNIT 2	**MONITORING MICROBIOLOGICAL QUALITY**
	Teaching Duration: Lectures 09
2.1	Principles of good manufacturing practice
2.2	Monitoring microbiological quality – Conventional testing methods
2.3	Monitoring microbiological quality – Application of rapid methods

UNIT 3	**MICROBIAL ASPECTS OF PHARMACEUTICAL PROCESSING**
	Teaching Duration: Lectures 09
3.1	Microbial spoilage and preservation of pharmaceutical products
3.2	Sterilization control and sterility assurance
3.3	The quality assurance and quality control of pharmaceutical products

UNIT 4	**PHARMACEUTICAL STERILE PRODUCTS AND MICROBIOLOGICAL AUDITING**
	Teaching Duration: Lectures 09
4.1	Types of sterile products: Injections, non-injectable sterile fluids, ophthalmic preparations, dressing, implants, absorbable haemostats, surgical ligatures and sutures, instruments & equipment
4.2	Vaccines: Seed lot system, production, fermentation, blending, filling, and drying
4.3	In-vitro diagnosis
4.4	Immune sera
4.5	Human immunoglobulin &monoclonal antibodies
4.6	Microbiological auditing

References:

- Barredo, J. L., (2005), Microbial Processes and Products. Humana Press, New Jersey, (ISBN: 978-1-59259-847-2)
- Denyer, S. P. and Baird, R. M., (2008), Guide to microbiological control in pharmaceuticals and medical devices. 2nd Edition, CRC Press, Boca Raton, (ISBN: 9781444330632)
- Flickinger, M. C. and Drew, S. W., (1999), Encyclopedia of Bioprocess Technology. Wiley- Interscience, New Jersey, (ISBN: 9780471138228)
- Gad, S. C., (2007), Handbook of Pharmaceutical Biotechnology. Wiley-Interscience, New Jersey, (ISBN: 978-0-470-25958-0)
- Hewitt,W.(2004). Microbiological Assays for Pharmaceutical Analysis-A rational approach, Indian Edition, CRC, (ISBN: 0-203-58859-2)
- Hugo and Russells, (2007), Pharmaceutical Microbiology, Blackwell Publishing.
- Walsh G., (2007), PharmaceurcalBiotechnolog- Concepts and Applications, Wiley (ISBN: 978-0-470-01244-4)

M.Sc. Microbiology Semester III
LIST OF PRACTICALS

MBP-3005

1. Screening of citric acid and lactic acid producing microorganisms.
2. Screening of cellulase, amylase and protease producing microorganisms.
3. Production of fungal amylase by solid state fermentation.
4. Production of fungal amylase by submerged fermentation
5. Partial purification of amylase by ammonium sulphate precipitation and dialysis/column chromatography and calculation of specific activity & fold purification.
6. Determination of *KLa*of laboratory fermenter.
7. Sterility testing of pharmaceutical products by direct inoculation & membrane filtration methods as per Indian Pharmacopoeia (IP).
8. Cell disruption by sonication and estimation of intracellular protein.
9. Production of ethanol using pure carbohydrate.
   (a) Determination of pH, TSS (ºBrix)
   (b) Determination of alcohol (ethanol) percentage.
   (c) Determination of phenol content
   (d) Estimation of reducing & total sugar.
10. Production of ethanol using agro-industrial waste.
    (a) Determination of pH, TSS (ºBrix)
    (b) Determination of alcohol (ethanol) percentage
    (c) Determination of phenol content
    (d) Estimation of reducing & total sugar
11. Microbial production of dextran/xanthan by *Leuconostocmesenteroides/Xanthomonascampestris.*
12. Microbiological assay of amino acid.
13. Detection of anti-HIV sera by ELISA.
14. Detection of anti-HBsAgsera by ELISA.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.Sc. MICROBIOLOGY

Teaching & Evaluation Scheme

Semester IV

Paper No.	Paper Title	Theory (Hrs/Week)	Practical (Hrs/Week)	External	Internal	Total	Credit
MB 4001	Seminar Presentation	4		70	30	100	**4**
MB 4002	Dissertation	12	16	350	150	500	**20**
TOTAL		**16**	**16**	**420**	**`180**	**600**	**24**

<table>
<tr><th colspan="2">Guidelines for MB 4001 & MB 4002</th></tr>
<tr><td>MB 4001</td><td>

Faculty has to mentor the allotted students for selected topics of seminar.
Students have to individually deliver a seminar on the advance or novel topic other than that mentioned in the curriculum.
Teacher has to evaluate seminar of individual student and prepare for the final presentation of the allotted students
Topic should not be related to his/her dissertation.
A seminar should be delivered within 15 minutes.
Students have to submit one copy of colour printed handouts (4 slides /page) of his/her presentation to the examiner.

</td></tr>
<tr><td>MB 4002</td><td>

Faculty has to mentor the allotted students for the dissertation.
Faculty will mentor the students for Scientific writing& communicationwhich includes:

Communication skill in science
Searching of scientific journals & resources
Reviewing scientific literature
Preparation of graphs and tables to present the scientific data
Online grammar checking in scientific writing
References management by online tools
Delivering effective oral presentation
Preparing and presenting research poster
Writing a research paper and compiling a dissertation thesis
Plagiarisms checking
Publishing in scientific journal

References:

Davis M, Davis K. and Dunagan M., (2012), Scientific papers and presentations: Effective scientific communication, 3rd edition, Elsevier and Academic press, (ISBN: 978-0-12-384727-0)
Wallwork A., (2011), English: for writing research papers, Springer science plus Business media, LLC, (ISBN: 978-1-4419-7921-6)

Dissertation work can be done individually or in a pair on any topic related to microbiology.
Dissertation may be carried in-houseor outside the campus after due permission grantedby the supervising teacher and institute head at the following recognized institutions or industries like:

Any UGC recognized University PG departments.
Any Agriculture University.
All National and State level research institute.
ISO or FDA/USFDA industry or research center having R & D and Q.C. facilities.

The thesis will be evaluated by examiner(s) which includes thesis evaluation and dissertation presentation.
The dissertation presentation shall be done in audio-visual mode by the candidate within 15 minutes.
The candidate has to submit their dissertation in a standard hard-bound thesis and soft copy in PDF format.

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એકેડેમિક કાઉન્સિલ તા.૨૫/૦૬/૨૦૨૧
બાબત : ૨૫ બિડાણ : ૧૭

Veer Narmad South Gujarat University, Surat

S.Y. B. Sc. (Microbiology) Syllabus Semester 3 & 4

(Effective from June, 2021)

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
B. Sc. MICROBIOLOGY

Teaching & Evaluation Scheme
S. Y. B. Sc. Semester III

Paper No.	Paper Title	Theory	Practical	External	Internal	Total	Credit
		(Hrs/Week)					
MB-301	Principles of bacterial systematics	02	-	50	20	70	06
MB-302	Control of microorganisms in the environment	02	-	50	20	70	
MB-303	Virology	02	-	50	20	70	
MBP-304	Practicals	-	06	60	30	90	03
Total		**06**	**06**	**210**	90	300	09

MB 301: Principles of Bacterial Systematics

Course description

Course code: MB 301
Course title: Principles of Bacterial Systematics
Course type: Core
Course credit: 02
Course overview:
The paper explores microbial taxonomy and classification of bacteria using an evolutionary framework. Bacterial taxonomy and phylogeny gives an understanding regarding degree of prokaryotic diversity unmatched by eukaryotic unicellular and multicellular organisms.

Course Objectives

- To understand taxonomic ranks and taxonomic phlogeny
- To study classical and molecular characteristics for microbial taxonomy
- To understand Bergey's manual of systematic bacteriology
- To study arachea and its classification
- To aquire knowledge of taxonomy of proteobacteria

Course Content

	UNIT 1	Microbial Taxonomy and the Evolution of Diversity
		Teaching Duration: Lectures 07
1.1	Microbial Taxonomy	
1.2	Taxonomic Ranks	
1.3	Microbial taxonomy and phylogeny 1.3.1 Classical Characteristics 1.3.2 Molecular Characteristics: Nucleic acid hybridization, Nucleic acid base composition	
1.4	Evolutionary process and the concept of microbial species	
1.5	Bergey's Manual of systematic bacteriology	

	UNIT 2	Taxonomy of Archaea
		Teaching Duration:Lectures 07
2.1	Overview of Archaea	
2.2	Major groups of *Archaea*	
2.3	Phylum *Crenarchaeota*	
2.4	Phylum *Euryarchaeota* 2.4.1 Methanogens and Methanotrophs 2.4.2 Haloarchaea	

	UNIT 3	Taxonomy of Proteobacteria
		Teaching Duration:Lectures 08
3.1	Class *Alphaproteobacteria*: Order *Rhizobiales*	
3.2	Class *Beta Proteobacteria*: Order *Hydrogenophiales*	
3.3	Class *Gamma Proteobacteria*: Order *Enterobacteriales*	
3.4	Class Delta *Proteobacteria*: Order *Bdellovibrionales*	
3.5	Class *Epsiloneproteobacteria*	

	UNIT 4	Important groups of bacteria
		Teaching Duration:Lectures 08
4.1	Class *Bacilli*: Aerobic endospore forming bacteria	
4.2	Class *Mollicutes*	
4.3	Phylum *Cyanobacteria*	
4.4	Phylum *Spirochaetes*	
4.5	Phylum *Bacteroidetes*	

Student learning Outcome

Unit 1: Student will learn evolutionary process of microorganisms.
Student will be able to classify microorganisms based on their cultural and molecular characteristics.

Unit 2: Students will gain knowledge of the unique characteristics of archea, its adaptation

and importance.

Unit 3: Students shall understand the major classes of proteobacteria and important phyla

Unit 4: Shall enable the students to understand aerobic endospore former, bacteroidetes, Spirohaetes and cyanobacteria.

Recommended References:

- Lory, S., Perry, J. J., Gunsalus, R. P., Staley, J. T. (2007). Microbial Life. 2nd Edition, United Kingdom: Sinauer Associates. ISBN: 9780878936854, 0878936858
- Pelczar, Chan and Krieg, (1993), *Microbiology-Concepts and Application*, International Edition, McGraw-Hill. ISBN: 9780071129145
- Sherwood, L., Willey, J. M., Woolverton, C. J. (2017). Prescott'sMicrobiology. Singapore: McGraw-Hill Education.10th Edition, 2017. ISBN: 9789813151260, 9813151269.
- Tortora G.J., and Funke B.R. (2016), *Microbiology an Introduction*, 12th Ed., Pearson, ISBN: 9781292099149

MB 302: Control of Microorganisms in the environment

Course description

Course code: MB 302
Course title: Control of Microorganisms in the environment
Course type: Core
Course credit: 02
Course overview:
The paper includes the study of the control and destruction of microorganisms. It includes the physical and chemical methods to control pathogens and prevent their transmission and to reduce or eliminate microbes responsible for the contamination of food, water and other substances.

Course Objectives

- To understand the principle of controlling the presence of microorganisms.
- To study the physical agents and mechanisms used for the control.
- To learn the effect of various chemical agents used for the microbial control.
- To understand the mechanism of control of chemical agents.
- To acquire the ability to select the control agent in the environment.

Course Content

	UNIT 1	Basic Principles of Microbial Control
		Teaching Duration: Lectures 07
1.1	Terminology of Microbial Control	
1.2	Microbial Death Rates	
1.3	Action of Antimicrobial Agents	
1.4	The Selection of Microbial Control Methods	
1.5	Situational Considerations	

	UNIT 2	Mechanical and Physical Methods for Microbial Control
		Teaching Duration: Lectures 08
2.1	Filtration	
2.2	Heat Related Methods	
2.3	Refrigeration and Freezing	
2.4	Desiccation and Lyophilization	
2.5	Osmotic Pressure	
2.6	Radiation	

	UNIT 3	Chemical Methods for Microbial Control – I
		Teaching Duration: Lectures 07
3.1	Choosing a Microbicidal Chemical	
3.2	Factors Affecting Germicidal Activity of Chemicals	
3.3	The Halogens Antimicrobial Chemical	
3.4	Phenols: Its derivatives and Applications	
3.5	Alcohols	

	UNIT 4	Chemical Methods for Microbial Control - II
		Teaching Duration: Lectures 08
4.1	Hydrogen Peroxide and related Germicides	
4.2	Chemicals with Surface Action: Detergents	
4.3	Heavy Metals	
4.4	Aldehydes	
4.5	Gaseous Sterilants and Disinfectants	
4.6	Dyes	
4.7	Acid and Alkalies	

Student learning Outcome

Unit 1: Student will understand the role of microbial control in disease transmission
Students will be enabled to select the suitable microbial control agents.

Unit 2: Gain knowledge of physical and mechanical of microbial control and mode of action of each.

Unit 3: Student shall understand the major chemical agents and its microbicidal effect.

Unit 4: Shall enable the students to understand the mechanism of chemical control.

Recommended References:

- Bauman R. W., (2003), *Microbiology, Pearson/Benjamin-Cummings*, (ISBN: 0-8-53-7590-2)
- Cowan M. K. and Talaro K. P., (2006), *Microbiology: A Systems Approac*h, Mc-Graw Hill Higher Education, (ISBN: 0-07-291804-7)
- Nester E. W., Anderson D. G., Roberts Jr. C. E., Pearsall N. N. and Nester T. M., *Microbiology,* International Edition, Mc-Graw Hill Higher Education, (ISBN: 0-07-121493-3)

Further Reading:

- Pommerville J. C., (2014), *Alcamo's Fundamentals of Microbiology*, 10th edition, Jones and Bartlett Learning, (ISBN: 978-93-80853-5374-1)
- Willey J. M., Sherwood L. M. and Woolverton C. J., (2017), *Prescott's Microbiology*, 10th edition, Mc-Graw Hill Education, (ISBN: 978-981-3151-26-0)

MB 303: Virology

Course description

Course code: MB 303
Course title: Virology
Course type: Core
Course credit: 02
Course overview:

The aim of the paper is to realize the increasing importance of virology. Students shall learn the origin, basic structure of virus and its classification. It teaches the cultivation and reproduction of virus. The paper also includes the role of virus in disease as well as cancer but also a study on viruses associated with plant, animal, insects and archaeal viruses.

Course Objectives

- To give an overview of medically important virus families.
- To describe the structure, classification and cultivation of viruses.
- To understand the replication strategies of viruses.
- To study virus like infectious particles
- To study the role of virus and virus host.

Course Content

	UNIT 1	Basics of Viral Structure
		Teaching Duration: Lectures 07
1.1	Origin of Virus	
1.2	Viron Structure is defined by Capsid Symmetry or presence and absence of Envelope	
1.3	Host Range and Specificity of Virus	

	UNIT 2	Viral Taxonomy and Cultivation
		Teaching Duration:Lectures 07
2.1	Classification of Viruses	
2.2	Emerging Viruses	
2.3	Cultivation of viruses in Laboratory	

	UNIT 3	Replication of Viruses
		Teaching Duration: Lectures 08
3.1	General Characteristic of Replication	
3.2	Replication of T – even phages (Lytic cycle)	
3.3	Lysogeny	
3.4	Replication of Animal Viruses	
3.5	Latent Virus infection	

	UNIT 4	Viruses and Sub Viral Infectious Particles
		Teaching Duration: Lectures 08
4.1	Viruses and Tertotogenesis	
4.2	Viruses like Agents	
4.3	Viruses and Cancer, Human Cancer Viruses	
4.4	Plant Viruses	
4.5	Viruses of Fungi and Protist	
4.6	Insect Viruses	
4.7	Archaeal Viruses	

Student learning Outcome

Unit 1: Students shall get insights about viruses, its structure, its symmetry and origin.
Unit 2: Students shall learn about classification of virus.
Acquire knowledge of emerging viruses threatening the world.
Unit 3: Enable the students to understand virus replication.
Students shall understand the differences between lytic and lysogenic cycles.
Unit 4: Students gain insights about viruses and virus like infectious particles.
Students shall understand the role of virus in cancer.

Recommended References:

- Black, J. G. (2012). Microbiology: Principles and explorations. Hoboken, NJ: Wiley. ISBN: 9780470541098, 0470541091.
- Sherwood, L., Willey, J. M., Woolverton, C. J. (2008). Prescott's Microbiology. Singapore: McGraw-Hill Education.7th Edition and 10th edition. 2017. ISBN: 0073302082, 9780073302089 and ISBN: 9789813151260, 9813151269.

S.Y.B.Sc. Microbiology

Semester– III Practicals

(Time Duration: 06 Hours/week)

MBP 304: Practicals

1. Enumeration of bacteria by Heterotrophic plate count method (HPC)
2. Action of antiseptics and disinfectants on bacteria.
3. Effect of hand sanitizer on skin flora.
4. Lethal action of U.V. rays on bacteria
5. Lethal action of heavy metals on bacteria
6. Demonstration of lysis of bacteria by bacteriophage.
7. Determination of TDP & TDT.
8. Study of biochemical reactions.
9. Pure culture study of *Escherichia coli* and *Klebseilla mobillis* (formerly *Enterobacter aerogenes)*
10. Pure culture study of *Proteus vulgaris, Serratia marcescens* and *Pseudomonas aeruginosa.*
11. Pure culture study of *Bacillus megaterium, Bacillus subtilis, Bacillus cereus.*
12. Pure culture study of *Staphylococcus aureus, Staphylococcus epidermidis.*

References:

- Aneja, K.R., (2003). *Experiments in Microbiology, Plant Pathology, Tissue Culture and Mushroom Production Technology,* 4th edition., New Age International Publishers.
- Cappuccino, J.G., (2016). *Microbiology: A Laboratory Manual,* 11th ed., Pearson Education (Singapore) Pvt. Ltd.
- Patel, R. J., & Patel, K. R., (2011). Experimental Microbiology, Vol. 2, 8th ed., Aditya.
- Patel, R. J., & Patel, K. R., (2015). Experimental Microbiology, Vol. 1, 9th ed., Aditya.

B. Sc. MICROBIOLOGY

Teaching & Evaluation Scheme
S. Y. B. Sc. Semester IV

Paper No.	Paper Title	Theory	Practical	External	Internal	Total	Credit
		(Hrs/Week)					
MB-401	Biological molecules	02	-	50	20	70	06
MB-402	Mycology, Phycology and protozoology	02	-	50	20	70	
MB-403	Microbial ecosystems	02	-	50	20	70	
MBP-404	Practicals	-	06	60	30	90	03
Total		**06**	**06**	**210**	**90**	**300**	09

MB 401: Biological molecules

Course description

Course code: MB 401
Course title: Biological molecules
Course type: Core
Course credit: 02
Course overview:
The paper gives an understanding of biomolecules found in all living organisms including microbes. Students shall learn important biomolecules such as proteins, enzymes, carbohydrates, lipids and nucleic acids. They shall become aware of the structure, types and the important functions of biomolecules.

Course Objectives

- To study the structure and properties of amino acids and proteins.
- To understand classification of enzymes and enzyme activity.
- To understand types of carbohydrates and its importance.

- To gain knowledge of lipids, its structure and functions.
- To enable students to understand DNA and RNA.

Course Content

	UNIT 1	**Amino Acids, Proteins and enzymes**
		Teaching Duration:Lectures 08
1.1	Amino Acids Exist in a Three-Dimensional world	
1.2	Individual Amino Acids: Their Structures and Properties	
1.3	The Peptide Bond	
1.4	Protein Structure and Function	
1.5	Chemical nature of enzymes	
1.6	Nomenclature and classification of enzymes	
1.7	Factor affecting enzyme activity	
1.8	Isoenzymes	

	UNIT 2	**Carbohydrates**
		Teaching Duration: Lectures 07
2.1	Sugars: Their structures and stereochemistry	
2.2	Reactions of monosaccharides	
2.3	Some Important oligosaccharides	
2.4	Structures and functions of polysaccharides	

	UNIT 3	**Lipids**
		Teaching Duration: Lectures 08
3.1	Classification lipids	
3.2	Fatty acids	
3.3	Glycerol lipid	
3.4	Lipid devoid of glycerol	
3.5	Complex lipids	
3.6	Lipids and biological membranes	

	UNIT 4	**Nucleic Acid**
		Teaching Duration:Lectures 07
4.1	Levels of Structure in Nucleic Acids	
4.2	The Covalent Structure of Polynucleotides	
4.3	The Structure of DNA	
4.4	Denaturation of DNA	
4.5	Types of RNA and their Structures	

Student learning Outcome

Unit 1: Student shall understand structure of amino acids and its role in peptide bond formation.

Student shall gain knowledge about structure and functions of proteins and enzymes.

Unit 2: Enable the students to understand the stereochemistry of carbohydrates and its functions.

Unit 3: Student shall acquire knowledge about lipids, their classification and its importance.

Unit 4: Acquire knowledge of structure of nucleic acids and its denaturation.
Student shall know about RNA and its types.

Recommended References:

- Campbell, M. K., & Farrell, S. O. (2012). *Biochemistry*. Belmont, CA: Brooks/Cole, Cengage Learning. ISBN: 9780840068583 0840068581.
- Rastogi, S. C., *Biochemistry* (2015), 2nd Edi. ISBN:9788171339389.

Further reading:

- Berg and Stryer, (2007) *Biochemistry*, 6th Ed. W H Freeman pub., ISBN: 9780716746843
- Murray, R. K., Granner, D. K., Mayes, P. A., & Rodwell, V. W. (2015). *Harper Biochemistry*, 30th Edi. Appleton and Lange.
- Voet and Voet, (2008) *Fundamentals of biochemistry*, 3rd Ed, Johns Wiley & Sons, Asia ISBN: 978-0470129302

MB 402: Mycology, Phycology and protozoology

Course description

Course code: MB 402
Course title: Mycology, Phycology and protozoology
Course type: Core
Course credit: 02
Course overview:
This paper includes the study of eukaryotic microorganisms such as fungi, algae and protozoa. The student shall learn the diversity of eukaryotic microbes and its differences in terms of morphology, reproduction and cultivation. The objective of the paper is to give an understanding of the ecological and economic impact of eukaryotic microbial population.

Course Objectives

- To understand eukaryotic microorganisms and its importance.
- To study distinguishing characteristics, reproduction and cultivation of fungi.
- To understand major classes of fungi.
- To give understanding of characteristics of algae and its economic importance.
- To gain knowledge of occurrence, importance and reproduction of protozoa

Course Content

	UNIT 1	Mycology
		Teaching Duration: Lectures 07
1.1	Importance of fungi	
1.2	Distinguishing characteristics of fungi	
1.3	Morphology of fungi	
1.4	Reproduction of fungi	
1.5	Cultivation of fungi	

	UNIT 2	Classification of fungi
		Teaching Duration: Lectures 08
2.1	The Chytridiomycota	
2.2	The Zygomycota	
2.3	The Ascomycota	
2.4	The Basidiomycota	
2.5	The Microsporidia	
2.6	The Glomeromycota	

	UNIT 3	Phycology
		Teaching Duration: Lectures 08
3.1	Occurrence of algae	
3.2	Characteristics of algae	
3.3	Algae and diseases	
3.4	Biological and economic importance of algae	
3.5	Lichen	

	UNIT 4	Protozoology
		Teaching Duration: Lectures 07
4.1	Occurrence of protozoa	
4.2	Ecology of protozoa	
4.3	The importance of protozoa	
4.4	Morphology of protozoa	
4.5	Reproduction of protozoa	

Student learning Outcome

Unit 1: Enable the students to understand the structural differences of prokaryotic and eukaryotic microorganisms.
Shall understand fungal structure, reproduction, cultivation and importance.
Unit 2: Give an insight of different fungal groups and its importance.
Unit 3: Students shall learn algal ecology, its characteristic and importance.
Unit 4: Gain knowledge of occurrence, importance and reproduction of protozoa.

Recommended References:

- Pelczar M. J. and Chan E. C. S., (1998), *Microbiology*, 5th Ed., Tata-Mc Graw Hill.
- Sherwood, L., Willey, J. M., Woolverton, C. J. (2017). *Prescott Microbiology*. Singapore: McGraw-Hill Education.10th Edition, 2017. ISBN: 9789813151260, 9813151269.

Further reading:

- Tortora G.J., and Funke B.R. (2016), *Microbiology: an Introduction*, 12 Ed., Benjamin Cummings.

MB 403: Microbial ecosystems

Course description

Course code: MB 403
Course title: Microbial ecosystems
Course type: Core
Course credit: 02
Course overview:
Microbial ecology is concerned with microbial processes that occur in ecosystem. It explains how nutrient availability and environmental factors influence microbial growth in various ecosystems. Student shall understand the role of microorganisms in evolution of life and balance of ecosystem. The objective of the paper is to give an understanding of the varied microbial interactions and its impact in sustenance of ecosystem.

Course Objectives

- To understand the role of microbial evolution in ecological development.
- To learn the methods to study microbial ecology.
- To gain an understanding of biogeochemical cycling and effect of global climate change.
- To develop insight about microbial interactions.
- To understand the role of microorganisms in ecosystem.

Course Content

UNIT 1	MICROBIAL EVOLUTION AND ECOLOGY	
		Teaching Duration: Lectures 08
1.1	The origin of life	
1.2	Chemical evolution	
1.3	Cellular Evolution	
1.4	Ribosomal RNA analysis for tracing microbial evolution	
1.5	Genetic basis of evolution	

1.6	Methods in microbial ecology

	UNIT 2	BIOGEOCHEMICAL CYCLING AND GLOBAL CLIMATE CHANGE
		Teaching Duration: Lectures 08
2.1	Global Climate Change; Global Infectious Disease Change	
2.2	Biogeochemical Cycling 2.2.1 Carbon cycle 2.2.2 Nitrogen Cycle 2.2.3 Phosphorus Cycle 2.2.4 Sulfur Cycle	
2.3	Interaction between Elemental Cycles	
2.4	Global Climate Change: Biogeochemical cycling out of balance	

	UNIT 3	MICROBIAL INTERACTIONS
		Teaching Duration: Lectures 07
3.1	Mutualism	
3.2	Cooperation	
3.3	Commensalism	
3.4	Predation	
3.5	Parasitism	
3.6	Amensalism	
3.7	Competition	

	UNIT 4	MICROORGANISMS AND ECOSYSTEMS
		Teaching Duration: Lectures 07
4.1	Microorganisms in terrestrial environments 4.1.1 Soils as an important microbial habitat 4.1.2 Microbe-plant interactions	
4.2	Microorganisms in marine and freshwater ecosystems 4.2.1 Water as a microbial habitat 4.2.2 Microorganisms in marine ecosystems 4.2.3 Microorganisms in freshwater ecosystems	

Student learning Outcome

Unit 1: Shall give an insight of microbial role in evolution of life.
Shall learn methods to study evolution.
Unit 2: Give an understanding of biogeochemical cycling.
Unit 3: Students shall gain knowledge of microbial interactions and its significance.
Unit 4: Gain knowledge of distribution and role of microorganisms in different habitats and ecosystems.

Sharma

Recommended References:

- Ronald M. Atlas & Richard Bartha (2005) *Microbial Ecology: Fundamentals and Applications*, 4thEd., Pearson Education. ISBN: 81-297-0771-3.
- Wiley, J., & Sherwood, L. (2013). *Prescott, Harley, and Klein's Microbiology*, 10th Ed., McGraw-Hill Science/Engineering/Math, ISBN: 9780073402406.

Further reading:

- McArthur, J. Vaun (2006). *Microbial Ecology: An Evolutionary Approach*, Academic Press. 416 pp. ISBN 0123694914.
- Mitchell R., Gu Pelczar Ji Dang, Chan and Krieg, (1993), *Microbiology-Concepts and Application*, International Edition, McGraw-Hill.
- Tortora G.J., and Funke B.R. (2016), *Microbiology an Introduction*, 12 Ed., Benjamin Cummings.

S.Y.B.Sc. Microbiology

Semester– IV Practicals

(Time Duration: 06 Hours/week)

MBP 404: Practicals

1. Qualitative analysis of carbohydrate (Any four sugar)
2. Qualitative analysis of proteins (Any three protein)
3. Study of extracellular enzymatic activity: Amylase, Caseinase, Gelatinase, Lipase
4. Study of intracellular enzymatic activity: Deaminase, Decarboxylase, Catalase, Dehydrogenase, Oxidase.
5. Cultivation and identification of economical important fungi. (9 genera) (*Aspergillus, Penicillium, Mucor, Rhizopus, Curvularia, Helminthosporium, Cunninghamella, Fusarium*, *Alternaria*)
6. Study of permanent slides of algae (*Volvox, Spirogyra*, Diatoms)
7. Study of permanent slides of algae Cyanobacteria (*Nostoc, Anabena*)
8. Study of permanent slides of Protozoa (*Amoeba, Paramoecium, Euglena*).
9. Isolation of nonsymbiotic nitrogen fixing aerobic bacteria- *Azotobacter* spp.
10. Isolation of *Rhizobium* spp. from root nodules of legume plants.
11. Isolation and identification of Actinomycetes from soil.
12. Isolation of protozoa from soil

References:

- Aneja, K.R., (2003). *Experiments in Microbiology, Plant Pathology, Tissue Culture and Mushroom Production Technology,* 4th edition., New Age International Publishers.
- Cappuccino, J.G., (2016). *Microbiology: A Laboratory Manual,* 11th ed., Pearson Education (Singapore) Pvt. Ltd.
- Patel, R. J., & Patel, K. R., (2011). *Experimental Microbiology,* Vol. 2, 8th ed., Aditya.
- Patel, R. J., & Patel, K. R., (2015). *Experimental Microbiology*, Vol. 1, 9th ed., Aditya.

એકેડેમિક કાઉન્સિલ તા. ૨૫/૦૬/૨૦૨૧
બાબત : ૨૬ બિડાણ : ૧૮

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

SYLLABUS FOR B.Sc. MEDICAL TECHNOLOGY

A student offering Medical Technology as a special subject will study papers MT 01 to MT 22 and Practicals based on theory papers. Teaching period and credit with internal and external marks are shown in table.

SEMESTER: I & II
Effective from June 2017

Semester	Paper No.	Name of Paper	Hours/ week	Credit	External Marks	Internal Marks	Total Marks
I	MT-01	Organization of Clinical Laboratory	2	2	50	20	70
	MT-02	Equipments and Instruments in Medical Technology Laboratory	2	2	50	20	70
Practical	MTP-01		04	2	40	20	60
II	MT-03	Fundamentals of Medical Technology	2	2	50	20	70
	MT-04	Introduction to Microbial World	2	2	50	20	70
Practical	MTP-02		04	2	40	20	60

SEMESTER: III & IV
Effective from June 2018

Semester	Paper No.	Name of Paper	Hours/ week	Credit	External Marks	Internal Marks	Total Marks
III	MT-05	Environment & Food Microbiology	2	2	50	20	70
	MT-06	Human anatomy and physiology-1	2	2	50	20	70
	MT-07	General biochemistry-1	2	2	50	20	70
Practical	MTP-03		6	3	60	30	90
IV	MT-08	Microbial Metabolism and Genetics	2	2	50	20	70
	MT-09	Human anatomy and physiology-2	2	2	50	20	70
	MT-10	General biochemistry-2	2	2	50	20	70
Practical	MTP-03		6	3	60	30	90

5/11/20

25/11/2021

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

SYLLABUS FOR B.Sc. MEDICAL TECHNOLOGY

SEMESTER: V & VI

Effective from June 2019

Semester	Paper No.	Name of Paper	Hours/ week	Credit	External Marks	Internal Marks	Total Marks
V	MT-11	Bacteriology and Virology	2	2	50	20	70
	MT-12	Clinical Pathology	2	2	50	20	70
	MT-13	Clinical Biochemistry and Enzymology	2	2	50	20	70
	MT-14	Haematology	2	2	50	20	70
	MT-15	Clinical Laboratory Instrumentation	2	2	50	20	70
	MT-16	Laboratory Management	2	2	50	20	70
Practical	MTP-05		12	6	120	60	180
VI	MT-17	Parasitology and Mycology	2	2	50	20	70
	MT-18	Immunology	2	2	50	20	70
	MT-19	Histology and Cytology	2	2	50	20	70
	MT-20	Pathophysiology	2	2	50	20	70
	MT-21	Blood Banking	2	2	50	20	70
	MT-22	Recent Advances in Diagnostic Techniques	2	2	50	20	70
Practical	MTP-06		12	6	120	60	180

VEER NARMAD SOUTH GUJARAT UNIVERSITY

Board of Studies (Physics)

Syllabus for T. Y. B. Sc. (Physics) with effect from June 2021

(Semester V & VI)

Structure for B. Sc. Syllabus

Inforce from June 2021

B. Sc. (PHYSICS)

Semester V

Sr. No.	Course Code	Course Title	Credits
1	PH – 506	Physics Paper VI	02
2	PH – 507	Physics Paper VII	02
3	PH – 508	Physics Paper VIII	02
4	PH – 509	Physics Paper IX	02
5	PH – 510	Physics Paper X	02
6	PH – 511	Physics Paper XI	02
7	PH – 512	Practical	06
8	Elective Course	Elective Paper 1 or 2 or 3	02

Faculty code: Science **Subject code: PH**
Name of the Program: B. Sc. (Physics) **Subject: PHYSICS**

External Examination	Time Duration
Theory Examination	2 Hrs. per paper
Practical Examination	2 Hrs. per practical

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Name of Exam	Semester	Paper No.	Course Group	Credit	Internal Marks	External Marks	Total Marks
B. Sc.	V	PH – 506	Theory	02	20	50	70
		PH – 507	Theory	02	20	50	70
		PH – 508	Theory	02	20	50	70
		PH – 509	Theory	02	20	50	70
		PH – 510	Theory	02	20	50	70
		PH – 511	Theory	02	20	50	70
		PH – 512	Practical	06	60	120	180
		Elective Course	Theory	02	20	50	70

Note:

1. Student must opt one Elective Paper in each semester (V & VI) out of different Elective Papers offered by the College. (Choice of the Elective Paper number exercised by student shall remain same in both the semesters)
2. College can offer more than one Elective Paper as a choice to the students depending on the available staff and infrastructure.

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T. Y. B. Sc. Sem V

Physics Paper VI (PH – 506)

Classical Mechanics and Solid State Physics

Unit 1	**Motion in Central Force Field (Introduction to Classical Mechanics by R G Takwale and P S Puranik, McGraw Hill Edu. (India) Pvt. Ltd., 2017)**
	Equivalent one-body problem (5.1), Motion in a central force field (5.2), General features of the motion (5.3), Motion in an inverse-square law force field (5.4), Equation of the orbit (5.5), Kepler's laws of planetary motion (5.6)
Unit 2	**Lagrangian Formulation (Introduction to Classical Mechanics by R G Takwale and P S Puranik, McGraw Hill Edu. (India) Pvt. Ltd., 2017)**
	Constraints (8.1), Generalised coordinates (8.2), D'Alembert's principle (8.3), lagrange's equations (8.4), General expression for kinetic energy (8.5), Symmetries and laws of conservation (8.6), Cyclic or ignorable coordinates (8.7), Velocity-dependent potential of electromagnetic field (8.8), Reyleigh's dissipation function (8.9)
Unit 3	**Free Electron Fermi Gas (Solid State Physics Charles Kittel , John Wiley & Sons, 8th ed., 2005)**
	Ch:6 Energy levels in one dimension, Effect of temperature on the fermi dirac distribution, Free electron gas in 3 dimensions, Heat capacity of the electron gas, Electrical conductivity and Ohm's law, Motion in magnetic field, Thermal conductivity of metals (Including subtopics)

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Unit 4	**Energy Bands (Solid State Physics Charles Kittel , John Wiley & Sons, 8th ed., 2005)**
	Ch:7 Nearly free electron model, Bloch functions, Kronig – Penny model, Wave equation of electron in periodic potential, Number of orbitals in a band (Including subtopics)

Additional References:

1. An Introduction to Mechanics by Daniel Kleppner and Robert Kolenkow, McGraw Hill Edu. 2017
2. Classical Mechanics by G. Aruldhas, PHI, 2015
3. Solid State Physics by S O Pillai, New Age International Publishers, 2018.

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T. Y. B. Sc. Sem V

Physics Paper VII (PH – 507)
Electrodynamics and Optics

Unit 1	**Electric Fields in Matter (Introduction to Electrodynamics by David J. Griffiths, Pearson India Education, 4th ed., 2015)**
	Ch – 4 Electric Fields in Matter **1 Polarization:** Dielectrics (1.1), Induced dipoles (1.2), Alignments of polar molecules (1.3), Polarization (1.4) **2 The field of a polarized object:** Bound Charges (2.1), Physical interpretation of bound charges, The field inside a dielectric (2.3) **3 The electric displacement:** Gauss's law in presence of dielectrics (3.1), A deceptive parallel (3.2), Boundary conditions (3.3) **4 Linear dielectrics:** Susceptibility, permittivity, Dielectric constant (4.1), Boundary value problems with linear dielectrics(4.2), Energy in dielectric systems(4.3), Forces on dielectrics (4.4)
Unit 2	**Magnetic Fields in Matter (Introduction to Electrodynamics by David J. Griffiths, Pearson India Education, 4th ed., 2015)**
	Ch – 6 Electric Fields in Matter **1 Magnetization:** Diamagnets, paramagnets, ferromagnets (1.1), Torques and forces on magnetic dipoles (1.2), Effect of magnetic field on atomic orbits (1.3), Magnetization (1.4) **2 The field of a magnetized object:** Bound currents (2.1), Physical interpretation of bound currents (2.2), The Magnetic field inside matter (2.3) **3 The Auxiliary Field H:** Ampere's law in magnetized materials (3.1), A deceptive parallel (3.2) **4 Linear and Non-linear media:** Magnetic susceptibility and permeability (4.1), Ferromagnetism (4.2)

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Unit 3	**Multiple Beam Interferometry (Optics by Ajoy Ghatak, McGraw Hill Edu. (India) Pvt. Ltd., 6th ed. 2017)**
	Introduction (16.1), Multiple reflections from a plane parallel film (16.2), The Fabry-Perot etalon (16.3), The Fabry-Perot interferometer (16.4), Resolving power (16.5), The Lummer-Gehrcke plate (16.6), Interference filters (16.7) (Including subtopics)
Unit 4	**Holography (Optics by Ajoy Ghatak, McGraw Hill Edu. (India) Pvt. Ltd., 6th ed. 2017)**
	Introduction (21.1), Basic theory (21.2), Requirements (21.3), Some applications of Holography (21.4) (Including subtopics)

Additional References:

1. Electricity and Magnetism by D C Tayal, Himalaya Publishing House, 2014
2. Fundamentals of Optics by F A Jenkins and H E White, McGraw Hill, 2017
3. Optics by Eugene Hecht and A. R. Ganeshan, Pearson Education, 2019

Veer Narmad South Gujarat University, Surat

T. Y. B. Sc. Sem V

Physics Paper VIII (PH – 508)

Atomic and Nuclear Physics

Unit 1	**Quantum Theory of Hydrogen Atom (Concepts of Modern Physics by Arthur Beiser, McGraw Hill Publishing Co. Ltd. New Delhi, 6th ed., 2006)**
	Schrodinger's equation for the hydrogen atom (6.1), Separation variables (6.2), Quantum numbers (6.3), Principal quantum number (6.4), Orbital quantum number (6.5), Magnetic quantum number (6.6)
Unit 2	**Quantum Theory of Hydrogen Atom (Concepts of Modern Physics by Arthur Beiser, McGraw Hill Publishing Co. Ltd. New Delhi, 6th ed., 2006)**
	Electron probability density (6.7), Radiative transitions (6.8), Selection rules (6.9), Zeeman effect (6.10), Electron spin (7.1), Exclusion principle (7.2), Symmetric and antisymmetric wave functions (7.3)
Unit 3	**Nuclear Models (Introduction to Nuclear and Particle Physics by V.K. Mittal, R.C. Verma, S.C. Gupta, PHI, 3rd ed., 2014)**
	Introduction (2.1), Liquid drop model (2.2), Shell model (2.3), Fermi gas model (2.4), Collective model (2.5) (Including subtopics)
Unit 4	**Radioactivity (Introduction to Nuclear and Particle Physics by V.K.Mittal, R.C. Verma, S.C. Gupta, PHI, 3rd ed., 2014)**
	Alpha emission (3.5), Beta decay (3.6) Gamma decay (3.7), Artificial or induced radioactivity (3.8), Applications of radioactivity (3.9) (Including subtopics)

Additional References:

1. Quantum Physics by Robert Eisberg & Robert Resnick, Wiley, 2006
2. Nuclear Physics by D C Tayal, Himalaya Publications, 2017.

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3. Nuclear and Particle Physics by Satadal Bhattacharyya, University Press (India) Private Ltd., 2019

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T. Y. B. Sc. Sem V

Physics Paper IX (PH – 509)

Statistical Mechanics and Special Relativity

Unit 1	**Blackbody radiation (Thermal Physics by Garg, Bansal and Ghosh, McGraw Hill Education (India) Pvt Ltd. Chennai, 2nd ed., 2012)**
	Blackbody radiation as a thermodynamics system (11.4), The Stefan-Boltzmann law (11.4.1), Isothermal and adiabatic expansion of blackbody radiation (11.4.2), Spectral distribution of radiant energy (11.5), Wien's law (11.5.1), Rayleigh-Jeans law (11.5.2), Planck's law (11.5.3)
Unit 2	**Basic concepts of Statistical Mechanics (Thermal Physics by Garg, Bansal and Ghosh, McGraw Hill Education (India) Pvt Ltd. Chennai, 2nd ed., 2012)**
	Introduction (12.1), Bridging microscopic and macroscopic behaviours (12.2), Phase space and quantum states (12.3), Specification of the state of the system (12.4), Macrostate and microstates (12.5), Probability calculations (12.6), Types of Ensembles (12.7), Entropy and probability (12.8) (Including subtopics)
Unit 3	**The Experimental Background of the Theory of Special Relativity (Introduction to Special Relativity by Robert Resnick, Wiley India Pvt. Ltd., 2007)**
	Introduction (1.1), Galilean transformations (1.2), Newtonian relativity (1.3), Electromagnetism and newtonian Relativity (1.4), Attempts to locate the absolute frame; the Michelson-Morley experiment (1.5), Attempts to preserve the concept of a preferred ether frame; the lorentz-fitzgerald contraction hypothesis (1.6), Attempts to preserve the concept of a preferred ether frame; the ether-drag hypothesis (1.7), Attempts to modify electrodynamics (1.8), The postulates of special relativity theory (1.9)
Unit 4	**Relativistic Kinematics (Introduction to Special Relativity by Robert Resnick, Wiley India Pvt. Ltd., 2007)**
	The relativity of simultaneity (2.1), Derivation of the Lorentz transformation equations (2.2), Some consequences of the Lorentz transformation equations (2.3), The relativistic addition of velocities (2.6), Aberration and Doppler effect of relativity (2.7)

Additional References:

1. Fundamentals of Thermal and Statistical Physics by Fredrick Reif, Sarat Book Distributors, 2010
2. The Special Theory of Relativity by S Banerji and Asit Banerjee, PHI Learning Pvt. Ltd. New Delhi, 2012

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T. Y. B. Sc. Sem V

Physics Paper X (PH – 510)

Analog and Digital Electronics

Unit 1	**MOSFET, Thyristor & UJT (Electronic Principles by A Malvino and D. Bates, McGraw Hill Edu. (India) Pvt. Ltd, New Delhi, 7th ed., 2017)**
	MOSFETS: The Depletion-mode MOSFET (14.1), D-MOSFET curves (14.2), Depletion-Mode MOSFET amplifiers (14.3), The Enhancement-mode MOSFET (14.4), The Ohmic region (14.5), Digital switching (14.6), CMOS (14.7), Power FETs (14.8), E-MOSFET amplifiers (14.9) **Thyristors:** The Four – Layer diode (15.1),The Silicon controlled rectifier (15.2), The SCR crowbar (15.3), SCR phase control (15.4), Bidirectional thyristors (15.5), Other thyristors (15.7)
Unit 2	**Differential Amplifier (Electronic Principles by A Malvino and D. Bates, McGraw Hill Edu. (India) Pvt. Ltd, New Delhi, 7th ed., 2017)**
	Differential amplifier (17.1), DC analysis of a differential amplifier (17.2), AC analysis of differential amplifier (17.3), Input characteristic of an Op Amp (17.4), Common mode gain (17.5), Integrated circuits (17.6), The current mirror (17.7), The loaded diff amp (17.8)
Unit 3	**Digital logic and combinational logic circuit (Digital Principles and Applications by D. Leach, A Malvino and G. Saha, McGraw Hill Edu. (India) Pvt. Ltd. 7th ed., 2010)**
	Digital Logic: The Basic gates-NOT, OR, AND (2.1), Universal logic gates (2.2), AND –OR invert gates (2.3) **Combinational Logic Circuit:** Boolean law and theorems (3.1), Sum of product method (3.2), Truth table to karnaugh map (3.3), Pairs, quads And octets (3.4) Karnaugh simplifications (3.5), Don't care conditions (3.6), Product of sum method (3.7), Product of sum simplification (3.8)
Unit 4	**Digital logic and combinational logic circuit (Digital Principles and Applications by D. Leach, A Malvino and G. Saha, McGraw Hill Edu. (India) Pvt. Ltd 7th ed., 2010)**
	Multiplexer (4.1), Demultiplexer (4.2), 1 of 16 Decoder, BCD to decimal decoders (4.4), Encoders (4.6), Exclusive OR gate (4.7), Parity generators and checkers (4.8), Magnitude comparator (4.9), Binary number system (5.1), Binary to decimal conversion (5.2), Decimal To binary conversion (5.3), Octal number (5.4), Hexadecimal numbers (5.5)

Additional References:

1. Functional Electronics by K.V. Ramanan – McGraw Hill Edu. (India) Pvt. Ltd Publication
2. Electronics Devices and Circuits by Allen Mottershed – PHI Publication.
3. Modern Digital Electronics by R P Jain, McGraw Hill Education, New Delhi, 2009.

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T. Y. B. Sc. Sem V

Physics Paper XI (PH – 511)

Mathematical Methods of Physics and C-Programming

Unit 1	**Vector Analysis : (Mathematical Method for Physicists by Arfken and Weber, Academic Press, 6th ed., 2010)**
	Orthogonal coordinates in R^3 (2.1), Differential vector operators (2.2), Spatial coordinate system; Introduction (2.3), Circular cylindrical coordinates (2.4), Spherical polar coordinates (2.5)
Unit 2	**Numerical Methods (Introductory Methods of Numerical Analysis by S.S.Sastry, PHI publication, 4th ed., 2006)**
	Solutions of algebraic equations: Introduction (2.1), The bisection method (2.2), The method of false position (2.3), The iteration method (2.4), Newton-Raphson method (2.5) **Interpolation:** Introduction (3.1), Errors in polynomial interpolation (3.2), Finite differences (3.3), Forward differences (3.3.1), Backward differences (3.3.2), Central differences (3.3.3), Symbolic relations and separation of symbols (3.3.4), Detection of errors by use of difference tables (3.4), Differences of a polynomial (3.5), Newton's formula for interpolation (3.6) Divided differences and their properties (3.10), Newton's general interpolation formula (3.10.1)
Unit 3	**C Programing (Computer Programing in C by V Rajaraman by PHI Learning Private Ltd, Delhi (24th Printing))**
	Numerical Constant and Variables: Constants (5.1), Scalar variable (5.2), Declaring variable names (5.3), Defining constants (5.4) **Arithmetic Expressions:** Arithmetic operators and modes of expressions (6.1), Integer expressions (6.2), Floating point expressions (6.3), Operator precedence in expressions (6.4), Examples of arithmetic expressions (6.5), Assignment statements (6.6), Defining variables (6.7), Arithmetic conversion (6.8), Assignment expressions (6.9), Increment and decrement operators (6.10), Multiple assignments (6.11)
Unit 4	**C Programing (Computer Programing in C by V Rajaraman by PHI Learning Private Ltd, Delhi (24th Printing))**
	Input and Output in C Programs Output function (7.1), Input function (7.2) **Conditional Statements** Relation Operators (8.1), Compound statement (8.2), Conditional statements (8.3), Example programs using conditional statements (8.4) **Implementing Loops in Programs** The *while* loop (9.1), The *for* Loop (9.2), The *do while* loop (9.3)

Additional References:

1. Mathematical Physics by H K Dass and Dr. Rama Verma, S.Chand Co.7th ed., 2019
2. Let us C by Y. Kanetkar, BPB Publications, 17th ed., 2017
3. Numerical Method for Scientists and Engineers by K. S. Rao, PHI, 2001.
4. Numerical Mathematical analysis by J. B. Scarborough, John Hopkin Press, 1930.

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Practicals for T. Y. B. Sc. Sem V

PH-512

LIST OF EXPERIMENTS

	GROUP A
1	To determine Young's modulus of a wire using optical lever.
2	To determine Gravitational acceleration by Keter's pendulum
3	To study Measurement of susceptibility of paramagnetic material
4	To determine Elastic constants for the material of flat spiral spring
5	To determine angle of contact and surface tension of mercury by Quinck's method.
6	To determine Moment of Inertia by Bifilar suspension.
	GROUP B
1	To determine wave length of light by constant deviation spectrometer
2	To determine the cardinal points of a lens system using turn table.
3	To determine separation between plates of a Fabry Perot Etalon.
4	To determine the resolving power of a telescope.
5	To determine Hartman formula using prism.
6	To determine refractive index of a liquid by total internal reflection.
	GROUP C
1	To determine activation energy of semiconductor
2	To determine electronic charge 'e' using photo – emissive cell.
3	To determine absorption coefficient of liquid using photo cell.
4	To determine dielectric constant of a dielectric material with frequency.
5	To determine value of Planck's constant using LEDs of at least 4 different colors.
6	To determine thermal conductivity of Rubber Tubing
	GROUP D
1	Study of Parallel resonance using LCR circuit.
2	To determine Temperature Coefficient of Resistance for Platinum using Carey-Foster's bridge
3	To determine self-inductance by Anderson's bridge
4	To determine absolute value of capacitance using ballistic galvanometer.
5	Comparison of capacitance by the method of mixture.
6	To determine figure of merits of ballistic galvanometer.
	GROUP E
1	Design built and test adder/ subtractor using IC 741
2	Design built and test astable multivibrator using IC-555/Op-Amp
3	Design built and study Wien bridge oscillator
4	Design built and test Integrator and differentiator using IC 741.
5	Design built and test AND, OR, NOT gates using NAND/NOR gates.
6	Design built and test two stage RC coupled amplifier.
	GROUP F
1	C-program for calculation of days between two dates of a year
2	C-program to solve the sum of the sine and cosine series and print out the curve.
3	C-program to convert a given integer into binary and octal systems and vice versa.
4	C-program to find Inverse of a matrix
5	Find roots of f(x) = 0 by using Newton-Raphson method
6	Find roots of f(x) = 0 by using iteration method
7	Use of Newton's forward, backward and general interpolation formula

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8	Use of Newton's interpolation formula to estimate the first order and the second order differentials numerically.

Additional References:

1. D.C.Tayal ,University Practical physics, Edited by Ila Agarwal, Himalaya Publishing House
2. B. L. Worsnop and H. T. Flint, Advanced Practical Physics, Asia Publishing House, New Delhi.
3. P. Khandelwal, A Laboratory Manual of Physics for Undergraduate Classes, Vani Publication House, New Delhi.
4. Geeta Sanon, BSc Practical Physics, 1st Edn. (2007), R. Chand & Co.

Note (for Sem-V Practical) :

1. The duration of each experiment is of 2 hours.
2. In the external exam, a student shall perform six experiments, one from each group. Each experiment will be of 2 hours duration.
3. There shall not be more than 20 students per batch in the external exam.
4. The external exam of each batch should be completed in two days by arranging three sessions of 2 hours each in a day.

Veer Narmad South Gujarat University, Surat

T. Y. B. Sc. Sem V

Elective Paper - I

Modern Digital and Analog Communication System-I

Unit 1	**Introduction : Communication System (Modern Digital And Analog Communication System by B P Lathi & Zhi Ding, Oxford University Press, 4th ed., South Asia Edition, 2017)**
	Communication systems (1.1), Analog and digital messages (1.2), Channel effect, Signal-to-Noise ratio and capacity (1.3), Modulation and detection (1.4) (Including subtopics)
Unit 2	**Amplitude Modulations and Demodulations (Modern Digital And Analog Communication System by B P Lathi & Zhi Ding, Oxford University Press, 4th ed., South Asia Edition, 2017)**
	Baseband versus carrier communications (3.1), Double-Sideband amplitude modulation (3.2), Amplitude modulation (AM) (3.3), Bandwidth-Efficient amplitude modulations (3.4), Amplitude modulations: vestigial sideband(VSB) (3.5), Local carrier synchronization (3.6), Frequency division multiplexing (FDM) (3.7), Phase-Locked loop and some applications (3.8) (Including subtopics)
Unit 3	**Angle Modulation and Demodulation (Modern Digital And Analog Communication System by B P Lathi & Zhi Ding, Oxford University Press, 4th ed., South Asia Edition, 2017)**

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	Nonlinear modulation (4.1), Bandwidth of Angle-Modulated waves (4.2), Generating FM waves (4.3), Demodulation of FM signals (4.4), Effects of nonlinear distortion and interference (4.5), Superheterodyne analog AM/FM receivers (4.6), FM broadcasting system (4.7)
Unit 4	**Sampling and analog-to-Digital Conversion (Modern Digital And Analog Communication System by B P Lathi & Zhi Ding, Oxford University Press, 4th ed., South Asia Edition, 2017)**
	Sampling theorem (5.1), Pulse code modulation (PCM) (5.2), Digital telephony: PCM in T1 carrier systems (5.3), Digital multiplexing (5.4), Differential pulse code modulation (DPCM) (5.5), Adaptive differential PCM (ADPCM) (5.6), Delta modulation (5.7) Vocoders and video compression (5.8) (Including subtopics)

Additional References:

1. Electronic Communications by Ruddy and coolen, Pearson Education, 4th ed., 2008
2. Introduction to Analog & Digital Communications : Simon Haykin & Michael Moher, 2014
3. Electronic Communication system by G. Kennedy & B. Devis, McGraw Hills Education, 6th ed., 2017.

Veer Narmad South Gujarat University, Surat
T. Y. B. Sc. (Physics) Sem V
Elective Paper II
Astrophysics-I

Unit 1	**Astronomical Instruments (An Introduction to Astrophysics by Baidyanath Basu, Tanuka Chattopadhyay and Sudhindra Nath Biswas PHI Learning Private Ltd, 2nd ed., 2017)**
	Optical telescopes (1.3), Radio telescopes (1.4), The hubble space telescope (HST) (1.5), Astronomical spectrograph (1.6), Spectrophotometry (1.9)
Unit 2	**Star (An Introduction to Astrophysics by Baidyanath Basu, Tanuka Chattopadhyay and Sudhindra Nath Biswas PHI Learning Private Ltd, 2nd ed., 2017)**
	Magnitudes, Motions, and Distances of Stars Stellar magnitude sequence (3.1), Absolute magnitude and the distance module (3.2), Radiometric magnitudes (3.5), The colour index of a star (3.6), Luminosities of star (3.7) **Spectral Classification of Stars** Introduction (4.1), Boltsmann's formula (4.2), Saha's equation of thermal ionization (4.3), Importance of ionization theory in astrophysics (4.6)
Unit 3	**The Sun (An Introduction to Astrophysics by Baidyanath Basu, Tanuka Chattopadhyay and Sudhindra Nath Biswas PHI Learning Private Ltd, 2nd ed., 2017)**
	Sun- A typical star (5.1), The photosphere: limb- darkening (5.2), Solar granulation (5.3), The chromosphere (5.5), Solar corona (5.6), Prominences (5.7), The 11 Year solar cycle and sunspots (5.8), The solar magnetic fields (5.9), Theory of sunspots

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	(5.10), Solar flares (5.11), Radio emission from the sun (5.12), Solar wind (5.13), The solar neutrino puzzle (5.14)
Unit 4	**Binary and Multiple Stars (An Introduction to Astrophysics by Baidyanath Basu, Tanuka Chattopadhyay and Sudhindra Nath Biswas PHI Learning Private Ltd, 2nd ed., 2017)**
	Introduction (7.1), Visual binary (7.2), Spectroscopic binary (7.3), Eclipsing binary (7.4), Multiple stars (7.5), Origin of binary stars (7.6), Steller masses and mass luminosity relation (7.7), Mass transfer in close binary systems (7.8)

Additional References:

1. Astrophysics: Stars and Galaxies by K D Abhyankar, Unievrsity Press, 2001
2. Introduction to Cosmology by Jayant Narlikar, Cambridge University Press, 2002.

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T. Y. B. Sc. (Physics) Sem V
Elective Paper III
Measurements and Instrumentation-I

Unit 1	**Optoelectronic measurement (Electrical and Electronic Measurements and Instrumentation By A.K. Sawhney, Dhanpat Rai & Co., 19th ed., 2021)**
	Introduction (19.1), Monochromatic light (19.2), Polarized wave shape (19.3), Refraction and refractive index (19.4), Reflection, Absorption and transmission (19.5), Radiometry and photometry (19.6), Terms relating to photometry (19.7), Laws of illumination (19.11), Terms relating to radiometry (19.12), Photometry/radiometry measurement systems (19.13), Optical sources (19.14), Optical detectors (19.15).
Unit 2	**Electronic Instruments (Electrical and Electronic Measurements and Instrumentation By A.K. Sawhney, Dhanpat Rai & Co., 19th ed., 2021)**
	Introduction (20.1), Electronic voltmeter and their advantages (20.2), Vacuum tube voltmeter (20.3), Differential amplifier (20.4), Difference amplifier type of electronic voltmeter (20.5), Source follower types of electronic voltmeter (20.6), DC voltmeter with direct-coupled amplifier (20.7), Chopper stabilized amplifier (20.8), Electronic voltmeter using rectifier (20.9)
Unit 3	**Cathode Ray Oscilloscope (Electrical and Electronic Measurements and Instrumentation By A.K. Sawhney, Dhanpat Rai & Co., 19th ed., 2021)**
	Introduction (21.1), Cathode ray tube (21.2), Electron gun (21.3), Electrostatic focusing(21.4), Electrostatic deflection (21.5), Post deflection acceleration of electron beam (21.6), Effect of beam transit time and frequency limitations (21.7), Deflection plates (21.8), Graticule (21.10), Time base generator (21.13), Oscilloscope amplifiers (21.14), Vertical input and sweep generator signal synchronization (21.15), Attenuators (21.16), Basic CRO circuits (21.17), Observation of waveform on CRO (21.18), Measurements of voltage and currents (21.19), measurements of phase and frequency (21.20)

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Unit 4	**Transducers (Electrical and Electronic Measurements and Instrumentation By A.K. Sawhney, Dhanpat Rai & Co., 19th ed., 2021)**
	Transducers (25.6), Electric-transducers (25.7), Classification transducers (25.8), Characteristics and choice of transducers (25.9), Summary of factors influencing the choice of transducers (25.10), Resistive transducers (25.11), Potentiometers (25.12), Materials used for potentiometer (25.14), Advantages and disadvantages of resistance potentiometer (25.15)

Additional References:

1. Electrical and electronic measurements and instrumentation By R.K.Rajput, S.Chand Publication
2. Electronic instrumentation by H.S.Kalsi, Mc Graw Hill (third Edition), 2017
3. Electrical and electronic measurements and instrumentation by Syed Imam and Vibhav Kumar Published by Wiley, 2020

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Structure for B. Sc. Syllabus

Inforce from June 2021

B. Sc. (PHYSICS)

Semester VI

Sr. No.	Course Code	Course Title	Credits
1	PH – 606	Physics Paper VI	02
2	PH – 607	Physics Paper VII	02
3	PH – 608	Physics Paper VIII	02
4	PH – 609	Physics Paper IX	02
5	PH – 610	Physics Paper X	02
6	PH – 611	Physics Paper XI	02
7	PH – 612	Practicals	06
8	Elective Course	Elective Paper 1 or 2or 3	02

Faculty code: Science **Subject code: PH**

Name of the Program: B. Sc. (Physics) **Subject: PHYSICS**

External Examination	Time Duration
Theory Examination	2 Hrs. per paper
Practical Examination	2 Hrs. per practical

Name of Exam	Semester	Paper No.	Course Group	Credit	Internal Marks	External Marks	Total Marks
B. Sc.	VI	PH – 606	Theory	02	20	50	70
		PH – 607	Theory	02	20	50	70
		PH – 608	Theory	02	20	50	70
		PH – 609	Theory	02	20	50	70
		PH – 610	Theory	02	20	50	70
		PH – 611	Theory	02	20	50	70
		PH – 612	Practical	06	60	120	180
		Elctive Course	Theory	02	20	50	70

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T. Y. B. Sc. Sem VI

Physics Paper VI (PH – 606)

Classical Mechanics and Solid State Physics

Unit 1	**Moving Coordinate Systems (Introduction to Classical Mechanics by R G Takwale and P S Puranik, McGraw Hills Edu. Pvt. Ltd., 2017)**
	Coordinate system with relative translational motion (9.1), Rotating coordinate system (9.2), The Coriolis force (9.3), Motion on the Earth (9.4), Effect of Coriolis force on a freely falling particles (9.5)
Unit 2	**Motion of a Rigid Body (Introduction to Classical Mechanics by R G Takwale and P S Puranik, McGraw Hills Edu. Pvt. Ltd., 2017)**
	Euler's theorem (10.1), Angular Momentum and Kinetic Energy (10.2), the inertia tensor (10.3), Euler's equations of motion (10.4), Torque-free motion (10.5), Euler's angles (10.6), Motion of a symmetric top (10.7)
Unit 3	**Fermi Surfaces and Metals (Solid State Physics Charles Kittel , John Wiley & Sons, 8th ed., 2005)**
	Ch: 9 Reduced zone scheme, Periodic zone scheme, Construction of fermi surfaces, Electron orbits, Hall orbits and open orbits, Calculation of energy bands, Experimental methods in fermi surface studies (including of subtopics)
Unit 4	**Superconductivity (Solid State Physics Charles Kittel , John Wiley & Sons, 8th ed., 2005)**
	Ch:10 Experimental Survey, Theoretical Survey, High Temperature Superconductors (including subtopics)

Additional References:

1. An Introduction to Mechanics by Daniel Kleppner and Robert Kolenkow, McGraw Hill Edu. 2017
2. Classical Mechanics by G. Aruldhas, PHI, 2015
3. Solid State Physics by S O Pillai, New Age International Publishers, 2018.

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T. Y. B. Sc. Sem VI

Physics Paper VII (PH – 607)

Electrodynamics and Optics

Unit 1	**Electrodynamics (Introduction to Electrodynamics by David J. Griffiths, Pearson India Education, 4th ed., 2015)**
	Ch-7 Electrodynamics **1 Electromotive Force:** Ohm's law (1.1), Electromotive force (1.2), Motional emf (1.3) **2 Electromagnetic Induction** Faraday's law (2.1), The induced electric field (2.2), Inductance (2.3), Energy in magnetic field (2.4)
Unit 2	**Electrodynamics (Introduction to Electrodynamics by David J. Griffiths, Pearson India Education, 4th ed., 2015)**
	Ch-7 Electrodynamics **3 Maxwell's Equations :** Electrodynamics before maxwell (3.1), How maxwell fix Ampere's law (3.2), Maxwell's equation (3.3), Magnetic charge (3.4), Maxwell's equations in matter (3.5), Boundary conditions (3.6) **Conservation laws:** The continuity equation (1.1), Poynting's theorem (1.2)
Unit 3	**Reflection and Refraction of Electromagnetics Waves (Optics by Ajoy Ghatak, McGraw Hill Edu. (India) Pvt. Ltd., 6th ed., 2017)**
	Introduction (24.1), Reflection and refractions at an interface of two media (24.2), Normal incidence on a medium (24.3), Oblique incidence: E Parallel to the plane of incidence (24.4), Polarization by reflection: Brewster's law (24.5), Total internal reflection and the evanescent wave (24.6), Oblique incidence: E perpendicular to the plane of incidence (24.7), Expressions for reflectivity and transmittivity (24.8)
Unit 4	**Optical Fiber Basics using Ray Optics (Optics by Ajoy Ghatak, McGraw Hill Edu. (India) Pvt. Ltd., 6th ed., 2017)**
	Why glass fibers? (28.5), The coherent bundle (28.6), The numerical aperture (28.7), Attenuation in optical fibers (28.8), Multimode fibers (28.9)

Additional References:

1. Electricity and Magnetism by D C Tayal, Himalaya Publishing House, 2014.
2. Fundamentals of Optics by F A Jenkins and H E White, McGraw Hill, 2017.
3. Optics by Eugene Hecht and A. R. Ganeshan, Pearson Education., 2019.

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T. Y. B. Sc. Sem VI

Physics Paper VIII (PH – 608)

Atomic and Nuclear Physics

Unit 1	**Many Electron Atoms (Concepts of Modern Physics by Arthur Beiser, McGraw Hill Publishing Co. Ltd. New Delhi, 6 ed., 2006)**
	Periodic table (7.4), Atomic structures (7.5), Explaining the Periodic table (7.6), Spin-Orbit Coupling (7.7), Total Angular Momentum (7.8), X-Ray spectra (7.9)
Unit 2	**Molecular Physics (Concepts of Modern Physics by Arthur Beiser, McGraw Hill Publishing Co. Ltd. New Delhi, 6 ed., 2006)**
	The Molecular bond (8.1), Electron sharing (8.2), The H2+ Molecular ion (8.3), The Hydrogen molecule (8.4), Complex molecules (8.5), Rotational energy levels (8.6), Vibrational energy levels (8.7), Electronic spectra of molecules (8.8)
Unit 3	**Particle Accelerators and Radiation Detectors (Introduction to Nuclear and Particle Physics by V. K. Mittal, R. C. Verma, S. C. Gupta, PHI, 3rd ed., 2014)**
	Introduction (6.1) Cockcroft and Walton accelerator (6.2), Tandem accelerator (6.4), Linear Accelerator (LINAC) or Drift Tube accelerator (6.5), Introduction (7.1), Gas-Filled detectors (7.2), Ionizations chamber (7.3), Proportional counters (7.4), Geiger-Muller (GM) counters (7.5), Scintillations detectors (7.6), Semiconductors radiations detectors (7.7), Cloud chamber (7.8), Cerenkov counters (7.12) (Including subtopics)
Unit 4	**Particle Physics (Introduction to Nuclear and Particle Physics by V. K. Mittal, R. C. Verma, S. C. Gupta, PHI, 3rd ed., 2014)**
	Introduction (8.1), Productions of elementary particles (8.2), Types of interaction (8.3), Classification of elementary particles (8.4), Mass spectra and decays of elementary particles (8.5), Quantum numbers (8.6), Conservation laws (8.7) (Including subtopics)

Additional References:

1. Quantum Physics by Robert Eisberg & Robert Resnick, Wiley, 2006
2. Nuclear Physics by D C Tayal, Himalaya Publications, 2017
3. Nuclear and Particle Physics by Satadal Bhattacharyya, University Press (India) Private Ltd, 2019

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T. Y. B. Sc. Sem VI

Physics Paper IX (PH – 609)

Statistical Mechanics and Special Relativity

Unit 1	**Classical and Quantum Statistics (Thermal Physics by Garg, Bansal and Ghosh, McGraw Hill Education (India) Pvt Ltd. Chennai, 2nd ed., 2012)**
	Classical and quantum statistics (12.9), Distribution functions (12.9.1), Partition function and thermodynamics properties of a system (13.2), The partition function for an ideal monatomic gas(13.3), Single partition function (13.3.1), N-particle partition function and thermodynamic variables (13.3.2), Some deductions from MB statistics (13.4), Distribution law for molecular speeds (13.4.1), specific heat capacity of gases (13.4.2), partition function of a diatomic molecule (13.4.3), specific heat capacity of hydrogen (13.4.5)
Unit 2	**Specific Heat Capacity of Solids (Thermal Physics by Garg, Bansal and Ghosh, McGraw Hill Education (India) Pvt Ltd. Chennai, 2nd ed., 2012)**
	Specific heat capacity of solids (13.5), Einstein's theory (13.5.1), Debye theory (13.5.2), Thermodynamic functions of systems with finite number of energy levels (13.6), negative temperatures (13.6.1), transition between states: Einstein's formulation of spontaneous and stimulated emission of radiation (13.6.2), Laser action (13.6.3)
Unit 3	**Relativistic Dynamics (Introduction to Special Relativity by Robert Resnick, Wiley India Pvt. Ltd.)**
	The need to redefine momentum (3.2), Relativistic momentum (3.3), Alternative views of mass in relativity (3.4), The relativistic force law and the dynamics of a single Particle (3.5), The equivalence of mass and energy (3.6)
Unit 4	**Relativity and Electromagnetism (Introduction to Special Relativity by Robert Resnick, Wiley India Pvt. Ltd.)**
	Introductions (4.1) The interdependence of electric and magnetic fields (4.2), The transformation for **E** and **B** (4.3), The field of a uniformly moving point charge (4.4), Forces and fields near a current carrying wire (4.5), Forces between moving charges (4.6), The invariance of Maxwell's equations (4.7), The possible limitations of Special Relativity (4.8)

Additional References:

1. Fundamentals of Thermal and Statistical Physics by Fredrick Reif, Sarat Book Distributors, 2010
2. The Special Theory of Relativity by S Banerji and Asit Banerjee, PHI Learning Pvt. Ltd. New Delhi, 2012

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T. Y. B. Sc. Sem VI

Physics Paper X (PH – 610)

Analog and Digital Electronics

Unit 1	**Operational Amplifiers and Linear Op-Amp circuits (Electronic Principles by A Malvino and D. Bates, McGraw Hill Edu. (India) Pvt. Ltd, New Delhi, 7th ed.)**
	Introduction : Introduction to OP Amps (18.1), The 741 Op Amp (18.2), The inverting amplifiers (18.3), The Non-inverting amplifiers (18.4), Two Op-Amp applications (18.5) Inverting-amplifier circuits (20.1), Noninverting-amplifier circuits (20.2), Inverter/Noninverter circuits (20.3), Differential amplifiers (20.4), Instrumentation amplifiers (20.5), Summing amplifier circuits (20.6)
Unit 2	**Feedback & Oscillators (Electronic Principles by A Malvino and D. Bates, McGraw Hill Edu. (India) Pvt. Ltd, New Delhi, 7th ed.)**
	Feedback: Four types of negative feedback (19.1), VCVS Voltage gain (19.2) **Oscillators:** Theory of sinusoidal oscillators (23.1), The Wein Bridge oscillator (23.2), Other RC oscillators (23.3), The Colpitt oscillator (23.4), Other LC oscillators (23.5), The 555 timer (23.7), Astable operation of 555 timer (23.8), 555 circuits (23.9)
Unit 3	**Arithmetic Circuits (Digital Principles And Applications by D. Leach, A Malvino and G. Saha, McGraw Hill Edu. (India) Pvt. Ltd, 7th ed., 2010)**
	Clock waveforms (7.1), TTL clock (7.2), Schmitt trigger (7.3), 555 timer – Astable (7.4), 555 timer – monostable (7.5), Monostables with input logic (7.6), Pulse-forming circuits (7.7)
Unit-4	**Flip-Flop (Digital Principles And Applications by D. Leach, A Malvino and G. Saha, McGraw Hill Edu. (India) Pvt. Ltd, 7th ed., 2010)**
	RS Flip-Flop (8.1), Gated Flip-Flops (8.2),Edged-Triggered RS Flip-Flops (8.3), Edged-Triggered D Flip-Flops (8.4), Edged-Triggered, Jk Flip-Flops (8.5), Flip-Flops Timing (8.6),Edge Triggering through input lock out (8.7), JK Master-Slave Flip-Flops (8.8).

Additional References:

1. Functional Electronics by K.V. Ramanan – McGraw Hill Edu. Pvt. Ltd, New Delhi Publication
2. Electronics Devices and Circuits by Allen Mottershed – PHI Publication.
3. Modern Digital Electronics by R P Jain, McGraw Hill Education, New Delhi, 2009.

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T. Y. B. Sc. Sem VI

Physics Paper XI (PH – 611)

Mathematical Method of Physics and C-Programming

Unit 1	**Differential equations (Mathematical Method for Physicists by Arfken and Weber, Academic Press 6th ed., 2010)**
	Partial Differential Equations (9.1), First order Differential Equations (9.2), Separation of variables (9.3), Singular Points (9.4) Series solutions-Frobenius method (9.5)
Unit 2	**Matrices (Mathematical Method for Physicists by Arfken and Weber, Academic Press 6th ed., 2010)**
	3.2 **Matrices** Basic Definitions, Rank, Equality, Addition, Subtraction, Multiplication by Scalar, Matrix Multiplication- inner product, Direct product, Diagonal matrices, Matrix inversion, 3.3 **Orthogonal Matrices** Direction cosines, Applications to vectors, Orthogonality conditions: Two Dimensional case, Transpose matrix 3.5 **Diagonalization of Matrices:** Moment of inertia matrix, Eigen vector, Eigen values, Hermitian matrices, Anti-Hermitian matrices, Functions of matrices, Diagonal matrices
Unit 3	**C Programing (Computer Programing in C by V Rajaraman by PHI Learning Private Ltd, Delhi (24th Printing))**
	Defining and Manipulating Arrays: Array Variable (10.1), Syntax rules for arrays (10.2), Use of multiple subscripts in array (10.3), Reading and writing multidimensional arrays (10.4), Examples of for Loops with arrays (10.5) **Logical Expressions and More Control Statements:** Introduction (11.1), Logical operators and expressions (11.2), Precedence rules for logical operators (11.3), Some example of use of logical expressions (11.4), The switch statement (11.5), The break statement (11.6), The continue statement (11.7)
Unit 4	**C Programing (Computer Programing in C by V Rajaraman by PHI Learning Private Ltd, Delhi (24th Printing))**
	Functions: Introduction (13.1), Defining and using functions (13.2), Syntax rules for function declaration (13.3), Array in functions (13.4), Global local and static variables (13.5)

Additional References:

1. Mathematical Physics by H K Das and Dr. Rama Verma, S. Chand Co., 7th ed., 2019
2. Mathematical Physics by P K Chattopadhaya, New Age International publishers, 2006
3. Let us C by Y. Kanetkar, BPB Publications, 17th ed., 2017

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Practicals for T. Y. B. Sc. Sem VI

PH-612

LIST OF EXPERIMENTS

	GROUP A
1	To determine Young's modulus by Koeing's method.
2	To study Resonance Pendulum
3	To study coupled oscillator
4	To determine the oscillation of mass in the case of combination of two spring.
5	To determine Young's modulus by the method of vibration
6	To determine the moment of inertia of a flywheel
	GROUP B
1	To determine refractive index of liquid using hollow prism
2	To determine the wavelength of light using Fresnel's biprism
3	To determine the resolving power of diffraction grating
4	To determine cardinal points of a lens system using Searle's goniometer
5	To determine the wavelength of light using Lloyd's mirror
6	To determine wavelength of light using Edser butler plate
	GROUP C
1	To determine the constants of thermocouple
2	To determine e/m by Thomson's method
3	To determine the constants of BG using solenoid
4	To study LDR
5	To study Colpitt's oscillator
6	To study Hartley's oscillator
	GROUP D
1	To determine high resistance using method of leakage
2	To determine mutual inductance by Carey-Foster's method
3	To determine self-inductance of a given coil by Rayleigh's method
4	To determine self-inductance of a given coil using Maxwell's Induction bridge
5	To determine the ratio of capacities using Desauty's method
6	To determine mutual inductance using ballistic galvanometer

References:

1. University Practical Physics by D C Tayal, Edited by Ila Agarwal, Himalaya Publishing House
2. Advanced Practical Physics by B. L. Worsnop and H. T. Flint, Asia Publishing House, New Delhi.
3. A Laboratory Manual of Physics for Undergraduate Classes by P. Khandelwal, Vani Publication House, New Delhi.
4. BSc Practical Physics by Geeta Sanon, S. Chand & Co., 1st ed. 2007

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Note (for Sem-VI Practical):

1. The duration of each experiment is of 2 hours.
2. In the external exam, a student shall perform four experiments, one from each group. Each experiment will be of 2 hours duration.
3. The experiments in Sem-VI divided in four groups (A,B,C and D) carrying 4 credits (8hrs/week) as per list attached above.
4. In addition to experiments, students have to perform project work (4 hr/week, 2 credits) under the guidance of a faculty as per the guidelines mentioned below:
5. There shall not be more than 20 students per batch in the external exam.
6. The external exam of each batch of 20 students should be completed in two days by arranging three sessions of 2 hours each in a day. Last two sessions per batch shall be allotted for evaluation of project work.

Guidelines for Project Work:

It is expected that,

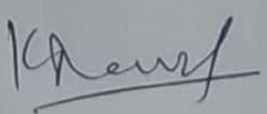
1. As project work the student does work equivalent to twelve hours laboratory experiments through sixth semester under the guidance of faculty.
2. A project shall be carried out either individually or in a group of not more than four students. The Head of the Department shall assign one teacher per project. The equivalent workload should be credited to the teacher who has been assigned the project guideship and must be added in the time schedule of practical.
3. The project work is a practical course and it is intended to develop a set of skills pertaining to the laboratory work apart from the cognition of students. Therefore, the guides should not permit projects that involve no contribution on part of student.
4. The project must have a clear and strong link with the principles of basic physics and/or their applications.
5. The theme chosen should be such that it promotes better understanding of physics concepts and brings out the creativity in the students.
6. The evaluation of the project work must give due credit to the amount of the project work actually done by a student, skills shown by the student, understanding of the physics concepts involved and the presentation of the final report at the time of viva voce.
7. Any ready-made material used in the report (such as downloaded pages from the web) must be clearly referred to and acknowledged.
8. Time schedule for project work shall be decided by the guide in such a way that the final report submission is completed along with submission of journal of laboratory work.
9. Any non-adherence to this norm should attract a penalty by way of deduction in the marks awarded to a student.

Minimum 4 hours per student/group should be spent by the faculty member for the guidance of project work to the students which shall be considered as work load of practical.

Evaluation of the project work:

The following points shall be considered during evaluation of project work:

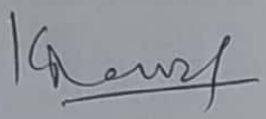
1. Working model (Experimental or Concept based simulation)
2. Understanding of the project
3. Data collection
4. Data Analysis
5. Innovation/difficulty
6. Report.



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Scheme of external examination: (Total 120 marks)

1. The University (external) examination for Practical shall be conducted at the end of each Semester and the evaluation of Project work at the end of the sixth semester along with practical examination.
2. The candidates shall appear for external examination of Practical course carrying
   (i) 120 marks at the end of fifth semester (Six practical of two hours each)
   (ii) 80 marks (Four sessions of two hours each) + 40 marks project work.
3. The evaluation of project work should be conducted based on presentation and report. Extra care must be taken in the evaluation of projects done in a pair or group. Delegation of the work done by individuals must be sought from the students in such cases.
4. The candidate shall prepare and submit a certified Journal for practical examination based on the practical course with at least 80% of total experiments from each group.
5. At the time of practical examination, the candidate must also submit the certified Project Report prepared as per the guidelines given in the Syllabus.
6. A candidate will be allowed to appear for the practical examination in each semester only if the candidate submits a certified journal of that semester or a certificate from the Head of the Department to the effect that the candidate has completed the practical course of that semester as per the minimum requirements and a project completion report duly certified by the project in-charge and Head of the Department.
7. The scheme for internal marks (total 60 marks) shall also be followed to include project work evaluation.
8. During the external practical examination the number of students per batch should be twenty (20).



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T. Y. B. Sc. Sem VI

Elective Course – I

Modern Digital and Analog Communication System-II

Note: The prerequisite for this course is that a student should have taken the Elective paper: Modern Digital and Analog Communication System-I in Semester V.

Unit 1	**Principles of Digital Data Transmission (Modern Digital And Analog Communication System by B P Lathi & Zhi Ding, Oxford University Press, 4th ed., South Asia Edition (2017)**
	Digital communication systems(8.1), Line coding (8.2), Pulse shaping (8.3) (Including subtopics)
Unit 2	**Principles of Digital Data Transmission (Modern Digital And Analog Communication System by B P Lathi & Zhi Ding, Oxford University Press, 4th ed., South Asia Edition (2017)**
	Scrambling (8.4), Digital receivers and regenerative repeaters (8.5), Eye diagrams: An important tool (8.6), PAM: Mary baseband signalling for higher data rate (8.7), Digital carrier systems (8.8), Mary digital carrier modulation (8.9)
Unit 3	**Performance Analysis of Digital Communication Systems (Modern Digital And Analog Communication System by B P Lathi & Zhi Ding, Oxford University Press, 4th ed., South Asia Edition (2017)**
	Optimum linear detector for binary polar signaling (9.1), General binary signaling (9.2), Coherent receivers for digital carrier modulations (9.3), Signal space analysis of optimum detection (9.4), Vector decomposition of white noise random processes (9.5) (Including subtopics)
Unit 4	**Performance Analysis of Digital Communication Systems (Modern Digital And Analog Communication System by B P Lathi & Zhi Ding, Oxford University Press, 4th ed., South Asia Edition (2017)**
	Optimum receiver for while gaussian noise channels (9.6), General expression for error probability of optimum receivers (9.7), Equivalent signal sets (9.8), Nonwhite (Colored) Channel noise (9.9), Other useful performance criteria (9.10), Noncoherent detection (9.11) (Including subtopics)

Additional References:

1. Electronic Communications by Ruddy and coolen, Pearson Education, 4th ed., 2008
2. Introduction to Analog & Digital Communications : Simon Haykin & Michael Moher, 2014
3. Electronic Communication system by G. Kennedy & B. Devis, McGraw Hills Education, 6th ed., 2017.

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T. Y. B. Sc. Sem VI

Elective Paper II

Astrophysics-II

Note: The prerequisite for this course is that a student should have taken the Elective paper: Astrophysics-I in Semester V.

Unit 1	**Structure and Evolution of Stars (An Introduction to Astrophysics by Baidyanath Basu, Tanuka Chattopadhyay and Sudhindra Nath Biswas PHI Learning Private Ltd 2nd ed.)**
	Introduction (14.1), The equation of state for stellar interior (14.3), Mechanical and thermal equilibrium in stars (14.4), Energy generation in stars (14.6), Steller evolution (14.7) White dwarfs (14.8)
Unit 2	**Pulsars, Neutron Stars and Black Holes (An Introduction to Astrophysics by Baidyanath Basu, Tanuka Chattopadhyay and Sudhindra Nath Biswas PHI Learning Private Ltd 2nd ed.)**
	Discovery of pulsars (15.1), Rotating neutron stars model of pulsars (15.2), Period distribution and loss of rotational energy (15.3), Binary pulsars (15.7), Black holes (15.8)
Unit 3	**Quasars (An Introduction to Astrophysics by Baidyanath Basu, Tanuka Chattopadhyay and Sudhindra Nath Biswas PHI Learning Private Ltd 2nd ed.)**
	The discovery (20.1), Radio properties (20.2), Optical properties (20.3), The redshift of quasars (20.4), Active galactic nuclei (20.5)
Unit 4	**Cosmology (An Introduction to Astrophysics by Baidyanath Basu, Tanuka Chattopadhyay and Sudhindra Nath Biswas PHI Learning Private Ltd 2nd ed,)**
	Introduction (21.1), Redshift and the Exapansion of the Universe (21.2), Matter Density in the universe and the deceleration parameter (21.3), The Cosmological Principle: The perfect Cosmological principle (21.4), Fundamental equations of cosmology (21.5), The Cosmic Microwave Background Radiation (21.8)

Additional References:

1. Astrophysics: Stars and Galaxies by K D Abhyankar, University Press, 2001
2. Introduction to Cosmology by Jayant Narlikar, Cambridge University Press, 2002.

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T. Y. B. Sc. Sem VI

Elective Paper III

Measurements and Instrumentation-II

Note: The prerequisite for this course is that a student should have taken the Elective paper: Measurements and Instrumentation-I in Semester V.

Unit 1	**Primary Sensing Elements and Trasducers 1 (Electrical and Electronic Measurements and Instrumentation By A.K. Sawhney, Dhanpat Rai & Co., 19th ed., 2021)**
	Resistance Thermometer (25.19), Thermistors (25.20), Integrated circuits temperature transducers (25.22), Variable inductance transducers (25.23), Linear Variable Differential Transformer (LVDT) (25.24), Rotary Variable Differential Transformer (RVDT)(25.25), Synchros (25.26), Resolvers (25.27)
Unit 2	**Primary Sensing Elements and Trasducers 2 (Electrical and Electronic Measurements and Instrumentation By A.K. Sawhney, Dhanpat Rai & Co., 19th ed., 2021)**
	Capacitive transducers (25.28), Piezo-electric transducers (25.29), Hall effect transducers (25.30), Magneto-Resistors (25.31), Magneto-elastic and magneto-strictive trasducers (25.32), Optoelectronic transducers (25.33)
Unit 3	**Display Devices (Electrical and Electronic Measurements and Instrumentation By A.K. Sawhney, Dhanpat Rai & Co., 19th ed., 2021)**
	Introduction (28.1), Electrical indicating instruments (28.2), Digital instruments (28.3), Electronic counters (28.4), Digital display methods (28.5), Digital display units (28.6), Segmental displays (28.7), DOT matrices (28.8), Rear projection display (28.9), Light emitting diode (28.11), Liquid crystal diodes (28.12), Nixie tubes (28.13), Segmental gas discharge displays (28.14), Decade counting assemblies (DCAs) (28.15), Display systems (28.16)
Unit 4	**Modern Sensors and Chemical Sensors (Electrical and Electronic Measurements and Instrumentation By A.K. Sawhney, Dhanpat Rai & Co., 19th ed., 2021)**
	Types of modern sensors (32.2), Neno-sensors (32.3), Biosensors (32.4), Introduction (34.1), Probe analysers (34.2), Differential refractometers (34.3), Spectrophotometers (34.4), Detectors (34.5), Filters (34.6), Chromatography (34.7), Electrochemical sensors (34.8),

Additional References:

1. Electrical and electronic measurements and instrumentation By R.K.Rajput, S.Chand Publication
2. Electronic instrumentation by H.S.Kalsi, Mc Graw Hill (third Edition), 2017
3. Electrical and electronic measurements and instrumentation by Syed Imam and Vibhav Kumar Published by Wiley, 2020

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પ્રા. રેખાબેન એમ. પટેલ
સંસ્કૃત બોર્ડ અધ્યક્ષ
વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી,સુરત.
એસ.બી ગાર્ડા આર્ટસ એન્ડ પી.કે. પટેલ
કોમર્સ કોલેજ, નવસારી.
તા. ૨૫ / ૬ / ૨૦૨૧

પ્રતિશ્રી ,
રજીસ્ટ્રારશ્રી ,
વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી,
સુરત.

વિષય- સંસ્કૃત વિષયમાં B. A.Sem-III & IV માં અભ્યાસક્રમ બાબત

માનનીય મહોદયશ્રી,

સવિનય, જણાવવાનું કે સંસ્કૃત વિષયમાં B. A.Sem-III & IV [પેપર – 5 (B) 'અભિશપ્તપુષ્પમ' અને પેપર–8 (B)] 'યુગાવતાર' ની અભ્યાસક્રમ સામગ્રી ઉપલબધ ન હોવાથી તા- ૧૪-૬-૨૦૨૧ની બોર્ડ ઓફ સ્ટડીઝની સભામાં ઉપરોક્ત પુસ્તકોના બદલે અનુક્રમે શ્રી હર્ષ વિરચિત 'રત્નાવલી' અને શ્રી જગન્નાથવિરચિત 'પ્રાસ્તાવિકવિલાસ' ને બોર્ડના સર્વ સભ્યોની સંમતિથી અભ્યાસક્રમમાં સમાવવાનું સર્વાનુમતે નક્કી થયું હતું પરંતુ હવે પેપર – 5 (B) 'અભિશપ્તપુષ્પમ' અને પેપર–8 (B)] 'યુગાવતાર'ની અભ્યાસક્રમ સામગ્રી ઉપલબધ થવાથી બોર્ડના સૌ સભ્યોની ટેલિફોનિક સંમતિથી, તેનો સમાવેશ શૈક્ષણિક વર્ષ ૨૦૨૧-૨૨થી અમલમાં આવે તે અંગે ઘટતું કરવા વિનંતી.

સહકાર બદલ આપનો આભાર.

ભવદીયા,

R M Patel
25-06-21

પ્રા.રેખાબેન એમ. પટેલ
સંસ્કૃત બોર્ડ અધ્યક્ષ

નકલ રવાના :
(૧) ડીનશ્રી, વિનયન વિભાગ, પ્રિ. ડૉ. હેમાલીબેન દેસાઈ
વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી,સુરત.

VEER NARMAD SOUTH GUJARAT UNIVERSITY

First Year B.Com.

Semester – 1

Course Code- CC 105 A

Financial Accounting – 1

(Syllabus Effective from Academic Year 2021-22 onwards)

Objectives:

1. To make students understand basic concepts, theories and principles of accounting.
2. To make students aware of accounting systems followed in different types of businesses.

Unit	Course Contents	Weightage
1.	**Theoretical Framework & practical Transaction** The nature of financial accounting principles, concepts and conventions namely entity, money measurement, going concern, cost, realization, accruals, periodicity, consistency, prudence (conservatism), materiality and full disclosures.	10%
2.	**Sale or Conversion of Partnership Firm to a Limited Company (Practical)**	30%
3.	**Structure of Balance Sheet as per Companies Act 2013 (Theory & Practical)** i. Introduction, meaning, definition , Purposes/ objectives of Preparation of Balance Sheet , Limitations of Balance Sheet ii. Coverage of Balance Sheet : Equity & Liabilities(Shareholder's funds, Share application money pending allotment, Non-Current Liabilities and Current Liabilities) and Assets (Non-Current Assets and Current Assets), Contingent Assets and Contingent Liabilities	30%

4.	**Branch Accounting(Theory& Practical)** Concept of Dependent Branches: accounting aspects; debtors system, stock and debtors system.	**30%**
5	Fieldvisit/ Project: Visit to a Branch of departmental store etc.to explore accounting system followed to record transactions etc..	

Note:

1) **Practical problems shall not exceed 70% of total weightage.**
2) **Suggested field Activity related to Accounting Job / work as part of practical knowledge.**

Suggested Readings:

1. Gupta. R. L and Radhaswamy M. : Financial Accounting; Sultan Chand and Sons, New Delhi.
2. Mongo J. R., Ahuja Girish and Sehgal Ashok : Financial Accounting ; Mayur Paper Back, Noida.
3. Shukla M. C., Grewal T. S. and Gupta S. C. : Advanced Accounts; S. Chand & Co. New Delhi.
4. Agarwala A. N. Agarwala K. N. : Higher Science of Accountancy; Kitab Mahal, Allahabad
5. Rathnam & Hanumanta : Advanced Accounting ; Kitab Mahal - Agra
6. Harishikesh Chakravorty : Advanced Accounting ; Oxford University Press.
7. B. D. Agrawal, Financial Advanced Accounting Vol. I &II ; Premier Pub. Book Co. Delhi.
8. Xavier : Advanced Accountancy ; Tata McGraw Hill.
9. . Ashok Sehgal& Deepak Sehgal : Financial Accounting ; Taxman Publications.
10. . S. K. Bhattacharya : Accounting for Management ; Vikas Publisher.

14. Prin.T.J.RANA : Financial Accounting – 1; B.S.PRAKASHAN
15. પ્રિ.ટી.જે.રાણા : નાણાકીય હિસાબીપધ્ધતિ-૧ : બી.એસ.શાહ.પ્રકાશન

Course Outcome:

VEER NARMAD SOUTH GUJARAT UNIVERSITY

First Year B.Com.

Semester – 2

Course Code- CC 205 A

Financial Accounting – 2

(Syllabus Effective from Academic Year 2020-21 onwards)

Objectives:

The objective of this paper is to help students to acquire conceptual knowledge of the financial accounting and to impart skills for recording various kinds of business transactions.

Unit	Course Contents	Weightage
1.	**Accounting Standards** (i) Introduction, meaning and need for Accounting Standard, Accounting Standard Board (ASB), Procedure for the issue of Accounting Standards, Importance of Accounting Standards, Concepts of IND-AS, List of Accounting Standards (AS) prevailing list in India, (ii) Discussion of AS AS - 2: Valuation of Inventories (Introductory Examples); AS – 9 : Revenue Recognition (Introductory Transactions); AS – 10 : Property Plant and Equipment.	**10%** **10%**
2.	**Consignment Accounts** Introduction to Consignment, Difference between Sale and Consignment, Terms used in consignment like Proforma Invoice, Normal & Abnormal Loss, Valuation of Closing Stock , General & Del-Credere Commission etc., Procedure for Consignment Transactions, Accounting treatment i.e. Journal entries as well as Ledger accounts in the books of consigner and consignee	**25%**
3.	**Joint Venture** Introduction, meaning, features of Joint Venture, Difference between Partnership and Joint Venture, Methods of keeping accounts i.e. (i) When a separate set of books is kept for a Joint Venture and (ii) when no separate set of books is kept for the Joint Venture	**30%**
4.	**Hire Purchase Accounting System:** Introduction, Nature of Hire Purchase Agreement, Special features of Hire Purchase Agreement, Terms used in Hire Purchase Agreements (namely hire vendor, hire purchaser, cash price, down payment, hire purchase installment and hire purchase price), Difference between hire Purchase and Installment Purchase System , Accounting Treatment i.e. Journal Entries and Ledger Accounts in the books of Hire Vendor and Hire Purchaser.	**25%**
5	Practical: Visit any dealer/showroom to understand the concept of Hire Purchase or Installment System	

Note:

1) **Practical problems shall not exceed 70% of total weightage.**
2) **Suggested field Activity related to Accounting Job / work as part of practical knowledge.**

Suggested Readings:

1. Gupta. R. L and Radhaswamy M. : Financial Accounting; Sultan Chand and Sons, New Delhi.
2. Mongo J. R., Ahuja Girish and SehgalAshok : Financial Accounting ; Mayur Paper Back, Noida.
3. Shukla M. C., Grewal T. S. and Gupta S. C. : Advanced Accounts; S. Chand & Co. New Delhi.
4. Compendium of Statement and Standards Accounting : The Institute of Chartered Accountants of India, New Delhi.
5. Agarwala A. N. Agarwala K. N. : Higher Science of Accountancy; KitabMahal, Allahabad
6. Rathnam&Hanumanta : Advanced Accounting ; KitabMahal - Agra
7. HarishikeshChakravorty : Advanced Accounting ; Oxford University Press.
8. B. D. Agrawal, Financial Advanced Accounting Vol. I &II ; Premier Pub. Book Co. Delhi.
9. Xavier : Advanced Accountancy ; Tata McGraw Hill.
10. . Ashok Sehgal& Deepak Sehgal : Financial Accounting ; Taxman Publications.
11. . S. K. Bhattacharya : Accounting for Management ; Vikas Publisher.
12. . Accounting Standards: Taxmann Publications, New Delhi
13. . Das Gupta : Indian and International Accounting Standards, Sultan Chand & Sons, New Delhi
14. Prin.T.J.RANA : Financial Accounting – 2 ; B.S.PRAKASHAN
15. પ્રિ.ટી.જે.રાણા : નાણાકીય હિસાબીપધ્ધતિ-૨ : બી.એસ.શાહ.પ્રકાશન

Course Outcome:

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Second Year B.Com.
Semester – III
Advanced Accounting & Auditing - Paper – II
(Corporate Accounting)
Course Code - CE 320 A (2)
(Syllabus effective from Academic Year 2021-22 onwards)

Objective:

- This course enables the students to develop awareness about corporate accounting in conformity with the provision of Companies Act.

Unit	Course Inputs	Weightage
(1)	**Concepts under Companies Act, 2013:** • Section 2(41) Financial year • Section 2 (50) Issued Capital • Section 2 (64) Paid up share capital • Section 2 (71) Public Company • Section 2 (62) One person company • Section 2(68) Private company	**10%**
(2)	**Liquidation of Company** • Accounts relating to liquidation of Company (Liquidator's Statement of receipt and payment).	**30%**
(3)	**Accounting for Amalgamation of Companies as per Indian Accounting Standard -14.**	**30%**
(4)	**Accounting for Absorption of Companies as per Indian Accounting Standard -14.**	**30%**

Note:

1. Accounting of Amalgamation and Absorption of Companies are to be taughtas per Indian Accounting Standard -14 only;
2. Practical problems shall not exceed 70% of total weightage.
3. Marks for Advanced Accounting & Auditing I and II to be considered in a group.
4. All the provisions of the Companies Act, 2013 shall be applicable**.**

Suggested Readings (Latest edition As per Company Act 2013 to be referred):

1. Gupta R.L., Radhaswamy M : Company Accounts ; Sultan Chand and Sons. New Delhi.
2. Maheshwari S.N.: Corporate Accounting ; Vikas Publishing House, New Delhi.

3. Monga J.R., Ahuja, Girish and Sehgal Ashok: Financial Accounting; MayurPaper Backs. Noida.
4. Shukla M.C.Grewal T.S. and Gupta S.C.: Advanced Accounts.; S. Chand& Co. New Delhi.
5. Moore C.L. and Jaedicke R.K.: Managerial Accounting; South WesternPublishing Co. Cincinnati. Ohio.
6. Jain &Narang : Advance Accounting ; Kalyan Publication.
7. Mukherjee & Hanif :Mordern Accountancy ; Tata McGraw Hill.
8. Dr. A.N. Agrawal : Accountancy ; Kitab Mahal , Agra.
9. Rathanam : Advanced Accountancy ; Kitab Mahal , Agra.
10. A.C. Tulsian : Advanced Accountancy ; Tata McGraw Hill.
11. S.P. Iyengar : Advanced Accountancy; Sultan Chand.
12. Accounting Standards: Quick Referencer for Micro Non Company Entities-ICAI
13. ICAI CA Tube - YouTube channel (Free of Charge)
14. Prin.T.J.RANA :ADVANCED ACCOUNTING & AUDITING-2 ; B.S.PRAKASHAN
15. પ્રિ.ટી.જે.રાણા : ઉચ્ચતર નામાપદ્ધતિ -૨ : બી.એસ.શાહ.પ્રકાશન

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Second Year B.Com.
Semester – IV
Advanced Accounting & Auditing – Paper – IV
(Corporate Accounting)
Course Code – CE 420 A (2)
(Syllabus effective from Academic Year 2021-22 onwards)

Objective:

- This course enables the students to develop awareness about corporate accounting in conformity with the provision of Companies Act.

Unit	Course Inputs	Weightage
(1)	**Internal Re-organization:** • Capital Reduction Scheme.	25%
(2)	**Bonus Shares** • Section 63 Issue of Bonus Shares	10%
(3)	**Redeemable Preference shares** • Section 55 Issue and redemption of preference shares	25%
(4)	**Final Accounts:** • As per Schedule III of Companies act, 2013, Excluding computation of managerial remuneration and disposal of profit.	40%

Note:

1. Practical problems shall not exceed 70% of total weightage.
2. Marks for Advanced Accounting & Auditing Paper III & IV to be considered in a group.
3. All the provisions of the Companies Act, 2013 shall be applicable.

Suggested Readings (Latest edition As per Company Act 2013 to be referred):

1. Gupta R.L., Radhaswamy M: Company Accounts; Sultan Chand and Sons. NewDelhi.
2. Maheshwari S.N.: Corporate Accounting; Vikas Publishing House, New Delhi.
3. Monga J.R., Ahuja, Girish and Sehgal Ashok: Financial Accounting;

Mayur Paper Backs Noida.
4. Shukla M.C., Grewal T.S. and Gupta S.C.: Advanced Accounts. S. Chand &Co. New Delhi.
5. Moore C.L. and Jaedicke R.K.: Managerial Accounting; South Western Publishing Co. Cincinnati. Ohio.
6. Jain & Narang : Advance Accounting ; Kalyan Publication.
7. Mukherjee & Hanif : Mordern Accountancy ; Tata McGraw Hill.
8. Dr. A.N. Agrawal: Accountancy; Kitab Mahal, Agra.
9. Rathanam: Advanced Accountancy; Kitab Mahal, Agra.
10. A.C. Tulsian: Advanced Accountancy; Tata McGraw Hill.
11. S.P. Iyengar: Advanced Accountancy; Sultan Chand.
12. ICAI CA Tube - YouTube channel (Free of Charge)
13 Prin.T.J.RANA :ADVANCED ACCOUNTING & AUDITING-4 ; B.S.PRAKASHAN
14. પ્રિ.ટી.જે.રાણા : ઉચ્ચતર નામાપદ્ધતિ -૪ : બી.એસ.શાહ.પ્રકાશન

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Second Year B.Com.
Semester - III
Advanced Accounting & Auditing - Paper – I
(Cost Accounting)
Course Code - CE 320 A (1)
(Syllabus effective from Academic Year 2021-22 onwards)

Objective:

- This course exposes the students to the basic concepts and the tools used in cost accounting.

Unit. No.	Course Inputs	Weightage
(1)	**Introduction:** Nature and scope of cost accounting; Cost concepts and classification; Method and techniques; Installation of costing system; Advantages and Limitation of Cost accounting	15%
(2)	**Accounting for Material:** Material control; Concept and techniques; Pricing of material issues; Treatment of material losses, Calculation of material turnover rate.	15%
(3)	**Accounting for Labour:** Labour cost control procedure; Labour turnover; Idle time and overtime; Methods of wage payment - time and piece rates; - (Halsey Plan and Rowan Plan)	20%
(4)	**Accounting for Overheads:** Classification and departmentalization: Absorption of overheads; Determination of overhead rates; Under and over absorption and its treatment including machine hour rate.	25%
(5)	**Cost Ascertainment:** Unit costing (Advanced problems on Estimated cost statement)	25%

Note:

1. Practical problems shall not exceed 70% of total weightage.
2. Marks for Advanced Accounting & Auditing Paper I & II to be considered in a group.

Suggested Readings:

1. Arora M. N. : Cost Accounting - Principles and Practice; Vikas, New Delhi.
2. Jain S. P. and Narang K.L. : Cost Accounting : Kalyani, New Delhi.
3. Horngren. Charles, Foster and Datar: Cost Accounting - A Managerial Emphasis;
4. Tulsian P. C. : Practical Costing ; Vikas, New Delhi.
5. Maheshwari S.N. : Advanced problems and Solution in Cost Accounting; SultanChand, New Delhi.
6. Rathanam, Cost Accountancy ; Himalaya Publishing House, Delhi.
7. Jawaharlal : Cost Accountancy ; Tata McGraw Hill, New Delhi.
8. Dr. N. K. Agrawal : Cost Accounting Text & Problem; SuchitraPrakashan.
9. Intal P. G :Practicals on Cost Account ; Atlantic Publication.
10. Gowda J. M. : Advanced Cost Accounting ; Himalaya Publishing House, NewDelhi.
11. Nigam &Sharma : Advance Cost Accounting ; Himalaya Publishing House, NewDelhi.
12. Khanna &Pandey : Practical Costing ; S. Chand & Co., Delhi.
13. Prin.T.J.RANA :ADVANCED ACCOUNTING & AUDITING-1 ; B.S.PRAKASHAN
14. પ્રિ.ટી.જે.રાણા : ઉચ્ચતર નામાપદ્ધતિ -૧ : બી.એસ.શાહ.પ્રકાશન

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Second Year B.Com.
Semester - IV Advanced Accounting & Auditing - Paper – III
(Cost Accounting)
Course Code - CE 420 A (1)
(Syllabus effective from Academic Year 2021-22 onwards)

Objective:

- This course exposes the students to the basic concepts and the tools used in cost accounting.

Unit	Course Inputs	Weightage
1	**Cost Ascertainment :** ➢ Contract costing; ➢ Operating costing;(Transport Costing (Passenger and Goods) Only) ➢ Process costing (excluding inter-process profits & equivalent units) ➢ Process costing - joint and by-products	 **25%** **20%** **20%** **15%**
2	**Standard Costing** ➢ Meaning, setting up of standards, ➢ Variance (Computation of Variance RegardingMaterial & labour only - material cost variance, material price variance & material usage variance, labour cost variance, labour rate variance & labour efficiency variance only) (Elementary)	 **20%**

Note:

1. Practical problems shall not exceed 70% of total weightage.
2. Marks for Advanced Accounting & Auditing Paper III & IV to be considered in a group.

Suggested Readings:

1. Arora M. N. : Cost Accounting - Principles and Practice; Vikas, New Delhi.
2. Jain S. P. and Narang K.L. : Cost Accounting : Kalyani, New Delhi.
3. Anthony Robert, Reece, etnal: Principles of Management Accounting : Richard D. Irwin Inc. Illinois.

4. Horngren. Charles, Foster and Datar: Cost Accounting - A Managerial Emphasis; Prentice Hall of India, New Delhi.
5. Khan M. Y. and Jain P. K. Management Accounting : Tata McGraw Hill.
6. Kalpan R. S. Atkinson A. A. : Advanced Management Accounting : Prentice Hall of India International.
7. Tulsian P. C. : Practical Costing ; Vikas, New Delhi.
8. Maheshwari S.N. : Advanced problems and Solution in Cost Accounting; Sultan Chand, New Delhi.
9. Rathanam, Cost Accountancy ; Himalaya Publishing House, Delhi.
10. Jawaharlal : Cost Accountancy ; Tata McGraw Hill, New Delhi.
11. Dr. N. K. Agrawal : Cost Accounting Text & Problem; SuchitraPrakashan.
12. Intal P. G :Practicals on Cost Account ; Atlantic Publication.
13. Gowda J. M. : Advanced Cost Accounting ; Himalaya Publishing House, New Delhi.
14. Nigam &Sharma : Advance Cost Accounting ; Himalaya Publishing House, New Delhi.
15. Khanna &Pandey : Practical Costing ; S. Chand & Co., Delhi.
16. Prin.T.J.RANA :ADVANCED ACCOUNTING & AUDITING-3 ; B.S.PRAKASHAN
17. પ્રિ.ટી.જે.રાણા : ઉચ્ચતર નામાપદ્ધતિ -૩ : બી.એસ.શાહ.પ્રકાશન

VEER NARMAD SOUTH GUJARAT UNIVERSITY

S.Y.B.Com. (Semester -III)

Accountancy & Taxation-III

(Draft Syllabus effective from Academic Year 2021-22 onwards)

Objectives:

- To acquaint the students with certain aspects of Accountancy.
- To enable the students to know the basics of Income tax and Goods and Service Tax.

Unit No.	Course Content	Weightage
1	**Departmental Accounts** • Introduction • Basis of allocation of common expenditure • Inter corporate transfer • preparation of departmental accounts	**20%**
2	**Accounting for Investment (AS-13)** • Meaning, Importance, Alternatives of Investment, Types of Investments, Accounting for investments • Examples of only Fixed Interest bearing securities(FIFO & Average cost Method Only). • Brokerage to be calculated on market value only	**20%**
3	**Tax Structure of India (Direct Taxes)** **1) Basic Concepts** Introduction • **Definition:** • Assessee, Assessment year, Previous year, person, Income, Agriculture Income. • Meaning of Tax planning, tax evasion and tax avoidance • Scope of Total Income and residential status of assessee.	**15%**

	2) Heads of Income chargeable to Tax under Indian Income Tax Act (Basic concept of all the heads) **3) Computation of Income under the head "Capital Gains"**	**25%**
4	**Tax Structure of India (Indirect Taxes)** **Goods and Service Tax** • Introduction and concept Dual GST, advantages of GST • Present Indirect tax structure V/s GST (Shorts Comings and Challenges) • Definitions (Selected) Goods, Services, CGST, IGST, Person, Works Contract, Places of Business, Aggregate turnover, Business, Place of Supply, Composite Supply, Mixed Supply • Composition levy and Collection	**20%**

Note:

1. The provisions of the Act to be studied shall be the provisions as they are in force for the Assessment year as applicable in the beginning of the current Academic Year.
2. Practical problems shall not exceed 70% of total weightage.
3. In Investment Account brokerage is to be calculated on market price only.

Suggested Readings:

1. Singhania V. K. : Students Guide to Income Tax-Taxmann Publication ;Delhi

2. Prasad, Bhgawati: Income Tax Law and Practice : Willey Publication; New Delhi.

3. Malhotra H. C.: Income Tax Law & Accounts; Sahitya Bhawan, Agra.

4. Dinker Pagare : Income Tax Law and Practice; Sultan Chand & Sons, New Delhi.

5. Girish Ahuja and Ravi Gupta: Systematic Approach to Income Tax) : Wolters Kluwer (India Pvt. Ltd. Publications, New Delhi.

6. Chandra Mahesh and Shukla D. C.: Income Tax Law and Practices ;Pragati Publications, New Delhi.

7. Poddar Avinash S : Glimpses of GST , CCH India – A Wolter Kluwer Business.

8. Batra Ashok, GST Law and Practice, CCH India– A Wolter Kluwer Business.

9. Datey V S, GST Ready Reckoner,Taxmann.

10. Mohan Rajat Illustrative Guide to GST, Bharat Law House

11. Accounting Standards :quick Referencer Institute Of Chartered Accountatns Of India.

12. Gupta. R. L and Radhaswamy M. : Financial Accounting; Sultan Chand and Sons, New Delhi.

14. Prin.T.J.RANA :ACCUNTANCY & TAXATION:3 ; B.S.PRAKASHAN
15. પ્રિ.ટી.જે.રાણા : નામાપધ્ધતિ અને કરવેરા:૩ : બી.એસ.શાહ.પ્રકાશન

VEER NARMAD SOUTH GUJARAT UNIVERSITY

S.Y.B.Com. (Semester -IV)

Accountancy & Taxation-IV

(Syllabus effective from Academic Year 2021-22 onwards)

Objectives:

- To acquaint the students with certain aspects of Accountancy.
- It enables the students to know the basics of Income tax and its implications.

Unit No.	Course Content	Weightage
1	**Valuation of Shares** • Need for valuation of share, Factors affecting value of share, Methods of valuation of share ***Note: Amount of Goodwill shall be given in the problem.***	**25%**
2	**Computation of Income under the head "Salaries"**	**20%**
3	**1) Computation of Income under the head "House Property"** **2) Procedure of Income Tax Return (Section 139 to140A)**	**30%**
4	**Goods and Service Tax** • Time and Value of supply, • Power to grant exemption Registration • Returns and payment of Tax and Input Tax credit	**25%**

Note:

1. The provisions of the Act to be studied shall be the provisions as they are in force for the Assessment year as applicable in the beginning of the current Academic Year.
2. Practical problems shall not exceed 70% of total weightage.

Suggested Readings:

13. Singhania V. K. : Students Guide to Income Tax-Taxmann Publication ;Delhi

14. Prasad, Bhgawati: Income Tax Law and Practice : Willey Publication; New

Delhi.

15. Malhotra H. C.: Income Tax Law & Accounts; Sahitya Bhawan, Agra.

16. Dinker Pagare : Income Tax Law and Practice; Sultan Chand & Sons, New Delhi.

17. Girish Ahuja and Ravi Gupta: Systematic Approach to Income Tax) : Wolters Kluwer (India Pvt. Ltd. Publications, New Delhi.

18. Chandra Mahesh and Shukla D. C.: Income Tax Law and Practices ;Pragati Publications, New Delhi.

19. Poddar Avinash S : Glimpses of GST , CCH India – A Wolter Kluwer Business.

20. Batra Ashok, GST Law and Practice, CCH India– A Wolter Kluwer Business.

21. Datey V S, GST Ready Reckoner,Taxmann.

22. Mohan Rajat Illustrative Guide to GST, Bharat Law House

23. Gupta. R. L and Radhaswamy M. : Financial Accounting; Sultan Chand and Sons, New Delhi.

24. Prin.T.J.RANA :ACCUNTANCY & TAXATION ; 4 B.S.PRAKASHAN
25. પ્રિ.ટી.જે.રાણા : નામાપધ્ધતિ અને કરવેરા : ૪ બી.એસ.શાહ.પ્રકાશન

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Third Year B.Com.
Semester -V
Advanced Accounting & Auditing - Paper-V
(PRINCIPLES OF AUDITING)
Course Code - CE 520 A (1)
(Syllabus effective from Academic Year 2021-22)

Objective:

This course aims at imparting knowledge about the principles and methods of auditing and their applications.

Unit	Course Contents	Weightage
1	**Introduction:** 1.1 Meaning of Auditing, Scope of Auditing and Principle of auditing, difference between auditing and Accountancy and Advantages and Limitation of Auditing 1.2 Objectives of Auditing, 1.3 Types of Audit	**25%**
2	**Audit Procedure:** 2.1 Consideration for commencing new audit 2.2 Audit Programme 2.3 Audit Notebook 2.4 Working Papers and Evidences 2.5 Routine checking and test checking.	**20%**
3	Internal Control System: 3.1 Introduction, 3.2 Overview, 3.3 Internal Check System (In Detail)	**20%**
4	**Audit Procedure** 4.1 Vouching 4.2 Verification and Valuation of assets and liabilities	**35%**

Note:

- Case law in Auditing is not expected. However Principles enunciated in such case law is expected to be covered without specific reference to individual case.
- Marks for Advanced Accounting & Auditing Paper V & VI to be considered in a group.

Suggested Reading

1. Gupta Kamal: Contemporary Auditing; Tata McGraw-Hill, New Delhi
2. Tandon B.N.: Principles and Practice of Auditing;-S. Chand& Co, New Delhi.
3. Pagare Dinkar: Principles and Practice of Auditing;-Sultan-Chand& Co, New Delhi
4. Sharma T.R.: Auditing Principles and Problems; Sahitya Bhawan, Agra.
5. RG. Saxena: Principle & Practicing of Auditing; Himalaya Publications.
6. Kamal Gupta: Fundamental of Auditing; Tata McGrew Hill, New Delhi.
7. S.V. Ghatalia: Practical Auditing; Allied Publisher.
8. Batra & Bagadia: Text Book of Auditing; Taxman Publication.
9. Auditing and Assurance Module-I, II (Intermediate Course)- The Institute of chartered accountants of India
10. Prin.T.J.RANA :ACCUNTANCY & TAXATION:3 ; B.S.PRAKASHAN
    પ્રિ.ટી.જે.રાણા : નામાપધ્ધતિ અને કરવેરા:૩ : બી.એસ.શાહ.પ્રકાશન

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Third Year B.Com.
Semester -VI
Advanced Accounting & Auditing - Paper-VII
(PRINCIPLES OF AUDITING)
Course Code - CE 620 A (1)
(Syllabus effective from Academic Year 2021-22)

Objective:

This course aims at imparting knowledge about the principles and methods of auditing and their applications.

Unit	Course Contents	Weightage
1	**Audit of Limited Companies** (with Provisions of CompaniesAct, 2013 and companies rules 2014 and 2015): (a) **Company Auditor**: Appointment (Sec.139); Removal and resignation of auditor (Sec. 140); Eligibility, qualifications and disqualifications ofauditor (Sec.141); Remuneration of auditors (Sec.142); Powers & Duties of auditors and Auditing Standards (Sec.143, 145, 146, 147); Auditor not to render certain services (Sec.144); Liabilities of an Auditor; Internal Audit (Sec.138) (b) **Divisible profits and Dividend:** Declaration and payment of dividend (Sec.123, 124, 125, 126, 127) (C) **Auditor's Report:** Standard Report and Qualified Report	**50%**
2	**Investigation; Audit of Non-profit Companies:** **(a)** Where fraud is suspected **(b)** When a running business is proposed	**15%**
3	**Preparation or Audit Programs**: Preparation of Audit Programs for educational institutions,Trust, Co-op. Societies.	**15%**
4	**Recent Trends in Auditing**: (a) Nature and Significance of Cost Audit, (b) Nature and Significance of Tax Audit, (c) Meaning and Overview IT Enabled Audit, (d) Audit Vs Certification	**20%**

Note:

1. Case law in Auditing is not expected. However Principles enunciated in such case law is expected to be covered without specific reference to individual case.
2. Marks for Advanced Accounting & Auditing Paper VII & VIII to be considered in a group.

Suggested Reading

1. Gupta Kamal: Contemporary Auditing; Tata McGraw-Hill, New Delhi
2. Tandon B.N.: Principles and Practice of Auditing;-S. Chand & Co, New Delhi.
3. Pagare Dinkar: Principles and Practice of Auditing;-Sultan-Chand & Co, New Delhi
4. Sharma T.R.: Auditing Principles and Problems; Sahitya Bhawan, Agra.
5. RG. Saxena: Principle & Practicing of Auditing; Himalaya Publications.
6. Kamal Gupta: Fundamental of Auditing; Tata McGrew Hill, New Delhi.
7. S.V. Ghatalia: Practical Auditing; Allied Publisher.
8. Batra & Bagadia: Text Book of Auditing; Taxman Publication.
9. Auditing and Assurance Module-I, II (Intermediate Course)- The Institute of chartered accountants of India
10. Prin.T.J.RANA :ACCUNTANCY & TAXATION:3 ; B.S.PRAKASHAN
    પ્રિ.ટી.જે.રાણા : નામાપધ્ધતિ અને કરવેરા:૩ : બી.એસ.શાહ.પ્રકાશન

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Third Year B.Com.
Semester -V
Advanced Accounting & Auditing - Paper – VI
(MANAGEMENT ACCOUNTING)
Course Code - CE 520 A (2)
(Syllabus effective from Academic Year 2021-22 onwards)

Objective:

- This course provides the students an understanding of the application of accounting techniques of management

Unit	Course Contents (as per UGC Model Curriculum)	Weightage
1	**Management Accounting:** 1.1 Meaning, nature, scope and functions of management accounting 1.2 Role of management accounting in decision making 1.3 Management accounting vs. financial accounting 1.4 Tools and techniques of management accounting	10%
2	**Financial Statements:** 2.1 Meaning, objectives, types and limitations of financial statements 2.2 Types and Techniques of Financial Statement Analysis: -Common Size Statement -Trend Percentage - Comparative Statements Analysis	15%

3	**Methods of Financial Statements Analysis:** **3.1 Ratio analysis (Following ratios are to be taught)-** **a) Profitability Ratios:** Gross Profit Margin Ratio Net profit margin ratio Operating Ratio Expenses Ratio Return on Capital Employed Ratio Return on Shareholder's Fund Ratio Return on Equity Share Capital Ratio **b) Leverage Ratios:** Debt –Equity Ratio Proprietary Ratio Capital gearing Ratio Long term Funds/ Fixed Assets Ratio Interest coverage Ratio **c) Liquidity ratios:** Current ratio Liquid ratio Acid test ratio **d) Turnover Ratios:** Stock- turnover Ratio Debtors Ratio Creditors Ratio Total Assets Turnover Ratio **3.2 Funds Flow Statement** **3.3 Cash Flow statement (AS-3)**	**25%** **25%** **25%**

Note:

1. Practical problems shall not exceed 70% of total weightage.
2. Marks for Advanced Accounting & Auditing Paper VII & VIII to be considered in a group.

Suggested Readings:

1 Arora M. N: Cost Accounting - Principles and Practice; Vikas, New Delhi.

2 Jain S. P. and Narang K. L: Cost Accounting; Kalyani, New Delhi.

3 Anthony Robert, Reece, Et al: Principles of Management Accounting; Richard D. Irwin Inc. Illinois.
4 Horngren, Charles, Foster and Datar: Cost Accounting-A Managerial Emphasis; Prentie Hall of India, New Delhi.
5 Khan M. Y. and Jain P. K: Management Accounting; Tata McGraw Hill.
6 Kalpan R. S. and Atkinson A. A.: Advanced Management Accounting; Prentice Hall India, New Delhi.
7 Dr. S. N. Maheshwari: Problem & Solution in Management Accounting &FinancialManagement; Sultan Chand.
8 Dr. Goyel&Manmohan: Management Accountancy; Taxman Publication.
9 Ravi M.Kishore: Management Accountancy, Taxman Publication.
10 L. N. Chopde& D. H. Chaudhary: lntroduction to Management Accounting; Sheth Publishers Pvt. Ltd., Bombay.
11 Prin.T.J.RANA :ACCUNTANCY & TAXATION:3 ; B.S.PRAKASHAN
12 પ્રિ.ટી.જે.રાણા : નામાપધ્ધતિ અને કરવેરા:૩ : બી.એસ.શાહ.પ્રકાશન

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Third Year B.Com.
Semester -VI
Advanced Accounting & Auditing - Paper – VIII
(MANAGEMENT ACCOUNTING)
Course Code - CE 620 A (2)
(Syllabus effective from Academic Year 2021-22 onwards)

Objective:

- This course provides the students an understanding of the application of accounting techniques of management.

Unit	Course Contents (as per UGC Model Curriculum)	Weightage
1	**Budgeting for profit planning and control:** • Meaning of Budget and budgetary control • Types of Budgets • Cash Budget • Fixed and flexible budgeting • Objectives • Merits and Limitations of Budgeting • Responsibility accounting	**60%**
2	**Accounting for Decision Making** • The concept of differential cost; Cost profit volume analysis- BEP analysis and its applications (Exceptkey factor)	**30%**
3	**Cost of Capital (Only Theory)** - Meaning and Significance - Specific, overall(weighted average cost of capital) and marginal cost of capital	**10%**

Note:

1. Practical problems shall not exceed 70% of total weightage.
2. Marks for Advanced Accounting & Auditing Paper VII & VIII to be considered in a group.

Suggested Readings:

1 Arora M. N: Cost Accounting - Principles and Practice; Vikas, New Delhi.
2 Jain S. P. and Narang K. L: Cost Accounting; Kalyani, New Delhi.

3 Anthony Robert, Reece, Et al: Principles of Management Accounting; Richard D. Irwin Inc. Illinois.
4 Horngren, Charles, Foster and Datar: Cost Accounting-A Managerial Emphasis; Prentie Hall of India, New Delhi.
5 Khan M. Y. and Jain P. K: Management Accounting; Tata McGraw Hill.
6 Kalpan R. S. and Atkinson A. A.: Advanced Management Accounting; Prentice Hall India, New Delhi.
7 Dr. S. N. Maheshwari: Problem & Solution in Management Accounting & Financial Management; Sultan Chand.
8 Dr. Goyel&Manmohan: Management Accountancy; Taxman Publication.
9 Ravi M.Kishore: Management Accountancy, Taxman Publication.
10 L. N. Chopde& D. H. Chaudhary: lntroduction to Management Accounting; Sheth Publishers Pvt. Ltd., Bombay.
11 Prin.T.J.RANA :ACCUNTANCY & TAXATION:3 ; B.S.PRAKASHAN
પ્રિ.ટી.જે.રાણા : નામાપધ્ધતિ અને કરવેરા:૩ : બી.એસ.શાહ.પ્રકાશન

VEER NARMAD SOUTH GUJARAT UNIVERSITY
M.Com Semester -I
Financial & Management Accounting Paper-1
Paper No: 104
(Syllabus for Academic Year 2021-22)

Objectives:

- To give the idea about holding Companies Account
- To clear the concept about provisions of companies act 2013 and calculation of managerial remuneration
- To give the idea for accounting pattern for non-government organization
- To clear the conceptual understanding about social Accounting and Public interest Accounting

Unit	Particular	Weightage
1.	**Holding Company Accounts: (Practical)** ❖ Introduction of Holding Company & Subsidiary Company as per CompaniesAct, 2013 ❖ Preparation of consolidated BalanceSheet with one subsidiary company (Excluding Cross Holdings) as per Companies Act, 2013	**40%**
2.	**Managerial Remuneration: (Practical)** ❖ Provisions under the companies Act, 2013 and its computation	**30%**
3.	**Indian Accounting Standard (IND AS),** ❖ **Introduction of IND AS,** ❖ **Events after the reporting Periods (IND AS-10)**	**10%**
4.	**Accounting for Non-GovernmentOrganization: (Theory)** Meaning and definition of NGO – Formation and classification of NGO- Importance of NGO Accountability – Accounting framework for NGO – Types of books and records maintainedby NGO	**10%**
5.	**Conceptual Understanding (Theory):** ❖ Social Accounting (Meaning, itsNature, Need, Advantages)	**10%**

Note:-

1. Practical problems shall not exceed 70% of total weightage
2. The recent development in the paper be considered as implied part of the curriculum

References:

- Advance Accounting Vol. I & II – R.L.Gupta; Sultan Chand & Co., New Delhi
- Advance Accounting – S N Maheshwari
- Management Accounting & Financial Control – S.N. Maheshwari Sultan Chand & Co., New Delhi.
- Contemporary Accounting, Issues by Jawalal, Published by Vision Books, New Delhi.
- Principles of Management Accounting by Manmohan and S.N. Goyel, Sahitya Bhavan, Agra
- Human Resource Accounting – Gupta; Sultan Chand & Sons.
- Students Guide to IND AS - Dr. D.S. Rawat; Taxmann Publication
- Practical Guide to IND AS and IFRS – CA Kamal Garg; Bharat Law House Pvt. Ltd., New Delhi

VEER NARMAD SOUTH GUJARAT UNIVERSITY
M.Com Semester -I
Financial & Management Accounting Paper-2
Paper No: 105
(Syllabus for Academic Year 2021-22)

Objectives:

- To learn the financial accounting system of limited companies in detail
- To learn the calculation about Fire claim & Branches Account in detail
- To clear the theatrical concept about Environment & Human resource Accounting

Unit	Particular	Weightage
1.	**Final Accounts of Limited Company(Practical)** (as per Companies Act, 2013)	**40%**
2.	**Branch Accounting: (Practical)** ❖ Independent Branch – foreign branch as per Accounting Standard – 11(As per Revised 2018) (Exchangerate should br given)	**30%**
3.	**Environment Accounting: (Theory)** Introduction: its origin and development, environmental accounting for developed and developing countries – Indian context, Merits and demerits of environment accounting	**15%**
4.	**Human Resource Accounting: (Theory)** ❖ Need & Development, It's Concept of Human Resource Accounting, Valuation of Human Resource, Recording & Disclosure in Financial Statement, Importance of Human Resource Accounting, Human Resource Accounting in India	**15%**

Note:-

1. Final Accounts of Company are to be taught only as per Scheduled III of Companies Act, 2013 and it is expected that students prepare balance sheet as per Companies Act, 2013
2. Practical problems shall not exceed 70% of total weightage.
3. The recent development in the paper be considered as implied part of the curriculum
4. Revised

References:

- Advance Accounting Vol. I & II – R.L.Gupta; Sultan Chand & Co., New Delhi
- Advanced Accounting – S N Maheshwari
- Management Accounting & Financial Control – S N Maheshwari Sultan Chand & Co., New Delhi
- Contemporary Accounting, Issues by Jawarlal, Published by Vision Books, New Delhi.
- Principles of Management Accounting by Manmohan and S.N. Goyel, Sahitya Bhavan, Agra
- Human Resource Accounting – Gupta; Sultan Chand & Sons
- Practical Financial Analysis – Foulke R A
- Techniques of Financial Analysis – Erich A. Illefert
- Environment Accounting – D. Das Gupta; D. Wheeler, New Delhi
- Accounting Standards: Taxmann Publications, New Delhi
- Das Gupta: Indian and International Accounting Standards, Sultan Chand & Sons, New Delhi
- Corporate Accounting – Dr. P.C. Tulsian ; S Chand, New Delhi
- Corporate Financial Accounting Dr. S. N. Shukla and Dr. K. N. Gupta Sahitya Bhavan Publication, Agra

VEER NARMAD SOUTH GUJARAT UNIVERSITY
M.Com Semester -I
Financial & Management Accounting Paper-3
Paper No: 106
(Syllabus for Academic Year 2021-22)

Objectives:

- To acquaint the students with the recent trends in accountancy
- To give a basic working knowledge of some of the provisions of Income Tax Act 1961
- Knowledge Required: Reasonable working knowledge is expected

Unit	Particular	Weightage
1.	**Accounting Standards: (Practical)** *(Recommended by the Institute of Chartered Accountants of India)* ❖ Meaning, Objects, Utilities, International Accounting Standard Board(IASB), Accounting Standards Board (ASB) ❖ Following standards required to be studied. AS -12 Accounting for Government Grants AS -17 Segment Reporting Accounting AS – 20 Earnings Per Share AS – 26 Intangible Assets AS – 28 Impairment of Assets	**25%**
2.	**Income Tax: (Practical)** **I. Provisions relating to:30%** Computation of Income under the head "Profits and gains of business or profession" including audit of accounts of certain person. (Section 28 to 43, 43C, 44AA, 44AB, 44AD, 44ADA, 44AE,44AF **II. Provisions relating to : 15%** Set off and carry forward of losses (Section 70, 71, 72, 72A, 73, 74, 74A, 75, 78, 79 & 80)	**45%**

3.	**TDS, TCS and PAN(Theory)** I. Introduction – E filing of income tax returns and E-payment of income tax, Application of PAN (49A), online registration of PAN II. Online filing of return of income of individuals, E-TDS, TCS (Tax Collect at Source), TCS on sales of Goods, TCS on Purchase, TCS on Special Transaction, Return preparation utility, Viewing of tax credit available in form – 26 AS(Annual Information Statements), III. Online filing of TDS statements – overview of TDS. Application for TAN (tax account number) utilities available for preparation of statements \ certificates	**15%**
4.	**Goods and Service Tax:** ❖ Introduction and Concept Dual GST, Advantages of GST ❖ Present Indirect Tax Structure v/s GST ❖ GST Council ❖ Collection of tax under Integrated Good and Service Act, 2017 (section 5 & 6) ❖ Definitions: Goods, Service, CGST, IGST, Person, Work Contract, Place of Business, Aggregate turnover, Business, Supply, Place of Supply, Composite Supply, Mixed Supply. Composition Scheme	**15%**

Note:

1. If the Act is amended or replaced, the provisions and/or sections according to the amended/ new Act will be applicable. Each year, updations /amendments in the provisions of the respective Act or Amended Act, as the case may be, will be applicable.
2. Provisions which are effective in the relevant Assessment year must be taught. Relevant Assessment Year means the concerned Academic Year.
3. Practical problems shall not exceed 70% of total weightage.

Reference Books:

- Direct Taxes - V. K. Singhania; Taxamann Publication.
- Students guide to Income - Tax - V. K. Singhania.
- Advanced Accounting - Tulsian; Tata. McGraw Hill.
- Management Accounting - Dr. S. P. Gupta; SahityaBhavan, Agra.
- Accounting Theory - L. S. Porwal; Tata McGraw.
- Wheldon's A cost Accounting - L. W. J. Owler& J. L. Brown; Pitman Publishing Ltd., London.
- Cost Accounting - N. K. Agrawal; Global Business Press.
- Financial Accounting - S. KR. Paul; New Central Book Agency (P) Ltd., Kolkata.
- Advance Accounting Vol. I & II - R. L. Gupta; Sultan Chand & Co., New Delhi.
- Management Accounting & Financial Control - S. N. Maheshwari Sultan Chand & Co., New Delhi.
- Advance Management Accounting - Ravi M. Kishore; TaxmannAllide Services (P) Ltd., New Delhi.
- Poddar Avinash S : Glimpses of GST , CCH India – A Wolter Kluwer Business
- Batra Ashok, GST Law and Practice, CCH India– A Wolter Kluwer Business
- Datey V S, GST Ready Reckoner, Taxmann
- Mohan Rajat Illustrative Guide to GST, Bharat Law House

VEER NARMAD SOUTH GUJARAT UNIVERSITY
M.Com-I Semester - 2
Financial & Management Accounting Paper – 4
Paper No: 204
(Syllabus effective from Academic Year 2020-21 onwards)

Objectives:

- To acquaint the students with recent trends in accountancy.
- To develop in them the skill to analyze the financial accounting data for managerial decisions.
- To give the idea about Fundamental Analysis of the Company
- To acquaint the students with financial reporting of Non-Trading Organisation
- To give the idea about Return on Capital Employed

Unit	Particular	*Weightage*
1	**Ratio Analysis (of Company's Financial Statements): (Practical)** Classification of ratios, Uses and limitations of ratios, Computation / Interpretation and analysis of different ratios. ***Exclude : Preparation of financial statements on the basis of ratios and other data.*** ***Note : The Weightage shall be on testing conceptual knowledge of Ratio and interpretation based on the same.***	35%
2.	**Accounts for Non-Trading Organisations : (Practical)** Introduction : Meaning of Trading and Non-Trading Organisation - Need of Accounts and Books of Accounts of Non-Trading Organisation - Distinctive Classification of Capital- Revenue and Deferred transaction - Exceptions and Debatable points in Expense and Incomes -Receipts and Payment Account & Income and Expenditure Account -Preparing Income – Expenditure Account from Receipt Payment Account -Preparing Receipt-Payment Account from Income Expenditure Account -Preparing Opening and Closing Balance-sheet form Receipt-Payment Account and Income Expenditure Account	35%
3.	**Return on Capital Employed (Theory Only)** Introduction –Meaning, Utility- Concepts of Capital Employed (1. Total Capital Employed 2. Net Capital Employed 3. Owners Capital Employed 4. Average Capital Employed)- Concept of Profit and Return- Du-Point Chart Showing interrelation between Functional aspect and Financial Aspects- Advantages of Return on Capital Employed.	15%
4.	**Startup Finance : (Theory Only)** Introduction of Startup finance. - Pitch Presentation. -Sources of Funding. Government Policy for Make in India Project- Startup financing through Venture Capital Financing	15%

Note:-

1. Practical problems shall not exceed 70% of total weightage.
2. The recent development in the paper be considered as implied part of the curriculum.

References:

- Advance Accounting Vol. I & II - R. L. Gupta; Sultan Chand & Co., NewDelhi.
- Advanced Accounting - S. N.Maheshwari.
- Management Accounting & Financial Control - S. N. Maheshwari Sultan Chand & Co., New Delhi.
- Contemporary Accounting, Issues ByJawarlal, Published by Vision Books, NewDelhi.
- Principles of Management Accounting by Manmohan and S. N. Goyel, Sahitya Bhavan, Agra.
- Prasannachandra
- Financial Accouting, Bhushan Kumar Goyal and HN Tiwari, Inernatioanl Book House
- Introduction to Financial Accouting, Charles T. Horngren and Donna Philbrick, Pearson Educations.
- Compendium of Statements and Standards of Accouting, The Institute of Chartered Accounts of India, New Delhi.
- Financial Accouting, Deepak Sehgal, Vikas Publishing House, New Delhi
- Financial Accouting, S.N.Maheshwari and S.K. Maheshwari, Viaks Publishing House, New Delhi.
- Financial Accouting, Tulsian, Pearson Education.

VEER NARMAD SOUTH GUJARAT UNIVERSITY
M.Com-I
Semester - 2
Paper No: 205
Financial & Management Accounting Paper - 5
(Syllabus effective from Academic Year 2021-22onwards)

Objectives:

- To acquaint the students with financial reporting of Insurance & Electricity Companies.
- To give the idea about meaning of value addition and application of Value added Accounting
- To give the idea about objectives and importance of Reporting to management.

No.	Particular	Weightage
1.	**Accounting for Insurance Companies : (Practical)** ❖ Commercial & legal background of insurance business - Books maintained by insurance company - Preparation of final accounts of Life Insurance & General Insurance Company ***(Elementaryproblems only as per IRDA Regulation authority notification No.2000)***	**40%**
2.	**Value Added Accounting : (Theory)** ❖ Definition - Generation of Value Added Application statement - Difficulties in preparation of Value Added statement, Uses of Value Added Product Pricing - High- tech Accounting and Value Added - Group Value Added Statement.	**15%**
3.	**Final Accounts of Electricity Company** : **(Practical)** (as per the Electricity Act 2003, and as per company's Act 2013)	**30%**
4.	**Reporting to Management** : **(Theory)** ❖ Objectives of reporting, needs for Reporting at different Management levels - Types of reports - Guiding principles for preparing reports, Modes of reporting, Preparation of reports and use of reports by management.	**15%**

Note:

1. Final Accounts of Company are to be taught only as per Scheduled III of Companies Act, 2013 and it is expected that students prepare balance sheet as per Companies Act, 2013.
2. Practical problems shall not exceed 70% of total weightage.
3. The recent development in the paper be considered as implied part of the curriculum.

References:

- Advance Accounting Vol. I & II - R. L. Gupta; Sultan Chand & Co., New Delhi.
- Advanced Accounting - S. N. Maheshwari.
- Management Accounting & Financial Control - S. N. Maheshwari Sultan Chand & Co., New Delhi.
- Contemporary Accounting, Issues By Jawarlal, Published by Vision Books, New Delhi.
- Principles of Management Accounting by Manmohan and S. N. Goyel, Sahitya Bhavan, Agra.
- Practical Financial Analysis - Foulke R.A.
- Advanced Accounting - S.P Jain and K.L. Narang, Corporate Accounting Vol.2 Kalyani Publication
- Advanced Financial Accounting Dr. S.K.R. Paul,- Publication New central Book Agency (P.) Ltd., Kolkata

VEER NARMAD SOUTH GUJARAT UNIVERSITY
M.Com-I
Semester - 2
Paper No: 206
Financial & Management Accounting Paper - 6
(Syllabus effective from Academic Year 2021-22 onwards)

Objectives:

- To acquaint the students with the recent trends in accountancy.
- To give a basic working knowledge of some of the provisions of IncomeTax Act 1961, And Goods and Service tax
- Knowledge Required: Reasonable working knowledge is expected.

Unit.	Course Details	Weightage
1.	**Income Tax** **I. Provisions relating to : (Practical)** ❖ Income from Other Sources (Section 56 to 59), ❖ Income of Other Person included in Assessee's Total (Section 60 to 65)	**30%**
	II. Provisions relating to : (Theory) ❖ Deduction of Tax at Source (Section 192 to 206 & 206A) ❖ Tax Collection at Source (Section 206C & 206CA) ❖ Advance Payment of Tax (Section 207 to 219) ❖ Interest Chargeable in Certain case (Section 234A, 234B, 234C & 234D)	**20%**
2.	**III. Computation of total income and tax payable by partnership firm : (Theory and Practical)** ❖ Meaning of partnership firm ❖ Scheme of taxation of firms ❖ Conditions a firm should fulfill under section 184 ❖ Conditions for claiming deductions of remuneration and interest to partners under section 40(b) ❖ Computation of income of firm ❖ Computation of tax of firm	**35%**

3.	**Goods and Service Tax : (Theory)** ❖ GST on E-Commerce Operators ❖ TCS/TDS under GST ❖ Working of GST Council – Constitution, Member of GST Council , Power , Mandate of GST Council.	**15%**

Note:

1. If the Act is amended or replaced, the provisions and/or sections according to the amended/ new Act will be applicable. Each year, updations /amendments in the provisions of the respective Act or Amended Act, as the case may be, will be applicable.
2. Provisions which are effective in the relevant Assessment year/Financial Year must be taught. Relevant Assessment Year means the concerned Academic Year.
3. Practical problems shall not exceed 70% of total weightage.

References (Upadted)

- Direct Taxes - V. K. Singhania; Taxamann Publication.
- Students guide to Income - Tax - V. K. Singhania.
- Direct Taxes - Sukumar Bhattacharya; Books Syndicate Pvt. Ltd., Kolkota.
- PoddarAvinash S : Glimpses of GST , CCH India – A Wolter Kluwer Business
- Batra Ashok, GST Law and Practice, CCH India– A Wolter Kluwer Business
- Datey V S, GST Ready Reckoner, Taxmann
- Mohan Rajat Illustrative Guide to GST, Bharat Law House
- Systematic Approach to Income Tax Act. – Dr. Girish Ahuja and Dr. Ravi Gupta, Walter Kluwer
- Practical Approach to Income Tax Act. – Dr. Girish Ahuja and Dr. Ravi Gupta, Walter Kluwer
- GST Ready Reckoner-V. S. Datey Taxmann'S,
- GST Referencer & Manual- CA Gaurav Gupta, CA Ashu Dalmia, CA Avinash Poddar- Legal Matrix Publications
- Direct Taxes Law and Practice- Dr. H C Mehrotra , Dr. S.P. Goyal, Sahityabhavan Publication, Agra
- Ready Reckoner – Mukesh Patel, Ahmedabad

VEER NARMAD SOUTH GUJARAT
UNIVERSITY M.Com-II
Semester - 3
Paper No: 304

Financial & Management Accounting Paper - VII
(Syllabus effective from Academic Year 2021-22

onwards)

Objectives:

- To acquaint the students with long term investment decisions.
- To give the idea about cost-volume –profitability analysis.
- To give the basic concept about financial Security Market.

Unit	Particular	Weightag
1.	**Cost-Volume - Profit Analysis and break - even Analysis : (Practical)** Objectives, assumptions and limitations of CVP analysis - Types of break - even analysis - Assumptions and limitations of break - even charts - Profit volume charts - Break - even analysis with one key factor.	**35%**
2.	**Capital budgeting : (Practical)** Concept - Objectives - Importance of capital budgeting - Kinds of capital investment proposals - Factors affecting capital investment decisions - Appraisal methods - Capital budgeting under risk and uncertainty-Sensitivity analysis. **Capital budgeting techniques:** • Payback Period. • Discounted Payback Period. • Net Present Value. • Accounting Rate of Return. • Internal Rate of Return. • Profitability Index.	**35%**
3.	**Time Value of Money : (Theory)** Definition, Concepts, Application, Present Value, Future Value, Time Value of Money Example	**15%**
4.	**Corporate Social Responsibility (CSR)(Theory)** Meaning, Scope , Provision of Companies Act 2013 In respect of CSR	**15%**

Ref.: (Updated Book)

1) **Corporate Social Responsibility in India – Nayan Mitra, Springer Publication**

VEER NARMAD SOUTH GUJARAT UNIVERSITY
M.Com-II
Semester - 3
Paper No: 305
Financial & Management Accounting Paper - 8
(Syllabus effective from Academic Year 2021-22 onwards)

Objectives:

- The objective of this course is to expose students to advance accounting such as maintenance of Banking Company Accounts; and help in application of financial management
- Knowledge Required: Reasonable working knowledge is expected.

Sr. No.	Course Inputs	Weightage
1	**Working Capital Management: (Practical)** ❖ Introduction to working capital management, Components and Types of Working Capital ❖ Computation of working capital requirement(for each component). ❖ Working Capital Estimation Statement. ❖ Computation of operating cycle.	**35%**
2	Buy-Back of shares, Right Issue **:** (Practical) Employee Stock Option Plan (ESOP) (Practical)	**35%**
3	**Assets Pricing/Measurement Policy : (Theory)** AS 10 - Property, Plant & Equipment AS 13 Accounting for Investments	**15%**
4	**International Financial Management : (Theory)** Reasons for investing aboard - Basic problem in International Financial Management - Foreign Currency Management - Financing Multinational Organization -Mode of Payment in International Trade.	**15%**

Note:

1. Practical problems shall not exceed 70% of total weightage.
2. The recent development in the paper be considered as implied part of the curriculum.

References:

- Advance Accounting Vol. I & II - R. L. Gupta; Sultan Chand & Co., NewDelhi.
- Management Accounting & Financial Control - S. N. Maheshwari SultanChand & Co., New Delhi.
- Advance Management Accounting - Ravi M. Kishore; Taxmann AllideService
- Ltd., New Delhi.
- Management Accounting Tools & Techniques - N. Vinaykam & I. B. Sinha; Himalaya Publishication Hose, Mumbai.
- Advance Accounting - M. C. Shukla & T. S. Grewal; S. Chand & Company, Mumbai.
- Advance Accounting - R. L. Gupta & M. Radhaswamy; Sultan Chand & Co., New Delhi.
- Export Management - T. A. S. Balagopal; Himalaya Publishing House,Mumbai.
- Export - Do it Yourself - M. I. Mahajan; Snow White Publications Pvt. Ltd., Mumbai.
- How to Import - V. K. Puri; Nabhi Publication; New Delhi.
- Introduction to Database System - Date C. J.; Addision WesleyMassachuselts.
- The Compact Guide to Microsoft Office - Mansfield, Ron; BPB Publication Delhi.
- Principles of Database System - Ullman J. O.; Galgotia Publication, NewDelhi.
- Multinational Financial Management - Alan C. Shapiro, Prentice - Hall ofIndia, New Delhi.
- International Financial Management - P. G. Apte; Tata MC Graw, Hill Publishing Company Ltd., New Delhi.
- An Overview of Accounting Standards applicable to Micro Non Company Entities-The Institute of Chartered Accountants of India

VEER NARMAD SOUTH GUJARAT UNIVERSITY

M.Com-II

Semester - 3

Paper No: 306

Financial & Management Accounting Paper – 9

(Syllabus effective from Academic Year 2021-22 onwards)

Objectives:

- To give the idea about how to find out the cost of Product for processing unit and how to calculate inter Process profit.
- To clear the concept of value chain analysis and to understand Value-Added and Non-Value added activities with suitableexamples.
- To Understand the meaning, Importance and to learn the difference between Traditional and Activity-based Costing(ABC) And Activity based Management(ABM)
- To give the clear concept about Valuation of Bonds, Equity and options as well as to understand the forms of market.

Unit	Particular	Weightage
1.	**I. Process Costing : (Practical)** Inter process profit **II. Process Costing** Equivalent Production Analysis.	**40%**
2.	**Value Chain Analysis : (Theory)** Concept of Value Chain Analysis, Value chain linkages, Internal linkages, External linkages, Value- Added and Non-value added activities, Value-added and Value chain, Steps in value chain analysis, Importance of Value chain analysis.	**15 %**
3.	**Activity-Based Costing (ABC) and Activity Based Management (ABM) : (Practical)** Traditional costing system, Activity based costing, Cost hierarchy in ABC, Comparison between traditional and ABC costing, Advantage of ABC, Criteria for successful implementation of ABC system, Situation under which ABC can be applied, Activity Based Management(ABM), Functional Based Management and ABM, Areas in which ABM can be used, Relationship between ABM and ABC, Uses of ABM, Implementing ABM, Essentials for the success of ABM. and ABM , Operational and Strategic ABM, Techniques of ABM,	**30%**

4.	Valuation of Bonds, Equity and options, random walkand efficient market theory, Forms of Market Efficiency: Weak, Semi-Strong, Strong	**15%**

Note:

1. Practical problems shall not exceed 70% of total weightage.
2. The recent development in the paper be considered as implied part of the curriculum.

References:

- Advance Accounting Vol. I & II - R. L. Gupta; Sultan Chand & Co., NewDelhi.
- Advanced Accounting - S. N. Maheshwari.
- Management Accounting & Financial Control - S. N. Maheshwari SultanChand & Co., New Delhi.
- Contemporary Accounting, Issues by Jawarlal, Published by Vision Books,New Delhi.
- Strategic Cost mgt- Prof jawaharlal-Himalaya Pub.
- Human Resource Accounting - Gupta; Sultan Chand & Sons.
- Practical Financial Analysis - Foulke R. A.
- Techniques of Financial Analysis - Erich A. Illefert.
- Accounting Standards - Indian & International - N. Das Gupta; SultanChand & Sons.
- Advanced Accounting - Tulsian; Tata. McGraw Hill.
- Management Accounting - Dr. S. P. Gupta; Sahitya Bhavan, Agra.
- Accounting Theory - L. S. Porwal; Tata McGraw.
- Wheldon's Acost Accounting - L. W. J. Owler & J. L. Brown; PitmanPublishing Ltd., London.
- Cost Accounting - N. K. Agrawal; Global Business Press.
- Financial Accounting - S. KR. Paul; New Central Book Agency (P) Ltd.,Kolkata.
- Advance Accounting Vol. I & II - R. L. Gupta; Sultan Chand & Co., NewDelhi.
- Management Accounting & Financial Control - S. N. Maheshwari SultanChand & Co., New Delhi.
- Management Accounting Tools & Techniques - N. Vinaykam & I. B.Sinha; Himalaya Publishication House, Mumbai.
- Advance Accounting - M. C. Shukla & T. S. Grewal; S. Chand &Company, Mumbai.

VEER NARMAD SOUTH GUJARAT UNIVERSITY
M.Com-II
Semester - 4
Paper No: 404
Financial & Management Accounting Paper – X
(Syllabus effective from Academic Year 2021-22 onwards)

Objectives:

- To acquaint the students, how to take the decisions on the basis of marginal and differential costing.
- To clear the concept of cost of capital and calculations about it,
- To give the idea about product pricing method.
- To give the basic concept about Mechanics of Investing

Unit.	Particular	Weightage
1.	**Differential Costing : (Practical)** Meaning - Features and implications of differential costing - Marginal vs. differential costing - Applications of differential costing, Marginal Costing vs. Absorption costing.	**30%**
2.	**Cost of Capital : (Practical)** Concept - Computations of cost of equity capital (including new equity issue) - Cost of preference capital - Cost of debt - Cost ofretained earnings - Weighted average cost of capital.	**30%**
3.	**Product Pricing : (Practical 10% and Theory 10%)** Pricing policy - Aims and objectives of pricing - decision process - Role of Costs in pricing - pricing methods (Method of cost plus pricing, marginal cost pricing, added value method of pricing, opportunity cost pricing, Target Return pricing - Administered pricing), Strategies of product pricing (Pricing strategies for new products and Pricing of established products), Pricing during inflation and recession, Non-financial factors in pricing - Limiting factors in product pricing - Management Accountant's role in product pricing.	**20%**
4.	**Mechanics of Investment:** Investment Return and Risk, Risk diversifications, Systematic and unsystematic risk, Cost of Investing Securities. Specific factors affecting the value of particular company's shares - Timing of investment decisions.	**20%**

VEER NARMAD SOUTH GUJARAT UNIVERSITY
M.Com-II
Semester - 4
Paper No: 405
Financial & Management Accounting Paper - 11
(Syllabus effective from Academic Year 2021-22 onwards)

Objectives:

- To objective of this course is to expose students to advance accounting such as maintenance of Banking Company Accounts; and help in application of financial management.
- Knowledge Required: Reasonable working knowledge is expected.

Unit.	Course Inputs	weightage
1	**Final Accounts of Banking Companies-1 : (Theory)** Non-Performing Assets - Its effect on working of the bank - Remedies to reduce Non - Performing Assets (NPA)	**10%**
2	**Final Accounts of Banking Companies-2 : (Practical)** Final Accounts of Banking Companies Including final accounts of Co-operative Bank (As per Gujarat Co- operative Act and RBI Regulations)	**40%**
3	**Leases Accounting : (Practical)** Concept of leasing - Advantages of leasing - Disadvantages of leasing, Types of Leasing - Lease Evaluation, Accounting treatment for leases as per Accounting Standard 19 - Leasing in India. Decision making on the basis of either to Buy, Lease or Hire Purchase	**30%**
4.	AS-7 , Construction contracts AS-16 Borrowing Costs AS-12 Accounting For Government Grants	**20%**

Note:

1. Practical problems shall not exceed 70% of total weightage.
2. The recent development in the paper be considered as implied part of the curriculum.

References:

- Advance Accounting Vol. I & II - R. L. Gupta; Sultan Chand & Co., NewDelhi.
- Management Accounting & Financial Control - S. N. Maheshwari SultanChand & Co., New Delhi.
- Advance Management Accounting - Ravi M. Kishore; Taxmann AllideService (P) Ltd., New Delhi.
- Management Accounting Tools & Techniques - N. Vinaykam & I. B. Sinha; Himalaya Publishication Hose, Mumbai.
- Advance Accounting - M. C. Shukla & T. S. Grewal; S. Chand & Company, Mumbai.
- Advance Accounting - R. L. Gupta & M. Radhaswamy; Sultan Chand &Co., New Delhi.
- Export Management - T. A. S. Balagopal; Himalaya Publishing House,Mumbai.
- Export - Do it Yourself - M. I. Mahajan; Snow White Publications Pvt. Ltd., Mumbai.
- How to Import - V. K. Puri; Nabhi Publication; New Delhi.
- Introduction to Database System - Date C. J.; Addision WesleyMassachuselts.
- The Compact Guide to Microsoft Office - Mansfield, Ron; BPB Publication Delhi.
- Principles of Database System - Ullman J. O.; Galgotia Publication, NewDelhi.
- Multinational Financial Management - Alan C. Shapiro, Prentice - Hall ofIndia, New Delhi.
- International Financial Management - P. G. Apte; Tata MC Graw, Hill Publishing Company Ltd., New Delhi.
- www.mca.gov.in
- ICAI Tube (Youtube Channel-Free of Cost)
-

VEER NARMAD SOUTH GUJARAT UNIVERSITY
M.Com-II
Semester – 4
Paper No: 406
Financial & Management Accounting Paper - 12
(Syllabus effective from Academic Year 2021-22 onwards)

Objectives:

(P) To Calculate Different Types of Variances.
(Q) To learn Accounting for Underwriting & Brokerage & divisional profit performance management techniques
(R) To learn Exchange-rate theories.

Unit.	Particular	Weightage
1.	**Standard Costing : (Practical)** Material, Labour, Overhead and Sales Variances.Planning and operational variances. Interpretation of variances, Investigation of Variances.	**50%**
2.	**Accounting for Underwriting & Brokerage : (Practical)(Elementary Problems only)**.	**25%**
3.	**Divisional Profit Performance Measurement : (Practical)** Meaning - Arguments in favour of and against decentralized profit centers - Cost benefit analysis for decentralization - Methods of measuringdivisional performance.	**15%**
4.	**Inter Divisional Transfer Pricing : (Theory)** Concept - Transfer pricing methods (Pricing at cost, standard cost plus lumsum, market price, prorating for overall contribution, Dual pricing, negotiated prices) Guiding principles in fixing transfer prices - Benefits oftransfer pricing policy - International transfer pricing.	**10%**

Note:-

1. Practical problems shall not exceed 70% of total weightage.
2. The recent development in the paper be considered as implied part of the curriculum.

References:

- Advance Accounting Vol. I & II - R. L. Gupta; Sultan Chand & Co., New Delhi.
- Advanced Accounting - S. N. Maheshwari.
- Management Accounting & Financial Control - S. N. Maheshwari Sultan Chand & Co., New Delhi.

- Contemporary Accounting, Issues by Jawarlal, Published by Vision Books,New Delhi.
- Strategic Cost mgt- Prof jawaharlal-Himalaya Pub.
- Human Resource Accounting - Gupta; Sultan Chand & Sons.
- Inflation Accounting - Gupta; Sultan Chand & Sons.
- Practical Financial Analysis - Foulke R. A.
- Techniques of Financial Analysis - Erich A. Illefert.
- Environmental Accounting - D. Das Gupta; D. Wheeler, New Delhi.
- Direct Taxes - V. K. Singhania; Taxamann Publication.
- Students guide to Income - Tax - V. K. Singhania.
- Accounting Standards - Indian & International - N. Das Gupta; SultanChand & Sons.
- Direct Taxes - Sukumar Bhattacharya; Books Syndicate Pvt. Ltd., Kolkota.
- Advanced Accounting - Tulsian; Tata. McGraw Hill.
- Management Accounting - Dr. S. P. Gupta; Sahitya Bhavan, Agra.
- Accounting Theory - L. S. Porwal; Tata McGraw.
- Wheldon's Acost Accounting - L. W. J. Owler & J. L. Brown; PitmanPublishing Ltd., London.
- Cost Accounting - N. K. Agrawal; Global Business Press.
- Financial Accounting - S. KR. Paul; New Central Book Agency (P) Ltd., Kolkata.
- Advance Accounting Vol. I & II - R. L. Gupta; Sultan Chand & Co., NewDelhi.
- Management Accounting & Financial Control - S. N. Maheshwari SultanChand & Co., New Delhi.
- Management Accounting Tools & Techniques - N. Vinaykam & I. B.Sinha; Himalaya Publishication House, Mumbai.
- Advance Accounting - M. C. Shukla & T. S. Grewal; S. Chand &Company, Mumbai.

Veer Narmad South Gujarat University

First Year B.Com.

Semester - I Tax Procedure & Practice - Paper – 1

(Basic Concepts of Taxation in India)

(Syllabus effective from Academic Year 2021-22 and onwards)

Objective: It enables the students to know the basics of taxation framework in India.

Sr. No.	Course Inputs	Weightage
Unit 1	**(A) Introduction of Taxation** 1. Introduction of taxation in India 2. Brief Constitutional Provisions for taxation in India 3. Finance Commission Constitution of Commissions, Functions of Commission, Members of Commission, Procedure and Powers of Commission, Recommendation of 15th Finance Commission.	15%
	(B) Direct and Indirect Taxes 1. Direct Tax: Meaning, Types, Characteristics, Merits, Demerits 2. Indirect Tax: Meaning, Types, Characteristics, Merits, Demerits 3. Difference between Direct tax and Indirect Tax	10%
	(C) Tax Planning, Tax Avoidance, Tax Evasion and Tax Management 1. Concept of above terms 2. Comparison of above terms	10%
Unit 2	**Overview of Income Tax in India** 1. Brief History of Income Tax Act'1961 2. Sources of Income Tax Law in India 3. Basic Principles for charging Income Tax 4. Tax Calculation methods 5. Present Income Tax rates **Note: Basic Sums on calculation of income tax with the use of slab rates**	25%
Unit 3	**(A) Overview of GST Act** 1. Old System of Indirect Taxes in India 2. Limitation of Old System 3. Taxes to be subsumed 4. Amendment to Constitutional provisions for GST 5. Salient Features of GST 6. Advantages/Benefit of GST	25%
	(B) Value Added Tax 1. Concept and Meaning of VAT 2. Concept of Input Tax Credit 3. Methods of calculation of VAT **Note: Basic Sums on calculation of VAT**	15%
	Total	100%

Reference Books:

1. Singhania V. K., Students Guide to Income Tax, Delhi
2. Institute of Cost Accountants of India, Study Material of Intermediate Course, Kolkata.
3. Ahuja Girish & Gupta Ravi, Systematic Approach to income tax: Sahitya Bhavan Publications, New Delhi.
4. Manoharan T. N. and Hari G. R., Direct Tax Laws, Snowwhite.
5. Datey V.S., GST Ready Reckoner, Taxmman.
6. Poddar Avinash S: Glimpses of GST, CCH India – A Wolter Kluwer Business
7. Subramanian P.L., Guide to GST, Snowwhite
8. Gupta S.S., GST Law & Practice, Taxmann's
9. Batra Ashok, GST Law an Practice, CCH India-A wolter Kluwer Business
10. Poddar Avinash S., Desai Mehul P., GST Saral Samjhuti, SBD Publication, Ahmedabad.

Veer Narmad South Gujarat University
First Year B.Com.
Semester - II Tax Procedure & Practice - Paper – 2
(Basic Concepts of Taxation in India)
(Syllabus effective from Academic Year 2021-22 and onwards)

Objective: It enables the students to know the basics of Income Tax and Goods and Service Tax in India.

Sr. No.	Course Inputs	Weightage
Income Tax Act' 1961		**50%**
Unit 1	**Concept and Definitions** 1. Important Definitions: Income, Tax, Assessment, Assessment Year, Previous Year, Assessee, Person, Dividend, Company, Indian Company, India, Gross Total Income, Total Income, Casual Income 2. Heads of Income 3. Agricultural income 4. Capital Vs. Revenue: Receipts & Expenditure	20%
Unit 2	**Legal Framework of Income Tax in India** 1. Administration of Income Tax 2. Income Tax Authorities	10%
Unit 3	**Permanent Account Number** 1. PAN Structure 2. Application for PAN (Form 49A) (Theory and Practical) 3. Provision for Permanent Account Number (Section 139A) 4. Penalty for non-compliance **Note: Practical filing application for PAN to be asked in examination.**	20%
Goods and Service Tax Act' 2017		**50%**
Unit 4	**Models of GST** 1. Prime Models of GST Central GST and its Pros & Cons. , State GST and Pros & Cons, Dual GST and its Pros & Cons. 2. Indian Model of GST	15%
Unit 5	**Framework of GST in India** 1. Overview of GST Acts. - The Central Goods and services Tax Act, 2017 (CGST) - The State Goods and Services Tax Act, 2017 (SGST respective state) - The Integrated Goods and Services Tax Act, 2017 - The Union Territory Goods and Services Tax Act, 2017 2. GST in Inter-state, intra state and import transactions 3. GST Authorities 4. GST Council	15%
Unit 6	**Basic Definitions in GST** Goods, Service, Capital Goods, Input, Input Service, Business, Business Vertical, Place of Business, Person, Taxable Person, Invoice, Manufacturer, Turnover, Aggregate Turnover, Reverse Charge, Input Service Distributor, Adjudicating authority, Appropriate government **Note: Simple problems on computation of aggregate turnover**	20%
	Total	100%

Reference Books:

1. Singhania V. K., Students Guide to Income Tax, Delhi
2. Institute of Cost Accountants of India, Study Material of Intermediate Course, Kolkata.
3. Ahuja Girish & Gupta Ravi, Systematic Approach to income tax: Sahitya Bhavan Publications, New Delhi.
4. Manoharan T. N. and Hari G. R., Direct Tax Laws, Snowwhite.
5. Datey V.S., GST Ready Reckoner, Taxmman.
6. Poddar Avinash S: Glimpses of GST, CCH India – A Wolter Kluwer Business
7. Subramanian P.L., Guide to GST, Snowwhite
8. Gupta S.S., GST Law & Practice, Taxmann's
9. Batra Ashok, GST Law an Practice, CCH India-A wolter Kluwer Business
10. Poddar Avinash S., Desai Mehul P., GST Saral Samjhuti, SBD Publication, Ahmedabad.

Veer Narmad South Gujarat University
Second Year B.Com. Semester - III
Tax Procedure & Practice - Paper – 1
(Income Tax Act' 1961)
(Syllabus effective from Academic Year 2021-22 and onwards)

Objective: It enables the students to know the basis of Income Tax Act and its implications.

Sr. No.	Course Inputs	Weightage
Unit 1	Residential Status and Incidence of tax (Section 6)	15%
Unit 2	Head of income Salary (Section 15 to 17)	25%
Unit 3	Head of income House property (Section 22 to 27)	25%
Unit 4	Head of income Capital Gain (Section 45 to 55)	25%
Unit 5	Chapter VIA Deductions (Section 80C, 80CCC, 80CCD, 80CCG, 80D, 80DD, 80DDB, 80E, 80G, 80GG, 80QQB, 80TTA,80U)	10%
	Total	100%

Notes:
(1) Practical problems not less than 70% should be asked in the examination.
(2) The provisions of the Act to be studied shall be the provisions as they are in force for the Assessment Year as applicable in the beginning of the current Academic Year.

Reference Books:

1. Singhania V. K., Students Guide to Income Tax, Delhi
2. Institute of Cost Accountants of India, Study Material of Intermediate Course, Kolkata.
3. Ahuja Girish & Gupta Ravi, Systematic Approach to income tax: Sahitya Bhavan Publications, New Delhi.
4. Manoharan T. N. and Hari G. R., Direct Tax Laws, Snowwhite.

Veer Narmad South Gujarat University
Second Year B.Com. Semester - III
Tax Procedure & Practice - Paper – 2
(Goods and Service Tax Act' 2017)
(Syllabus effective from Academic Year 2021-22 and onwards)

Objective: It enables the students to know the primary application of GST Act in India.

Sr. No.	Course Inputs	Weightage
Unit 1	**Definitions** Goods, Service, Business, Business Vertical, Person, Casual taxable person, Non-resident Taxable Person, Turnover, Aggregate Turnover, Commissioner, Consideration, Local Authority, Notification, Recipient, Reverse Charge	20%
Unit 2	**Levy of & Exemption from GST** 1. Levy and Collection of Central / State GST 2. Composition Levy Scheme 3. Power to grant exemption from tax 4. Remission of tax/duty	20%
Unit 3	**Supply** 1. Meaning of Supply, inward Supply, Outward Supply 2. Scope of Supply 3. Necessary elements to constitute supply 4. Inter State Supply, Intra State Supply 5. Composite Supply and Mixed Supply 6. Continuous Supply of goods & Continuous Supply of Service 7. Taxable Supply 8. Zero rated Supply 9. Exempt Supply	30%
Unit 4	**Place of Supply of goods and Place of Supply of Services**	15%
Unit 5	**Time of Supply of goods and Time of Supply of Services**	15%
	Total	100%

Reference Books:

1. Datey V.S., GST Ready Reckoner, Taxmman.
2. Poddar Avinash S: Glimpses of GST, CCH India – A Wolter Kluwer Business
3. Batra Ashok, GST Law and Practice, CCH India – A Wolter Kluwer Business
4. Subramanian P.L., Guide to GST, Snowwhite
5. Gupta S.S., GST Law & Practice, Taxmann's
6. Batra Ashok, GST Law an Practice, CCH India-A wolter Kluwer Business
7. Mohan Rajat, Illustrative Guide to GST, Bharat Law House
8. GST Manual, Taxmann's, New Delhi

Veer Narmad South Gujarat University
Second Year B.Com. Semester - III
Tax Procedure & Practice - Paper – 3
(Income Tax Act' 1961)
(Syllabus effective from Academic Year 2021-22 and onwards)

Objective: It enables the students to know the basis of Income Tax Act and its implications.

Unit	Course Inputs	Weightage
Unit 1	**Heads of Income:** (A) Profits and Gains of Business or Profession (Section 28 to 32, 35, 36, 37, 40, 40A and 43B) - Maintenance of accounts by certain persons carrying on profession or business (Section 44AA) - Compulsory audit of accounts (Section 44AB) - Presumptive Incomes and Special Provisions (Sections 44AD, 44ADA and 44AE)	40%
Unit 2	**Head of Income:** Income from Other sources (Section 56 to 59) Unexplained cash credits, investments, money (Section 68 to 69D)	25%
Unit 3	Set off and Carry forward of Losses	25%
Unit 4	Clubbing of Income	10%
	Total	100%

Notes:
(1) Practical problems not less than 70% should be asked in the examination.
(2) The provisions of the Act to be studied shall be the provisions as they are in force for the Assessment Year as applicable in the beginning of the current Academic Year.

Reference Books:

1. Singhania V. K., Students Guide to Income Tax, Delhi
2. Institute of Cost Accountants of India, Study Material of Intermediate Course, Kolkata.
3. Ahuja Girish & Gupta Ravi, Systematic Approach to income tax: Sahitya Bhavan Publications, New Delhi.
4. Manoharan T. N. and Hari G. R., Direct Tax Laws, Snowwhite.

Veer Narmad South Gujarat University
Second Year B.Com.
Semester - IV Tax Procedure & Practice - Paper – 4
(Goods and Service Tax Act' 2017)
(Syllabus effective from Academic Year 2021-22 and onwards)

Objective: It enables the students to know the primary application of GST Act in India.

Unit	Course Inputs	Weightage
Unit 1	**Input Tax Credit** 1. Introduction 2. Meaning of input, input service, input tax, input tax credit and inward supply 3. Conditions necessary for obtaining input tax credit 4. Time limit for taking input tax credit 5. Appropriation of credit 6. Blocked credits 7. Taking input tax credit in respect of inputs and capital goods sent for a job work 8. Manner of Recovery of credit distributed in excess	25%
Unit 2	**Registration** 1. Registration 2. Person Liable to obtain registration (Section 22) 3. Person Liable to obtain registration (Section 23) 4. Compulsory Registration in certain cases (Section 24) 5. Procedure for obtaining Registration (Section 25) 6. Voluntary Registration 7. Deemed Registration (Section 26) 8. Special provision relating to casual taxable person and non-resident taxable person (Section 27) 9. Amendment of information in Registration (Section 28) 10. Cancellation of registration (Section 29) 11. Revocation of Cancellation of registration (Section 30)	25%
Unit 3	**Tax Invoice, Credit and Debit notes** 1. Tax Invoice 2. Bill of Supply 3. Credit Notes and Debit Notes 4. Prohibition of unauthorised collection of tax and Amount of Tax to be indicated in tax invoice and other documents	30%
Unit 4	**Accounts and Records** 1. Accounts and Other Records (Section 35) • Which accounts and records to be kept • Place and manner to keep accounts and records • Audit of accounts • Failure to maintain the accounts 2. Period of Retention of accounts (Section 36)	10%
Unit 5	**Returns** 1. Introduction of various records 2. Furnishing details of outward Supplies 3. Furnishing details of inward Supplies 4. Furnishing Return 5. First Return	10%

	6. Matching, Reversal and reclaim of input/output tax credit 7. Annual Return 8. Final Return 9. Default in furnishing return 10. Goods and Service Tax Practitioner	

Note:

1) Amendment up to the starting of Academic year (June month) every year

Reference Books:

1. Datey V.S., GST Ready Reckoner, Taxmman.
2. Poddar Avinash S: Glimpses of GST, CCH India – A Wolter Kluwer Business
3. Batra Ashok, GST Law and Practice, CCH India – A Wolter Kluwer Business
4. Subramanian P.L., Guide to GST, Snowwhite
5. Gupta S.S., GST Law & Practice, Taxmann's
6. Batra Ashok, GST Law an Practice, CCH India-A wolter Kluwer Business
7. Mohan Rajat, Illustrative Guide to GST, Bharat Law House
8. GST Manual, Taxmann's, New Delhi

Veer Narmad South Gujarat University
Third Year B.Com. Semester - V
Tax Procedure & Practice - Paper – 5
(Income Tax Act' 1961)
(Syllabus effective from Academic Year 2021-22 and onwards)

Objective: It enables the students to know the basis of Income Tax Act and its implications.

Unit	Course Inputs	Weightage
Unit 1	**Assessment Procedures** - Inquiring before Assessment under Sec. 143 (1) - Regular Assessment under Sec. 143 (2) - Best Judgment Assessment - Income escaping Assessment - Issue of notice where income has escaped assessment - Time limit for Notice Time limit for completion of assessment and reassessment	30%
Unit 2	**Refund** - Who can claim refund - Form No. 30 for refund - Time limit for Claiming refund - Refund on appeal - Interest on refunds	15%
Unit 3	**Rectification of mistakes** Orders to be amended, who rectifies, time limit, procedure	15%
Unit 4	**Appeals and revisions** - When an assessee can file appeal - Appellate authorities - Procedure for filling appeals - filling of Form No. 35-36 - Time limit for filing appeal - Revision by Income Tax Commissioner	20%
Unit 5	**Penalties** - Procedure for imposing penalties - Nature of default and penalties impossible - Waiver of penalty - Immunity from penalty	20%
	Total	100%

Reference Books:

1. Singhania V. K., Students Guide to Income Tax, Delhi
2. Institute of Cost Accountants of India, Study Material of Intermediate Course, Kolkata.
3. Ahuja Girish & Gupta Ravi, Systematic Approach to income tax: Sahitya Bhavan Publications, New Delhi.
4. Manoharan T. N. and Hari G. R., Direct Tax Laws, Snowwhite.

Veer Narmad South Gujarat University
Third Year B.Com. Semester - V
Tax Procedure & Practice - Paper – 6
(Goods and Service Tax Act' 2017)
(Syllabus effective from Academic Year 2021-22 and onwards)

Objective: It enables the students to know the primary application of GST Act in India.

Note: Examination for this paper will be of 25 marks only and of one hour only.

Unit	Course Inputs	Weightage
Unit 1	**Payment of Tax** 1. How to make payment? Introduction, Input tax credit, cash payment, credit card payment, Main Features of GST Payment Process 2. Introduction to Electronic Cash Ledger, Electronic Credit Ledger and Electronic Liability Ledger 3. Payment to be made in GST regime 4. Manner of utilisation of ITC 5. Interest on Delayed Payment of Tax (Section 50) 6. Interest to be paid by the department	25%
Unit 2	**Refunds** 1. Refund of tax Situations leading to refund, time limit, documents needed, grant of provisional refund 2. Principal of Unjust Enrichment 3. Rejection and Withholding refund claim 4. Interest on delayed refunds 5. Consumer welfare fund and its utilisation	25%
Unit 3	**Assessment** 1. Self-Assessment 2. Provisional Assessment 3. Scrutiny of records 4. Assessment of non-filers of return 5. Assessment of unregistered persons 6. Summary assessment in certain specified cases	20%
Unit 4	**Audit** 1. Audit by tax authorities 2. Special Audit	15%
Unit 5	**Penal Provisions** 1. Offenses and penalties 2. General Penalty 3. General disciplines related to penalty	15%
	Total	100%

Reference Books:

1. Datey V.S., GST Ready Reckoner, Taxmman.
2. Poddar Avinash S: Glimpses of GST, CCH India – A Wolter Kluwer Business
3. Batra Ashok, GST Law and Practice, CCH India – A Wolter Kluwer Business
4. Subramanian P.L., Guide to GST, Snowwhite
5. Gupta S.S., GST Law & Practice, Taxmann's
6. Batra Ashok, GST Law an Practice, CCH India-A wolter Kluwer Business
7. Mohan Rajat, Illustrative Guide to GST, Bharat Law House
8. GST Manual, Taxmann's, New Delhi

Project of GST : 25 Marks

Sr. No.	Particulars	Forms
1.	Basic Concepts of GST	
2.	GST Registration Process	
	♦ Application for Registration	GST REG-01
	♦ Acknowledgment of Registration	GST REG-02
3	Returns under GST	
	♦ Filed by all registered taxpayers for Outward Supplies	GSTR-1
	♦ Details of auto drafted supplies	GSTR-1A
	♦ Details of inward supplies of goods or services	GSTR-2
	♦ Details of auto drafted supplies	GSTR-2A
	♦ Monthly return	GSTR-3
	♦ Return filed by taxpayers who have opted for the Composition Scheme	GSTR-4
	♦ Annual return	GSTR-9
4	Payment under GST	
	♦ Electronic Liability Register of Registered Person	GST PMT-01
	♦ Electronic Credit Ledger of Registered Person	GST PMT-02
	♦ Electronic Cash Ledger	GST PMT-05
5	Application for Refund	GST RFD-01
6	Assessment under GST	
	♦ Application for Provisional Assessment under section60	GST ASMT-01
	♦ Final Assessment Order	GST ASMT-07
7.	Audit - Notice for conducting audit	GST ADT-01

Veer Narmad South Gujarat University
Third Year B.Com. Semester - VI
Tax Procedure & Practice - Paper – 7
(Customs Act' 1962)
(Syllabus effective from Academic Year 2021-22 and onwards)

Objective: It enables the students to know the primary application of Customs Act in India.

Unit	Course Inputs	Weightage
Unit 1	**Concept, Overview and Definitions of Customs Act' 1962** 1. Concept and Overview of Customs Act Nature of Customs Duty – objectives – Laws relating to customs Duty, Customs Rules and Regulation, Notification 2. Important Definitions: India, Customs Water, Territorial Waters, Goods, Duty, Dutiable Goods, Import, Importer, Imported Goods, Export, Exporter, Export Goods, Baggage, Foreign going vessel or Air craft, Prohibited goods, Notified Goods, Stores, Coastal Goods, Custom Station, Custom Area, Customs Port, Customs Airport, Air Freight Station, Land Customs Station, Inland Container Depot, Coastal Port, Warehousing Station, Custom House Agent, Boat Notes	20%
Unit 2	**Taxable Event in case of Import and Export** 1. Taxable event for Import Duty 2. Taxable event in case of Export 3. Relevant Date for the rate and valuation of Customs Duty in case of import and export.	10%
Unit 3	**Types of customs Duties** Basic Custom Duty, Integrated Tax, GST Compensation Cess, Additional Customs Duties u/s 3(1), 3(3), 3(5), Protective Duties, Safeguard Duty and Anti-Dumping Duty, Export duty, Social Welfare Surcharge, Emergency Power to impose or enhance duty	20%
Unit 4	**Valuation and Valuation Methods** 1. Valuation for customs Duty under section 14(1) and 14(2). 2. Methods of valuation in Customs	30%
Unit 5	**Procedure for import** Customs station, land customs station, Import General manifest, Documents to be submitted by importer, Entry inward , Bill of Entry, procedure to be followed by the carrier and the Importer.	10%
	Procedure for Exports Shipping Bill, Documents to be submitted by the Exporter, Entry outward, Declaration to be submitted by the Exporter- Procedure to be followed by the carrier and the Exporter.	10%
	Total	100%

Reference Books:

1. Singhania V. K., Students Guide to Income Tax, Delhi
2. Institute of Cost Accountants of India, Study Material of Intermediate Course, Kolkata.
3. Ahuja Girish & Gupta Ravi, Systematic Approach to income tax: Sahitya Bhavan Publications, New Delhi.
4. Manoharan T. N. and Hari G. R., Direct Tax Laws, Snowwhite.

Veer Narmad South Gujarat University
Third Year B.Com. Semester - V
Tax Procedure & Practice - Paper – 8
(Income Tax Act' 1961)
(Syllabus effective from Academic Year 2021-22 and onwards)

Objective: It enables the students to know the basis of Income Tax Act and its implications.

Note: Examination for this paper will be of 25 marks only and of one hour only.

Unit	Course Inputs	Weightage
Unit 1	**Tax deducted at Source** - Obligation of the person making Payment - who and when the person is liable to deduct tax at Source - Procedure and rate of Tax deducted at source on Various Payments - Certificate to be issued to the recipients in Various Forms 16, 16A - Deposit of Tax deducted at source - filling of the Challan and deposit of tax - filling and filling of relevant Certificates for lower or no deduction of tax at source	35%
Unit 2	**Advance - Tax** - Who is liable to pay advance tax - Computation of advance tax - Installment and due date of advance tax - Interest Payable by the assessee 234A, 234B, 234C & 234D	35%
Unit 3	**Self Assessment Tax and Return of Income** - Self-Assessment Tax - Return of Income - Return of loss - Belated Return - Revised return - Defective return - Authorised Signatories to the Return of Income	30%
	Total	100%

Reference Books:

1. Singhania V. K., Students Guide to Income Tax, Delhi
2. Institute of Cost Accountants of India, Study Material of Intermediate Course, Kolkata.
3. Ahuja Girish & Gupta Ravi, Systematic Approach to income tax: Sahitya Bhavan Publications, New Delhi.
4. Manoharan T. N. and Hari G. R., Direct Tax Laws, Snowwhite.

Project of Income Tax **25 Marks**

	Particulars	Form No.
1	PAN Application	49A
2	TAN Application	49B
3	TDS Certificate for Salary	16
4	TDS Certificate for other payments	16A
5	TDS/ Advance Tax/ Income Tax Challan	Challan
6	Income Tax Return 1 (For Individuals having income from salary, House property and other sources)	ITR 1
7	Income Tax Return 2 (For Individuals and HUFs not having Income from Business or Profession)	ITR 2



ONLINE SUMMER REPORT (501)

(in substitution with 'Summer Training Report – 501' due to COVID Pandemic)

T.Y.B.B.A (SEM-5)

EVALUATION GUIDELINES

(ONLY FOR A.Y. 2021-22)

BACHELOR OF BUSINESS ADMINISTRATION

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

Table of Contents

What is Online Summer Report? 1

Why Online Summer Report? 1

When to prepare O.S.R.?.....1

General Rules.....1

Credit Rules 2

Evaluation Pattern 3

University Evaluation (70 Marks) 3

Internal Evaluation (30 Marks).....3

ANNEXURE 1 (Format of OSR).....5

ANNEXURE 2 (Suggested List of Sectors).....10

ANNEXURE 3 (Structure of OSR) 11

ANNEXURE 4 (Suggested Formatting Guidelines) 12

VEER NARMAD SOUTH GUJARAT UNIVERSITY

ONLINE SUMMER REPORT (ONLY FOR A.Y. 2021-22)

What is Online Summer Report?

Student(s) will choose a sector of his/her/their choice (list is given in Annexure 2) and will understand the overall scenario of that particular sector. Along with that student(s) will choose certain companies belonging to that sector and shall study overall working of the company in the form of detailed scanning of functional areas of business viz Marketing, Finance, HRM and Operations followed by preparation of detailed report. This exercise will be group-based exercise but evaluation should be done on individual bases. However, a student can do this whole exercise individually.

Why Online Summer Report?

A student enrolled in Bachelor of Business Administration (BBA) program of Veer Narmad South Gujarat University has to undergo Summer Internship in any organization of their choice (Manufacturing / Processing is highly advisable) either individually or in group. But due to ongoing pandemic, it will be not be possible to send students on field and study the departments therein nor the companies shall allow them to their premises looking for security and other concerns. Hence, looking to the overall scenario, we hereby substitute conventional way of summer Training i.e. 'Summer Training Report – 501' with 'Online Summer Report' only for academic year 2021-22.

When to prepare O.S.R.?

Online Summer Report is supposed to be prepared during Semester 5 (A.Y. 2021-22) unlike conventional scheme of doing Summer Training during summer vacation. O.S.R. shall be in effect only for academic year 2021-22 and after this year, it will be discarded from curriculum and will be substituted by 'Summer Training Report – 501'.

General Rules

R.O.S.R. 1: One student / Group of students should prepare said report. HOWEVER, GROUP REPORT SHOULD BE ENCOURAGED.

R.O.S.R. 2: Student(s) will choose the sector of his/her/their own choice and will pick the companies belonging to that sector and will study overall working of the functional departments.

R.O.S.R. 3: College authority can decide minimum and maximum number of group size on their discretion but group size must not be greater than 6 (Six). Individual student can also undergo online summer project.

R.O.S.R. 4: Maximum two groups in the college can select same sector. In case where two groups have selected same sector, companies chosen therein must be different.

R.O.S.R. 5: College should allocate faculties for each group (faculty mentor) to guide them in the whole process. Information should be collected from Internet, Newspapers, Books, Journals and other sources strictly by giving due references. College as well as students must use these reports for academic purpose only and must not publish anywhere else.

R.O.S.R. 6: This study will purely be **'Sectoral Study'** by nature wherein students will learn functioning of the companies by studying departments like Production, Operations, marketing, finance, accounting, sales, personnel, HR, Health, Safety, Quality Assurance and others in that particular sector.

R.O.S.R. 7: At the end of Online Summer Report, they will have to prepare and submit Hard Bound Report to the college. Without Hard Bound Report, study would be considered incomplete and student(s) will not get credit for the same and will be considered failed in 'Summer Training Report' head of Third Year BBA Semester V.

R.O.S.R. 8: It is mandatory for an individual student to prepare the said report to earn the required credit of the said paper.

Credit Rules

R.O.S.R. 9: The credit of Online Summer Report (O.S.R.) shall be transferred to 'Summer Training Report' (501) subject only for academic year 2021-22. After this academic year Online Summer Report will be discarded and will be substituted by Summer Training Report - 501 itself.

R.O.S.R. 10: If a student(s) fails to prepare required report, he/she will be considered "FAIL" and will be allotted 'Grade F' in the said subject.

R.O.S.R. 11: In case a student(s) fail(s) to prepare online summer report during Semester 5, and he/she is declared fail in the said subject, college can instruct such students to prepare this report during Semester 6 and can earn the credit in the marksheet of Semester 5. If the student still fails to prepare the Online Summer Report even during Semester 6, he/she will undergo the summer training in conventional way i.e. departmental study by visiting the company.

R.O.S.R. 12: Online summer report shall be prepared by only those students who have got their term granted in Semester 5. Student who got their form withdrawn either in Semester 3 or Semester 4, shall not prepare Online Summer Report.

R.O.S.R. 13: If student(s) gets his/her form withdrawn in Semester 5 and student(s) had already completed Online Summer Report during Semester 5, in such circumstance, he/she will be allowed to use the completed report to claim the credit of 'Summer Training Report – 501'.

R.O.S.R. 14: An individual student or a group of students shall have to give VIVA VOCE Exam before the committee/panel. A panel consists of the faculty members of the college concerned or outside the college if college authority wishes to call panel outside. College must maintain full confidentiality during the whole evaluation process.

R.O.S.R. 15: Internal Marks of Online Summer Report should be put in the university ERP system in the Head of Summer Training Report – 501 at the time of putting internal marks of Semester 5.

R.O.S.R.16: If a student does not prepare online summer report, he / she will not be entitled for the credit of 'Summer Training Report - 501' of Semester 5.

Evaluation Pattern

Course Type	Semester	Course Code	Course Title	Course Credit	University Evaluation	Internal Evaluation	Tota
Core	Fifth	501	Summer Training Report	4	70 Marks	30 Marks	100

University Evaluation (70 Marks)

Particulars	Marks
Online Summer Report (Hard Bound) (Quality & Quantum of Information Gathered, Formatting, Content, Way of presentation)	35 Marks
VIVA VOCE of Report (Faculty panel from within /outside college)*	35 Marks
Total	**70 Marks****
** College concerned is allowed to frame faculty panel for VIVA within as well as outside college. If college appoints outside faculties/experts for VIVA, DA and TA should be borne by college only and not by VNSGU. Panel members should not be less than two.*	
***subject to producing completion certificate*	

Internal Evaluation (30 Marks)

Particulars	Marks
Regularity and Punctuality	15 Marks
Presentation of Group/Individual student by Faculty Mentor	15 Marks
Total	**30 Marks***
**To be put by faculty mentor in university ERP system at the time of putting internal marks of Semester 5*	

ANNEXURES

ANNEXURE 1
INFORMATION TO COVER / FORMAT OF O.S.R.

Points given hereunder are just for reference purpose, students can add and delete the points as per their own requirements taking guidance from faculty mentor.

Chapter 1: Industrial/Sectoral Scenario

- History / Evolution of the sector
- Overall working of the sector
- Challenges faced by that sector in India
- SWOC Analysis
- Major Players in the sector
- GDP contribution by that sector
- Some facts/figures regarding that sector (Optional)
- Global Perspective
- Summary

Chapter 2: Company Profiles

Group Size	Companies to be chosen
Individual	3
2	3
3	3
4	4
5	5
6	5

- Name & Location of Company
- Name & Location of other branches
- Year of Establishment
- Brief History
- Name of Founders and Promoters
- Vision Statements

- Mission Statement and Values statement
- Organizational Structure / Hierarchy (*if available*) (*along with diagram, also explain the same in brief*)
- Controlling System (*if available)*
- SWOT analysis of the companies (individually)
- Any other specific detail

Chapter 3: Finance department

Company Comparison table - Finance Department

Sr. No.	Particulars	Company X	Company Y	Company Z
1.	Trading and P&L account *(how they maintain, what is the present status etc.)*			
2.	Balance sheet			
3.	Ratios and their interpretation *(here, if the data is available, then students can find the ratio and put the analysis here.)*			
4.	Financial statement analysis (*the students can analyze the financial statements of the company and then put the final outcome here).*			
5.	Accounting procedure			
6.	CSR and the expense			
7.	A listed company. If yes, then where and since how long?			

Chapter 4: Marketing Department

Company Comparison table - Marketing Department:

Particulars	Company X	Company Y	Company Z
List of Products & Services			
Number of customers / overseas customers			
Specific distribution channel			
PLC – associate the product with respect to the PLC Stage			
Market segmentation			
Positioning strategies			
Promotion tools used			
Pricing Methods			
Sales force management			
CRM practices (if followed)			
List of products exported and in which country(s)			

Chapter 5: Human Resource Department (HRM) / Personal department

Particulars	Company X	Company Y	Company Z
Recruitment & Selection process			
Number of employees (*if available*)			
Training methodology/ approach			
Employee safety mechanisms			
Specific HR policies			
Performance Appraisal process			
Wages & Salary administration			
Grievance handling procedure			

Strategic HRM (if adopted)			
Employee feedback mechanism (if adopted)			
Any other			

Chapter 6: Production / Operations Department

If Manufacturing Firm is there

Particulars	Company X	Company Y	Company Z
Raw materials used			
Turnover			
Plant Location			
Inventory Policies (if available)			
Layouts used			
Products Produced			
Machines / Equipment used			
Process used (Process in brief)			
Quality Maintenance			
Specific Operations policies			
Services provided			
Any other			

If Service Firm is there

Particulars	Company X	Company Y	Company Z
Core Service			
Supplementary Services			
Role of Employees			
Equipment used			
Distribution Channel Used			
Service Process / Blueprint			
Quality Maintenance			
Specific Operations policies			
Service Pricing			
Physical Evidences used			
Any other			

Chapter 7: Any other Company Specific Department

Chapter 8: Conclusion from the study.

Here the group of students have to give an understanding regarding what did they study from various departments and how does the company functions in the particular sector.

Note: All the above points mentioned under chapter names are subject to availability on secondary sources. In case of non-availability of information, student(s) can add or delete points taking help of faculty mentor.

ANNEXURE 2

SUGGESTED LIST OF SECTORS THAT CAN BE CHOSEN BY STUDENTS

AGRICULTURE AND ALLIED INDUSTRIES	MANUFACTURING
AUTOMOBILES	MEDIA AND ENTERTAINMENT
AUTO COMPONENTS	MEDICAL DEVICES
AVIATION	METALS AND MINING
BANKING	MSME
BIOTECHNOLOGY	OIL AND GAS
CEMENT	PHARMACEUTICALS
CHEMICALS	PORTS
CONSUMER DURABLES	POWER
DEFENCE MANUFACTURING	RAILWAYS
E-COMMERCE	REAL ESTATE
EDUCATION AND TRAINING	RENEWABLE ENERGY
ELECTRONICS SYSTEM DESIGN & MANUFACTURING	RETAIL
ENGINEERING AND CAPITAL GOODS	ROADS
FINANCIAL SERVICES	SCIENCE AND TECHNOLOGY
FMCG	STEEL
GEMS AND JEWELLERY	TELECOMMUNICATIONS
HEALTHCARE	TEXTILES
INFRASTRUCTURE	TOURISM AND HOSPITALITY
INSURANCE	Any other with consent of faculty
IT & BPM	

ANNEXURE 3
STRUCTURE OF ONLINE SUMMER REPORT

Sr. No.	Particulars
1	Title Page
2	Report Completion Certificate (College)
3	Declaration
4	Acknowledgements
5	Executive Summary
6	Chapter 1: Industrial Scenario
7	Chapter 2: Profile of the Companies Selected
8	Chapter 3: Finance Department
9	Chapter 4: Marketing Department
10	Chapter 5: Human Resource / Personnel Department
11	Chapter 6: Production / Operations Department
12	Chapter 7: Any other company specific department
13	Chapter 8: Conclusion
14	Bibliography
15	Annexure

ANNEXURE 4
SUGGESTED FORMATTING GUIDELINES

- Font Type: Times New Roman
- Font Size (Main Heading): 18
- Font Size (Sub Heading): 16
- Font Size (Body Text): 12
- Line Spacing: 1.5
- Alignment: Justified
- References: APA Style
- Copies: 1 Hard Bound (Black Cover)



SUMMER TRAINING REPORT (501)

T.Y.B.B.A (SEM-5)

EVALUATION GUIDELINES

(EFFECTIVE FROM A.Y. 2022-23)

BACHELOR OF BUSINESS ADMINISTRATION

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

Contents

Sr. No.	Particulars	Pg. No.
1	About Summer Training Report (S.T.R.)	1
2	General Rules	2
3	Credit Rules	2
4	Evaluation Pattern	3
5	University Evaluation (70 Marks)	3
6	Internal Evaluation (30 Marks)	3
7	Annexure 1: Departments that can be studied	4
8	Annexure 2: Structure of Summer Training Report	7
9	Annexure 3: Suggestive Formatting Guidelines	8

SUMMER TRAINING REPORT – 501 (T.Y.B.B.A – Sem. V)

About Summer Training Report (S.T.R)

A student enrolled in Bachelor of Business Administration (BBA) program shall have to undergo Summer Internship in any organization of their choice (Manufacturing / Processing is highly advisable) either individually or in group. Student(s) will choose a company of his/her/their choice will personally go to the company and understand the working of the company there will prepare a report of the same and will have to present the report in front of panel members. This whole exercise will be equivalent to 4 credits in Semester 5 of BBA course. The students shall be able to get credit only when they complete their training.

General Rules

R.S.T.R. 1: At the end of Semester 4 during Summer Vacations, student(s) has to undergo 4-weeks Summer Internship Training. In case of No Summer Vacation, students must be allowed the time of 4 weeks by the college concerned.

R.S.T.R. 2: One student / Group of students should undergo said training. HOWEVER, GROUP PROJECT SHOULD BE ENCOURAGED.

R.S.T.R. 3: Student(s) will choose the company of his/her/their own choice and will bring the permission letter from there either in written letter format or via e-mail or any other formal mode. This training is the only means in BBA curriculum which allows the students to expose practically with hard-core working of manufacturing / processing. Hence, exposing them with manufacturing/processing firms is advisable. However, students can also be sent to service firms / organisations, if college wishes to do so.

R.S.T.R. 4: College authority can decide minimum and maximum number of group size on their discretion but group size must not be greater than 6 (Six). Further college can also decide the maximum limit of groups going in single company. Individual student can also undergo summer training project. College should appoint faculty mentor to guide them throughout their work.

R.S.T.R. 5: This study will purely be **'Departmental Study'** by nature wherein students will learn functioning of the company by studying departments like production, operations, marketing, finance, accounting, sales, personnel, HR, Health, Safety, Quality Assurance and others. If students are sent in pure service organisation, college should ascertain that there exist three to four departments for effective knowledge gaining experience.

R.S.T.R. 6: College should ascertain that student(s) are not going in the firm which is possessed by his/her/their(s) family members (It must not be student's / students' own firm).

R.S.T.R. 7: At the end of Summer Training Project, they will have to bring completion certificate and one copy of the same must be kept by the college. Without Project Completion

Certificate, study would be considered incomplete and student(s) will not get credit for the same and will be considered failed in 'Summer Training Report'.

R.S.T.R. 8: It is mandatory for an individual student to undergo the said training to earn the required credit of the said paper.

Credit Rules

R.S.T.R. 9: If a student(s) fails to undergo required summer training, he/she will be considered "FAIL" and will be allotted 'Grade F' in the said subject.

R.S.T.R. 10: In case a student(s) fail(s) to undergo the training and he/she is declared failed in it, a student can earn the required credit anytime after that by going to organization. A college shall have to permit him/her the leave during that period.

R.S.T.R. 11: If student(s) gets his/her form withdrawn either in Semester 3 or Semester 4, they cannot be allowed to undergo Summer Training in that particular year in.

R.S.T.R. 12: In case a student fails to clear 3/5th subjects of Semester 3 and Semester 4 and/or a student is unable to clear all subjects of Semester 1 and Semester 2 together, he / she will be allowed to undergo Summer Training, but the credit for the same will be transferred to him/her only when he/she satisfies all the conditions to enter in Semester 5.

R.S.T.R. 13: If student(s) gets his/her form withdrawn in Semester 5 and student(s) had already completed the training during summer vacation, in such circumstance, he/she will be allowed to use completion certificate to claim the credit of 'Summer Training Report – 501'.

R.S.T.R. 14: If a student exceeds maximum number of years to complete the BBA program and if in case of re-registration in BBA program, he/she will have to undergo Summer Training again.

R.S.T.R. 15: An individual student or a group of students shall have to give VIVA VOCE Exam before the committee/panel as a part of External Evaluation. A panel may consist of the faculty members of the college concerned or faculty panel outside the college, if college wishes for. College must maintain full confidentiality during the whole evaluation process.

R.S.T.R. 16: Internal Marks of Summer Internship Project should be put in the university ERP system at the time of putting internal marks of Semester 5.

R.S.T.R. 17: Although this is a group project work but evaluation should be done on individual student basis. E.g. If only 4 students are working sincerely out of 5 and one is not putting enough efforts, evaluation of that students should be less than other 4 members in group.

R.S.T.R.18: If a student never undergoes summer training, he / she will never be entitled for the credit of 'Summer Training Report (501)' of Semester 5.

Evaluation Pattern

Course Type	Semester	Course Code	Course Title	Course Credit	University Evaluation	Internal Evaluation	Total
Core	Fifth	501	Summer Training Report	4	70 Marks	30 Marks	100

University Evaluation (70 Marks)

Particulars	**Marks**
Summer Training Report (Hard Bound) (Quantum of Information taken, Formatting, Content, Way of presentation)	35 Marks
VIVA VOCE of Report (Faculty panel from within /outside college)*	35 Marks
Total	**70 Marks****
** College concerned is allowed to frame faculty panel for VIVA within as well as outside college. If college appoints outside faculties/experts for VIVA, DA and TA should be borne by college only and not by VNSGU. Panel members should not be less than two.*	
***subject to producing completion certificate*	

Internal Evaluation (30 Marks)

Particulars	**Marks**
Regularity and Punctuality, Follow-ups, Behavioural Conduct at company etc.	15 Marks
Presentation of Group/Individual student by College Faculty Mentor(s)	15 Marks
Total	**30 Marks***
**To be put by faculty mentor in university ERP system at the time of putting internal marks of Semester 5*	

ANNEXURE 1

DEPARTMENTS THAT CAN BE STUDIED

General Information

- Name & Location of Company
- Name & Location of other branches
- Year of Establishment
- Brief History
- Name of Founders and Promoters
- Vision Statements
- Mission Statement and Values Shared
- Organisational Structure / Hierarchy
- Controlling System
- Any other specific detail

Production Department / Processing Department

- Plant Location
- Plant Layouts Used
- Raw Materials Used
- Systems used (Continuous / Intermittent and their sub-systems)
- Heavy Machineries Used
- Products and Services produced
- Process used
- Description of Layout (Product, Process, FP, Hybrid)
- Material Handling Equipment used
- Inventory Control methods (if followed)
- Order Quantity, Lead Time, Reordering Level
- APP
- MPS
- List of dependent demand inventory (BOM file)
- CRP plan
- MRP plan
- Quality control technique
- Inspection Technique
- Work Study & Time Study (If Applicable)
- On the Job & Off the Job Training to Workers and Supervisors
- Names and addresses of plants if elsewhere situated

- Any other company specific detail

Marketing Department

- List of Products & Services
- Number of customers / overseas customers
- Marketing Plan
- Major competitors
- Specific Distribution channel
- PLC concept and association of their product with respect to PLC stage
- Market segmentation
- Positioning Strategies
- Promotion tools used
- Pricing method followed
- Sales force management
- CRM practices (if followed)
- Research Procedure (if conducted)
- MKIS (if maintained)
- Export Procedure (if applicable)
- Any other company specific detail

HRM / Personnel Department

- Recruitment Procedure
- Selection Process
- No. of employees
- Attendance maintenance
- Training given
- Fringe benefits provided
- Leave rules
- Employee Safety mechanisms
- Promotion – Transfer rules
- Specific HR policies
- Performance appraisal
- Wages & Salary Administration
- Grievance Handling Procedure
- Strategic HRM (if adopted)
- Employee Feedback mechanism (if adopted)

Finance Department / Accounting Department

- Trading & P & L Account
- Balance Sheet
- Ratios & their interpretation
- Financial Statement Analysis
- Accounting procedure

Purchase Department

- Purchase Procedure
- Purchasing Lead time
- Ordering Costs and carrying costs
- General details about purchase department
- Raw Materials Ordered
- List of Suppliers
- Re-Ordering Time
- Any other specific detail

Safety Department

- No. of fire extinguishers
- Safety Equipment provided to workers
- Workmen's Compensation policy
- List of Life Insurance Policies (if taken)
- List of General Insurance Policies (Fire, Marine, Burglary etc.)
- Health and Safety Policy
- Any other Safety mechanisms

Other Company Specific Departments that can be studied

- Packing Department
- Store & Warehousing
- Dispatch Department
- Engineering Department
- Q&A Department
- Any other department that company has other than above

ANNEXURE 2

STRUCTURE OF SUMMER TRAINING REPORT

Sr. No.	Particulars
1	Title Page
2	Project Completion Certificate (College)
3	Project Completion Certificate (Company)
4	Declaration
5	Acknowledgements
6	Executive Summary
7	Chapter 1: General Information
8	Chapter 2: Production Department / Purchase Department
9	Chapter 3: Marketing / Sales Department
10	Chapter 4: Finance / Accounts Department
11	Chapter 5: Human Resource / Personnel Department
12	Chapter 6: Purchase Department
13	Chapter 7: Any other company specific department
14	Bibliography
15	Annexure

ANNEXURE 3

SUGGESTED FORMATTING GUIDELINES

- Font Type: Times New Roman
- Font Size (Chapter Heading): 24
- Font Size (Main Heading): 16
- Font Size (Sub Heading): 14
- Font Size (Body Text): 12
- Line Spacing: 1.5
- Alignment: Justified
- References: APA Style
- Page No.: At Bottom Center
- Copies: 1 Hard Bound (Black Cover)

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વિષય- સંસ્કૃત પ્રશ્નપત્રોમાંથી અંગ્રેજી અનુવાદ દૂર કરવા બાબત.

માનનીય મહોદયશ્રી,

સવિનય, વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી સંસ્કૃત પરિવાર અને સંસ્કૃત બોર્ડના સભ્યોની લાગણી આપ સમક્ષ રજૂ કરીએ છીએ. સંસ્કૃત વિષયમાં **B.A-.Sem – I to VI** માં મુખ્ય વિષયના તમામ પ્રશ્નોપત્રો **(MCQ અને Descriptive, Online અને Offline)** અને **M.A Sem-I to IV**ના તમામ પ્રશ્નપત્રો **(MCQ અને Descriptive,Online અને Offline)**માંથી અંગ્રેજી વર્ઝન ભવિષ્યની તમામ પરીક્ષાઓ માટે દૂર કરવા અંગેની વિનંતી સ્વીકારી, ઘટતું કરશો એવી વિનંતી.

સહકાર બદલ આપનો આભાર.

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