VEER NARMAD SOUTH GUJARAT UNIVERSITY

B.E. Electrical

Semester - III

B.E.-II (Electrical Engg.)

Engineering Economics & Business Administration

Engineering Mathematics III

Electronics I

Electrical Networks I

Electrical Machines I

Computer Applications for Electrical Engineering

VEER NARMAD SOUTH GUJARAT UNIVERSITY

B.E.-II (Electrical Engg.)

Semester - III

EAH 301 ELE : Engineering Economics & Business Administration

	Lecture	Tutorial	Practical
Teaching Hours	3	0	0
Examination Scheme Marks	100	0	Continuous Evaluation 00 Examination 00

- Demand, law of demand, elasticity of demand, law of supply.
- Factors of production, laws of return.
- Capital formation, national income.
- Meaning and functions of money, functions of central bank and commercial banks.
- Creation of credit and control of credit, credit instruments, quantity theory of money, inflation.
- Price determination under different market conditions, perfect competition, monopoly and monopolistic competition, break even analysis.

MANAGEMENT & ORGANIZATION

- Forms of business organization, individual proprietorship, partnership, joint stock company, co-operative organization, state undertakings.
- Industrial finance- important sources.
- Elements of cost and depreciation.
- Fundamentals of management , principles of management.
- Planning-its meaning and importance, nature of planning.
- Organization principles, behaviour and structures.
- Delegation and decentralization- delegation of authority, centralization and decentralization.
- Control-essentials of control processes, requirements of good control system.
- Decision making: process and principles.
- Motivation and morale: need and theory. Incentives, morale and productivity, measures for raising morale.
- Marketing management, nature and functions of marketing.
- Production management, production planning and control, purchasing functions.
- Personel management, functions of personel department, procedure of recruitment and selection, types and methods of training.

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B.E.-II (Electrical Engg.)

Semester - III

ESM 302 ELE Engineering Mathematics III

	Lecture	Tutorial	Practical
Teaching Hours	**3**	**2**	**0**
Examination Scheme Marks	**100**	**50**	**Continuous Evaluation 00** **Examination 00**

Multiple Integrals :- Reorientation of concepts of integrals, double and triple integrals, evaluation techniques, change of order of integration, integrals in polar and cylindrical coordinates, change of variables of multiple integrals, application of double and triple integrals for evaluation of area, volume and mass.

Vector Calculus :- Basic concepts of vector calculus, line integrals, scalar and vector point functions, differential operator, gradient, directional derivatives, divergence, curl and

Laplacian with their properties and physical interpretation.

Surface integrals, Green's Gauss and Stokes theorem (without rigorous proof), applications. Gamma, Beta and Error Functions. Improper integrals and their convergence, Gamma and Beta functions and their properties, error functions, evaluations and applications.

Fourier Series Fourier expansion of functions with arbitrary period in particular periodic functions with period 2 p ., conditions of convergence, Fourier series of even and odd functions, Half range Fourier series.

Partial Differential Equations (de) Basic mathematical concepts, first order de of Lagrange's form, Pp+Qq=R, Second order pde of mathematical physics (Heat wave and Laplace Equation) with standard boundary conditions, solution by separation of variable method using

Fourier Series. Partial differential equation Modeling.

Complex Variables Basic mathematical concepts, analytical functions, C-R equations, Harmonic functions, related problems, Liner transformations of complex domains, special transformations, bilinear transformations, conformal mapping and applications, complex integration including contour integration (simple cases)

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B.E.-II (Electrical Engg.)

Semester - III

ECE 303 ELE Electronics I

	Lecture	Tutorial	Practical	
Teaching Hours	3	1	2	
Examination Scheme Marks	100	25	Continuous Evaluation Examination	20 30

Diode Circuit Analysis :- Introduction to Semiconductor junction Diode; Nonlinear properties; Ideal diode; Basic theory and analysis of simple diode circuit; DC load line; Small signal analysis and concept of dynamic resistance; AC load line; Diode capacitance; Temperature effects of diode; Different types of diode (Zener, schottckey) Manufacturer's specifications.

Rectifiers :- Circuit analysis of half-wave and full wave rectifer using semi-conductor devices; Bridge rectifier; Ripple and form factor calculation for above circuits; Efficiency and PIV for above circuits; Types of filters; C filter, L filter, LC filter, PIE filter; Analysis of filter and calculation of ripple and regulation

Introduction To Transistor Circuits :- Transistor characteristic; Plots for NPN and PNP configurations; Current flow mechanism in the junction transistor and calculation of Alpha and Beta; Analysis of CE configuration; Current amplification in the transistor; Graphical analysis of transistor circuits; Power calculations; Infinite bypass capacitor; Infinite coupling capacitors; Different dc biasing methods; Fixed bias, emitter stabilized bias, potential divider bias, dc bias with voltage feedback; Common base configuration analysis; Emitter follower.

Bias Stability :- Quiescent point variation due to uncertainty in Beta; Effect of temperature on the Q point; Stability factor analysis; Temperature compensation using diode biasing. Audio Frequency Linear Power Amplifiers :- Introduction to Class A, B, AB and C operation; Class A common-emitter power amplifier; Transformer coupled amplifier; Class B push pull power amplifier; Amplifiers using complementary symmetry; Class C amplifier.

Small Signal Low Frequency Analysis And Design :- Hybrid parameters; CE configuration; CB configuration ; CC configuration; Impedance reflection; Bootstrapping circuit; Phase splitter; Interpretation of manufacturers specification.

FET :- Introduction to theory and operations of n-channel JFFT & MOSFET; Reversibility of drain & source; P-channel FET; Bias stability in FET; Different FET configuration; Small signal analysis of FET

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B.E.-II (Electrical Engg.)
Semester - III

ELE 304 ELE Electrical Networks I

	Lecture	Tutorial	Practical
Teaching Hours	3	1	00
Examination Scheme Marks	100	25	Continuous Evaluation 00 Examination 00

Network Concepts :-Network element symbols and conventions, active element conventions, current and voltage conventions, loops and meshes, nodes, coupled circuits and dot conventions.

Mesh Current Network Analysis :- Mesh currents, choice of mesh currents, number of mesh currents required in setting up mesh equations, setting up of mesh equations by inspection, self and mutual inductances, setting up mesh equations in the impedance matrix form by inspection, use of Cramer's rule, solution of linear mesh equations and circuit analysis using matrices.

Node Voltage Network Analysis :- Node voltages, number of nodal voltages required in setting up nodal equations, self and mutual admittances, setting up nodal equations in the form of admittance matrices by inspection., use of Cramer's rule , solutions of linear nodal equations and circuit analysis using matrices.

Network Theorems :- Linearity and superposition, independent and dependent sources and their transformations, Thevenin's , Norton's, Millman's , Tellengen's, Reciprocity, Substitution and Maximum power transfer theorems. Use of these theorems in circuit analysis, Duality and dual of a planner network.

Polyphase unbalanced Networks :- Analysis of polyphase circuits using Kirchoff's laws, analysis of unbalanced delta connected circuits, analysis of unbalanced three phase three wire and four wire star connected circuits, determination of neutral point potential and phase voltages for unbalanced star connected circuits.

DC Circuit Transients :- Laplace Transform, R-L, R-C and R-L-C d.c transients, two mesh transients, applications to circuit analysis using Laplace Transform method. Initial and Final value theorems.

Topics in Time Domain and Frequency Domain :- Unit step function , other unit functions, the impulse, ramp and doublet. Laplace transforms for shifted and singular functions, Convolution integral.

Wave form analysis by Fourier series, trigonometrical and complex exponential forms, the frequency spectra of periodic wave forms, the Fourier integral and continuous frequency spectra, Fourier transforms and their relations to Laplace transforms.

Network Functions and Two port parameters :- Two port network concepts, driving point and transfer impedance and admittances, series and parallel combinations of transform impedance. Definitions, calculations and interrelationship of impedance and admittance parameters for four terminal networks.

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B.E.-II (Electrical Engg.)

Semester - III

ELE 305 ELE Electrical Machines I

	Lecture	Tutorial	Practical	
Teaching Hours	3	1	2	
Examination Scheme Marks	100	25	Continuous Evaluation Examination	20 30

Direct Current Machines :- Construction, magnetic circuit, flux density distribution, e.m.f equation, power and torque equation, Armature windings-single layer and double layer windings, simple lap and wave windings. Armature reaction, demagnetizing and cross magnetizing ampere-turns, compensating winding ,Commutation , commutation time and type, reactance voltage, inter-poles, ampere-turns for inter-poles. Self and separate excitations, shunt, series and compound wound motors and generators, magnetization characteristics, failure to self excite. Performance characteristics of DC generators and motors.

Losses and efficiency-Testing and separation of losses., no load (Swinburn) test, Hopkinson Test, Field's Test, Retardation Test.DC motor speed control (armature and field) Ward Leonard control. DC Motor starting and starters. Starting resistance step calculations.

Transformers :- Single and three phase transformers, core and shell type, construction, transformer ratio, no load current, ideal transformer, real transformer: equivalent circuits and vector diagram, per unit impedance, regulation, losses, efficiency, open and short circuit tests, back to back test, Excitation phenomena,

Polyphase transformers :- standard connections, phase angle difference. V connection, Scott connections three phase to six phase conversion, Auto transformers Voltage and current ratios, advantages and limitations Parallel operation.

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ELE 306 ELE Computer Applications for Electrical Engineering

	Lecture	Tutorial	Practical
Teaching Hours	3	0	3
Examination Scheme Marks	100	0	Continuous Evaluation 30 Examination 45

The topics given below shall be taught along with stress on computer programming in C language).

Errors :- in Numerical Computation, their types and estimation.

Solution of Transcendental and Polynomial equations :- Bisection method, Secant Method, Newton Raphson method for Polynomial equation.

Solution to system of linear algebraic Equations :- Gauss elimination method, Gauss Jordon Method, GaussSeidal Iteration method.

Interpolation :- Linear interpolation and high order interpolation using Lagrange's and Newton Interpolation methods, Finite difference operators and difference tables.

Numerical Integration :- Trapezoidal rule, Simpson's 1/3 and 3/8 rules.

Solution to ordinary differential equations :- Taylor series, Euler's method, Euler's predictor corrector method, Runge Kutta method of Second and Fourth order.