

# VEER NARMAD SOUTH GUJARAT UNIVERSITY

## SCHEME FOR TEACHING & EXAMINATION B.E.- II (Information Technology)

B.E.II (IT) 3 <sup>rd</sup> Semester		Teaching Scheme			Examination Scheme							
					Theory Exam		Practical/Quiz/Viva/T.W. etc.					
Course	Course No.	L Hrs.	T Hrs.	P Hrs.	University Exam.		University Exam.		Tuto- rial	Cont. Evaluati- on	Total Marks	
					Durati- on Hrs.	Marks	Durati- on Hrs.	Marks				
Elements of Electrical Engineering	ELE 301 IT	3	1	2	3	100	3	30	25	20	75	
Probability and Statistics	ASH 302 IT	3	0	2	2	100	3	30	0	20	50	
Discrete Mathematics	ASH 303 CO/IT	3	1	0	3	100	0	0	25	0	25	
Elements of Business Management	IT 304 IT	3	0	0	3	100	0	0	0	0	25	
Electronics – I	EC 305 IT	3	1	2	3	100	3	30	25	20	50	
Data Structure & Programming Methodology	EC 306 CO/IT	3	1	2	3	100	3	30	25	20	75	
<b>TOTAL:</b>		<b>18</b>	<b>4</b>	<b>8</b>	<b>-</b>	<b>600</b>	<b>-</b>	<b>120</b>	<b>100</b>	<b>80</b>	<b>300</b>	
<b>Total Contact Hours: 30</b>						<b>Total Marks : 900</b>						

# VEER NARMAD SOUTH GUJARAT UNIVERSITY

BE-II (IT)

Semester - III

## ELEMENTS OF ELECTRICAL ENGINEERING: ELE 301 IT

	Lecture	Tutorial	Practical
Teaching Hours	3	1	2
Examination Scheme Marks	100	Cont. Evaluation: 10 Examination: 15	Cont. Evaluation: 20 Examination: 30

### (A) THEORY

- (1) **Machines:** construction and basic principle, simple lap and wave windings, emf, torque and power equations, circuit model, generating and motoring modes, magnetizing characteristics, introduction to armature reaction and commutation, self excited generators, shunt series and compound motors, speed control, efficiency and losses.
- (2) **Transformers:** fundamentals and construction of single phase and three phase transformers, ideal transformer, emf equation, no load conditions, loading, accounting for finite permeability and core losses, equivalent circuit, no load and short circuit, efficiency, auto-transformer, three phase transformers, star and delta connections.
- (3) **Induction Machines:** construction and simple theory of operation of three phase induction motor, equivalent circuit, torque speed characteristics, no load and blocked rotor tests, load test, starting, speed control.
- (4) **Network Concepts:**  
Network elements, symbols and conventions, active element conventions, current and voltage conventions, loop and meshes, nodes, coupled circuits, dot conventions, star – delta transformation, definitions of mesh currents and nodal voltages; Choice of mesh currents or nodal voltages for setting up operating equations necessary for network analysis. Self and mutual inductances. Setting up network equations by inspection in impedance or admittance matrix forms. Use of Cramer’s rule and analysis of linear networks using matrices.
- (5) **Circuit Transients:** Review of Laplace Transform, R-L, R-C and R-L-C, D.C. and A.C. transients, two mesh transients analysis using Laplace transform method; Initial and Final value theorems and their applications for s-domain circuits.
- (6) **Time-domain and frequency domain:** The unit step function; other unit functions, the impulse, ramp and doublet; the laplace transforms for shifted and singular functions; the convolution integral.

(7) **Waveform analysis by Fourier Series:** Introduction to trigonometrical and complex exponential forms; the frequency spectra of periodic wave forms; the Fourier Integral and continuous frequency spectra; Introduction to Fourier transforms and their relationships to Laplace transforms.

(8) **Network Functions and Two port parameters:** Poles and zeros of a function, physical and analytical concepts, Terminal and terminal pairs, Driving point immittances, transfer functions, Restriction of locations of poles and zeros in S-plane. Definitions, calculations and interrelationship of impedance, admittance, hybride and transmission line parameters for four terminal networks. Image impedance and its calculations for symmetrical and unsymmetrical  $\pi$ , T and Ladder Networks.

(B) **PRACTICALS:**

Based upon the theory course prescribed above.

(C) **TUTORIAL ASSIGNMENT:**

Based upon the theory course prescribed above.

(D) **REFERENCES:**

- (1) Nagrath J., Basic Electrical Engineering, TMH
- (2) M. V. Deshpande, Electrical Machines , Wheeler.
- (3) S. K. Bhattacharya, Electrical Machines, TMH
- (4) B.R.Gupta & Vandana Singal, Fundamental of Electrical Machines., New Age International.
- (5) Van Valkenberg: Network Analysis, Asia Publishing House.
- (6) Edminister: Electrical Circuits, McGraw Hills
- (7) Hayt And Kimmerly: Engineering Circuit Analysis, McGraw Hills.
- (8) A. Sudharkar & S. P. Shyammohan, Circuits and Networks Analysis & Synthesis, Tata McGraw Hill.
- (9) A. Chakrabarti, Circuit Theory (Analysis & Synthesis), Dhanpat Rai & Son.

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# VEER NARMAD SOUTH GUJARAT UNIVERSITY

BE-II (IT)

Semester - III

## PROBABILITY AND STATISTICS: ASH 302 IT

	Lecture	Tutorial	Practical
Teaching Hours	3	0	2
Examination Scheme Marks	100	Cont. Evaluation: 00 Examination: 00	Cont. Evaluation: 20 Examination: 30

### (A) THEORY

- (1) **Introduction:** Treatment of data, Pareto diagrams, dot diagrams and frequency distributions; descriptive measures; calculation of mean and variance.
- (2) **Probability:** Sample spaces and events; counting; probability and axioms of probability; elementary theorems; conditional probability and Bayes' theorem; mathematical expectation and decision-making.
- (3) **Probability distributions:** Random variables; the binomial distribution; mean and variance of a probability distribution; Poisson approximation to the Binomial distribution; Poisson processes, Simulation.
- (4) **Probability densities:** Continuous random variables; the normal distribution; normal approximation to the binomial distribution; the uniform distribution; test for normality and transformation to near normality. Simulation.
- (5) **Sampling distributions:** Population and samples; sampling distribution of the mean (Known and unknown standard deviation), and of the variance.
- (6) **Inferences:** Point and interval estimation, Tests of hypotheses; null hypotheses and significance tests; hypotheses concerning one mean; relation between tests and confidence intervals. Estimation of variances and hypotheses concerning one variance. Simple applications in quality control.

### (B) PRACTICALS:

Based upon the theory course prescribed above.

### (B) REFERENCES

- (1) I R Miller, J E Freund & R Johnson  
Probability and statistics for Engineers  
Prentice Hall of India, 5<sup>th</sup> edition
- (2) J S Milton & J C Arnold  
Probability and statistics in the Engineering and Computing Sciences  
McGraw Hill International Edition
- (3) T. Veerajan  
Probability Statistics and Random Processes  
Tata Mc-GrawHill

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# VEER NARMAD SOUTH GUJARAT UNIVERSITY

BE-II (IT)

Semester - III

## DISCRETE MATHEMATICS: ASH 303 CO/IT

	Lecture	Tutorial	Practical
Teaching Hours	3	1	0
Examination Scheme Marks	100	Cont. Evaluation: 10 Examination: 15	Cont. Evaluation: 00 Examination: 00

(A) **THEORY**

1. Discrete mathematical models, Mathematical reasoning, Sets, Relations, Functions, Infinite Sets, Groups, Normal groups, Homomorphism, Lattice, Boolean Algebra, Method of generating new algebra from old graph, planar graphs, Trees, Cutsets, Connectivity, Partitions, Transversability, Introduction to combinatorics.

(C) **TUTORIAL ASSIGNMENTS:**

Based upon the theory course prescribed above

(C) **REFERENCES:**

1. Liu C. L.: Elements of Discrete Mathematics, 2nd ed., MH, 1985.
2. Vilenkin N.: Combinatorial Mathematics, Mir Pub., Moscow, 1974.
3. Narsing Deo: Graph Theory with Application to Computer Science, PHI.

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# VEER NARMAD SOUTH GUJARAT UNIVERSITY

BE-II (IT)

Semester - III

## ELEMENTS OF BUSINESS MANAGEMENT: IT 304 IT

	Lecture	Tutorial	Practical
Teaching Hours	3	0	0
Examination Scheme Marks	100	Cont. Evaluation: 00 Examination: 00	Cont. Evaluation: 00 Examination: 00

(A) **THEORY:**

1. **Business Management Concept:**  
Introduction, Nature, Universality, Thoughts & functions of Management, Management Levels & its functions, Organisational Management
2. **Organisation:**  
Aim, Nature, Organisation theories, System approach of organization, Types, Forms of an organization, Organisational Structure, Organization functions : Purchasing , Operation. Marketing and sales, Finance, product development, Quality, personnel, factors affecting Company Organization.
3. **Finance:**  
Introduction, Financial systems, Financial accounting, Budgeting-Types of budgets, Management accounting, Business plans.
4. **Product development:**  
Introduction, Product Lifecycle & Gap analysis, An ideal product development process, Models of product development process, Management Techniques in product development.
5. **Operation management:**  
Introduction, Organization of manufacturing; Production planning and control; materials management.
6. **Quality management:**  
Introduction, inspection and test; Quality assurance and ISO 9000; Total Quality Management; Tools and techniques; related issues, factors and costs.
7. **Personnel management:**  
Introduction, deploying & Employing people, Motivation, Leadership, Employee appraisal-aim & formal appraisal schemes, training & development methods, payment system.
8. **Team – work, creativity and personal management:**  
Introduction, Team working; group dynamics; Problem solving & decision making, Time management, Self appraisal-career planning, Curricular vitae
9. **Communication Skill :**  
Introduction Communication System, Information gathering, written & oral communications.

**(B) REFERENCES:**

- (1) Gail Freeman – Bell and James Balkwill  
Management in Engineering  
Prentice Hall International, 2<sup>nd</sup> Edition, 1996.
- (2) S. A. Sherlekar  
Modern Business Organization and management  
(A System Approach)  
Himalaya  
Y. K. Bhushan
- (3) Fundamentals of Business Organization and Management  
S. Chand & Company

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# VEER NARMAD SOUTH GUJARAT UNIVERSITY

BE-II (IT)

Semester - III

## ELECTRONICS - I : EC 305 IT

	Lecture	Tutorial	Practical
Teaching Hours	3	1	2
Examination Scheme Marks	100	Cont. Evaluation: 10 Examination: 15	Cont. Evaluation: 20 Examination: 30

(A) **THEORY:**

- (1) **Junction Diode Characteristics and Circuits:** Semiconductor materials, Energy levels, Extrinsic materials, Ideal Diode, Introduction to Semiconductor junction Diode; Nonlinear properties; Basic theory and analysis of simple diode circuit; DC load line; Small signal analysis and concept of static and dynamic resistance; AC load line; Diode capacitance; Temperature effects of diode; Characteristics of Zener diode, schottky diode, PIN diode and its applications, Manufacturer's specifications. Rectifiers: Circuit analysis of halfwave and full wave rectifier using semiconductor devices; Bridge rectifier; Ripple and form factor calculation for above circuits; Efficiency and PIV for above circuits; Filters; Analysis of filter and calculation of ripple and regulation.
- (2) **Transistors:** Transistor construction and its operation, Current flow mechanism in the junction transistor, Transistor characteristic, Analysis of CE, CB & CC configuration; Power calculations; Infinite bypass capacitor; Infinite coupling capacitors; Different dc biasing methods; Field Effect Transistor; Introduction to JFET and MOSFET; Construction and characteristic of JFETs, Transfer characteristic of JFET; Construction of MOSFET, Depletion type MOSFET (N-type and P-type), Enhancement Type MOSFET(N-type & P-type); FET biasing, Fixed bias, self bias, voltage divider biasing, Boot strapping , Darlington amplifier,Cascode amplifier. Factors affecting stability; Quiescent point variation due to uncertainty in Beta; Effect of temperature on the Q point; Stability factor analysis; Temperature compensation using diode biasing (Single diode and Two diode).
- (3) **Frequency Analysis And Design :** Importance of Hybrid parameters; CE configuration; CB configuration; CC configuration; Impedance reflection; Phase splitter; Interpretation of manufacturers specification. Low frequency analysis of FET amplifier; Source bypass capacitor; Drain coupling capacitor and gate coupling capacitor. High frequency parameters (Hybrid  $\Pi$  Parameters), Importance of Hybrid  $\Pi$  Parameters, relation Between H parameters and  $\Pi$  Parameters.
- (4) **Multistage transistor amplifiers :** Cascading of amplifier stages; Frequency response of the cascaded stages , step response of the amplifier , R-C coupled amplifier with bipolar transistor response ,
- (5) **Integrated Circuits Fabrication and Characteristics Technology:** Integrated circuit; Basic Monolithic IC, The Fabrication steps, Transistor and its integrated circuit; Integrated diode capacitor and resistor; Integrated circuit inductor;

(B) **PRACTICALS:**

Based upon the theory course prescribed above.

(C) **TUTORIAL ASSIGNMENTS:**

Based upon the theory course prescribed above.

(D) **REFERENCES**

- (1) Schilling & Belove: Electronic Circuits-Discrete and Integrated, McGraw-Hill Publication, 3rd edition 1989, Reprint 1994.
- (2) Boylestad & Nashlesky: Electronic Devices & Circuit Theory, Prentice-Hall India, and 8th edition 2000.
- (3) Sedra & Smith: Microelectronic Circuits, 4<sup>th</sup> Edition, 2000. Oxford University Press.
- (4) Millman & Halkias: Integrated Electronics, Tata McGraw-Hill Pub, 1992

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# VEER NARMAD SOUTH GUJARAT UNIVERSITY

BE-II (IT)

Semester - III

## DATA STRUCTURE & PROGRAMMING METHODOLOGY: EC 306 CO/IT

	Lecture	Tutorial	Practical
Teaching Hours	3	1	2
Examination Scheme Marks	100	Cont. Evaluation: 10 Examination: 15	Cont. Evaluation: 20 Examination: 30

(A) **THEORY**

- (1) **Structured Approach To Programming:** Stepwise refinement techniques; programming techniques; documentation; Basic concepts in program testing and reasoning about programs: loop invariants; procedures; scope rules; recursion. Implementation of the algorithms for internal sorting and searching in C.
- (2) **Study Of Data Structures:** Arrays; records; strings; stacks; queues; lists; trees and graphs. Implementation of these in C.

(B) **PRACTICALS:**

Based upon the theory course prescribed above.

(C) **TUTORIAL ASSIGNMENTS:**

Based upon the theory course prescribed above.

(D) **REFERENCES:**

- (1) Trembley & Sorenson: An Introduction to Data Structures with Applications, 2nd edition, (TMH (1993)/ISED (1984)), Reprint - 1995.
- (2) Tanenbaum A.M. & Augenstein M. J.: Data Structures using C, Prentice-Hall India, 1981, Reprint 1996.
- (3) Lipschutz : Data Structures, Tata McGraw Hill, Reprint 1995.

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