



B.TECH - INFORMATION TECHNOLOGY

(FOUR YEAR FULL TIME)

CURRICULUM 2008

SEMESTER I

Code No.	Course Title	L	T	P	C
THEORY					
XIT101	Technical English	3	1	0	4
XIT102	Mathematics- I	3	1	0	4
XIT103	Applied Physics	3	1	0	4
XIT104	Applied Chemistry	3	1	0	4
XIT105	Engineering Graphics	2	0	3	4
XIT106	Digital Computer Fundamentals	4	0	0	4
PRACTICAL					
XIT107	Applied Physics Lab	0	0	3	2
XIT108	Applied Chemistry Lab	0	0	3	2
XIT109	Basic Workshop Practices	0	0	3	2

Total Hours: 34

Total Credits: 30

SEMESTER II

Code No.	Course Title	L	T	P	C
THEORY					
XIT201	Mathematics – II	3	1	0	4
XIT202	Linux Programming	3	0	0	3
XIT203	Computer Programming	4	0	0	4
XIT204	Fundamentals of Electric and Electronic Circuits	4	0	0	4
XIT205	Digital Systems Design	3	1	0	4
XIT206	Engineering Mechanics	3	1	0	4
PRACTICAL					
XIT207	Computer Programming Lab	0	0	3	2
XIT208	Communication Skills Enhancement	2	0	2	3
XIT209	Electronics Lab	0	0	3	2

Total Hours: 33

Total Credits: 30



SEMESTER III

Code No.	Course Title	L	T	P	C
THEORY					
XIT301	Professional Ethics & Human Values (IT)	3	0	0	3
XIT302	Discrete Mathematics	3	1	0	4
XIT303	Microprocessors and Microcontrollers	3	1	0	4
XIT304	Principles of Communication Engineering	3	1	0	4
XIT305	Signals and Systems	3	1	0	4
XIT306	Data Structures	3	1	0	4
PRACTICAL					
XIT307	Microprocessors and Microcontrollers Lab	0	0	3	2
XIT308	Data Structures Lab	0	0	3	2

Total Hours: 29

Total Credits: 27

SEMESTER IV

Code No.	Course Title	L	T	P	C
THEORY					
XIT401	Environmental Science and Engineering	3	0	0	3
XIT402	Probability and Statistics	3	1	0	4
XIT403	Information Coding Techniques	3	1	0	4
XIT404	Object Oriented Programming	3	0	0	3
XIT405	Digital Signal Processing	3	1	0	4
XIT406	Computer Architecture	3	1	0	4
PRACTICAL					
XIT407	Object Oriented Programming Lab	0	0	3	2
XIT408	DSP and Communications Systems Lab	0	0	3	2

Total Hours: 28

Total Credits: 26

SEMESTER V

Code No.	Course Title	L	T	P	C
THEORY					
XIT501	Total Quality Management	3	0	0	3
XIT502	Numerical Methods	3	1	0	4
XIT503	Operating Systems	3	0	0	3
XIT504	System Software	3	0	0	3
XIT505	Embedded Systems	3	0	0	3
XIT506	Database Management System	3	1	0	4
PRACTICAL					
XIT507	Operating System Lab	0	0	3	2
XIT508	Database Management System Lab	0	0	3	2

Total Hours: 26

Total Credits: 24

SEMESTER VI

Code No.	Course Title	L	T	P	C
THEORY					
XIT601	Object Oriented Analysis and Design	3	1	0	4
XIT602	Computer Networks	3	0	0	3
XIT603	Visual Programming	3	0	0	3
XIT604	Compiler Design	3	1	0	4
XIT605	Mobile Computing	3	0	0	3
XITE**	Elective – I	3	0	0	3
PRACTICAL					
XIT607	Visual Programming Lab	0	0	3	2
XIT608	Network Lab	0	0	3	2

Total Hours: 26

Total Credits: 24

SEMESTER VII

Code No.	Course Title	L	T	P	C
THEORY					
XIT701	Entrepreneurial Development Management	3	0	0	3
XIT702	C # and .NET Framework	3	0	0	3
XIT703	Software Engineering	3	1	0	4
XIT704	Graphics and Multimedia	3	0	0	3
XITE**	Elective – II	3	0	0	3
XITE**	Elective – III	3	0	0	3
PRACTICAL					
XIT707	C # and .NET Lab	0	0	3	2
XIT708	Graphics and Multimedia Lab	0	0	3	2
XIT709	Mini Project	0	0	3	4

Total Hours: 28

Total Credits: 27

SEMESTER VIII

Code No.	Course Title	L	T	P	C
THEORY					
XIT801	Social Engineering	3	0	0	3
XIT802	Cryptography and Network Security	3	1	0	4
XITE**	Elective – IV	3	0	0	3
XITE**	Elective – V	3	0	0	3
PRACTICAL					
XIT805	Project Work	0	0	12	6

Total Hours: 25

Total Credits: 19

Over all Credits: 207

LIST OF ELECTIVES

Code No.	Course Title	L	T	P	C
XITE51	Network Programming and Management	3	0	0	3
XITE52	Bio - informatics	3	0	0	3
XITE53	Pattern Recognition	3	0	0	3
XITE54	Artificial Intelligence	3	0	0	3
XITE55	Web Technology	3	0	0	3
XITE56	Data Mining And Data warehousing	3	0	0	3
XITE57	Mobile Networks	3	0	0	3
XITE58	Web services	3	0	0	3
XITE59	Nano Technology	3	0	0	3
XITE60	Soft Computing	3	0	0	3
XITE61	Free Open Source Software	3	0	0	3
XITE62	Web Engineering	3	0	0	3
XITE63	Software Testing	3	0	0	3
XITE64	User Interface Design	3	0	0	3
XITE65	Digital Image Processing	3	0	0	3
XITE66	Computer Installation & Trouble shooting	3	0	0	3
XITE67	Software Design	3	0	0	3
XITE68	Information Security	3	0	0	3
XITE69	VLSI Design	3	0	0	3
XITE70	Pervasive Computing	3	0	0	3
XITE71	High Performance Computing	3	0	0	3

NOTE:

- L** → LECTURE HOURS
- T** → TUTORIAL HOURS
- P** → PRACTICAL HOURS
- C** → CREDITS HOURS

SEMESTER I

XIT101 TECHNICAL ENGLISH

3 1 0 4

UNIT I FOCUS ON LANGUAGE

15

Word formation with prefixes and suffixes - synonyms and antonyms - nominal compounds, prepositions, homonyms, homophones and hyponyms, Parts of speech, use of words as nouns and verbs, phrasal verbs, connectives, sentences patterns.

Suggested Activities

- Using prefixes and suffixes to change the grammatical functions of words – giving synonyms and antonyms, using the same words and its derivatives of different forms
- Expansion of noun + noun phrases - correction of errors in the given sentences.
- Using comparative forms of adjectives in sentences giving a pair of purpose and function statements to be linked with expressions like to in order to so as to (Eg: He used the ignition key. He started the engine. He used the ignition key in order to start the engine)
- Identification of content words in the given text.
- Learning multi functional words that can serve both nouns and verbs
- Analyzing sentences into S,V,O, C and A.

Note: All examples pertaining to this unit should preferably be related to science and technology.

UNIT II FUNCTIONAL GRAMMAR

15

Tense forms and voice forms, concord, degrees of comparison, conditional clause, definition of technical terms, Sentences expressing, (purpose and function,) comparison and contrast, cause and effect constructions, imperatives, reported speeches, Modal verbs, infinitives, gerund, participles

Suggested Activities

Giving pairs of cause and effect statements to be linked with expressions like *as / since / because*. Rewriting imperative sentences using assertive form '*should*' (Store energy and tap it when required energy should be and tapped when it is required)

- Rewriting infinitive forms as gerunds (eg: To modernize the administrative office with computers is expensive, Modernizing the administrative office with computers is expensive) Fill in the blanks with appropriate prepositions.
- Choosing sentences in a given text that use different tense forms
- Subject-verb agreement of the sentences given practical
- Providing a context for the use of the tense forms - rewriting the sentences in the impersonal passive form Rewriting the sentences in the reported speeches

UNIT III READING

10

Techniques of Reading – Technical articles on invention and discoveries, Reading comprehension on biographies of eminent scientists, engineers and successful entrepreneurs, Practicing -skimming and scanning, Rhetorical functions (narrative, descriptive and argumentative) sequencing of sentences. Connective adverbs. Idioms and phrases, phrasal verbs and cloze test.

Suggested Activities

- Taking a quick glance at the text to predict the content – reading to identify the main theme.
- Identifying the topic sentence in a paragraph – providing suitable titles for paragraphs – matching the titles with the paragraphs.
- Guessing the contextual meaning of words – comprehending a passage and answering questions of varied kinds.
- Transferring of information from a text to graphical representations like tree diagram / flow chart / bar chart / pie chart/ tables.
- Filling the gaps with appropriate missing words from the given list.
- Making notes based on a passage in the format given.
- Using an appropriate format to make notes from a given passage.
- Providing a suitable title after reading the passage.
- Identifying main and supporting ideas by scanning.
- Sequencing of jumbled sentences using linguistic clues (e.g.: reference words).

UNIT IV WRITING I

10

Framing questions and answering, (“Wh” type and “Yes or No”) type note making, (guided and open) making lists, stating problems and proposing solutions, recommendations, instructions, check lists, technical report writing, decoding from graphical representation (flow chart, pie chart, tree diagram) numerical expressions.

Suggested Activities

- Identifying the phrases used for making recommendations in given texts and employing them in making recommendations.
- Writing checklists in the appropriate format.
- Writing instructions for performing tasks at home or at work (use of imperatives).
- Summarizing the discussions and other oral practice activities like role play in the prescribed textbooks.
- Essay writing based on discussion of scientific and technical topics given in the prescribed textbooks.

Paragraph writing, essay writing, technical report writing, letter writing, (personal, business, letter of application, letter to the editor) resume writing, drafting e-mails, minutes of meeting, memorandum, creative writing.

Suggested Activities

- Using appropriate expressions to define a concept / describe an object / device / process.
- Writing paragraphs on different scientific discourse patterns like classification, comparison and problem / solution – identifying the topic sentence.
- Using unity, cohesion and coherence in paragraph writing.
- Writing formal and business letters using the appropriate format.
- Note – making (guided and open).
- Summarizing and writing paragraphs based on listening tasks in the prescribed textbooks.
- Making recommendations by using modal auxiliary verbs like *should*, *must*, *ought to* etc.

L: 45; T:15; Total: 60

TEXT BOOK:

1. Department of Humanities and Social Sciences, Anna University, English for Engineers and Technologists, Vols. I & II (Combined Edition), Orient Longman Pvt. Ltd., 2006.

REFERENCES:

1. V.R. Narayanaswami, Strengthen Your Writing, 3rd Edition, Orient Longman, 2005.
2. Andrea J. Rutherford, Basic Communication Skills for Technology, 1st Edition, Pearson Education Asia (Singapore) Pvt. Ltd., Bangalore, 2001.
3. Nell Ann Pickett, Ann A. Laster, Katherine E. Staples, Technical English (Writing, Reading and Speaking), 8th Edition, Pearson Education, USA, Addison Wesley Longman Inc., 2001.
4. “Power words in Pairs”. Emerald Publishers – Chennai

XIT102 MATHEMATICS – I**3 1 0 4****UNIT I MATRICES****9+3**

Eigen values and Eigen vectors of a real matrix – Characteristic equation Properties of Eigen values and Eigen vectors - Cayley - Hamilton theorem (excluding proof) - Similarity transformation (Concept only) – Orthogonal matrix - Orthogonal transformation of a symmetric matrix to diagonal form – Reduction of quadratic form to Canonical form by Orthogonal transformation.

UNIT II THREE DIMENSIONAL ANALYTICAL GEOMETRY**9+3**

Direction Cosine and Ratios – Angle between two lines – Equation of plane – Equation of Straight line – Coplanar lines – shortest distance between skew lines – Sphere – Tangent plane – Plane section of a sphere

UNIT III GEOMETRICAL APPLICATIONS OF DIFFERENTIAL CALCULUS**9+3**

Curvature – Cartesian and polar co – ordinates – Centre and radius of curvature – Circle of curvature – Involutives and evolutes – Envelops – Properties of envelopes and evolutes.

UNIT IV FUNCTION OF SEVERAL VARIABLES**9+3**

Functions of two variables – Partial derivatives – Total differential – Taylor’s expansion – Maxima and Minima – Constrained maxima and minima – Lagrange’s Multiplier method – Jacobians .

UNIT V ORDINARY DIFFERENTIAL EQUATIONS (ODE) AND APPLICATIONS 9+3

Linear equations of second order with constant and variable coefficients - Simultaneous first order linear equations with constant coefficients – Method of variation of parameters.

L:45; T:15; Total: 60

TEXT BOOKS:

1. Grewal .B.S., “Higher Engineering Mathematics”, 38th Edition- Khanna Publication –Delhi, 2004.
2. Kreyszi.E., “Advance Engineering Mathematics”, 8th Edition-John Wiley & Son (Asia) Ltd, Singapore,. 2001.

REFERENCES:

1. Bali. N.P., Narayana Iyengar, and Chand.N., “Engineering Mathematics” Laxmi Publication Pvt. Ltd-New Delhi, 2003.
2. Veerarajan.T., “Engineering Mathematics (For First Year)”, 4th Edition , John Wiley & Son -Hill Publishing company Ltd, New Delhi, 2005.
3. Kandasamy. P., Thilagavathy. K, and Gunavathy. K., “Engineering Mathematics”-Volume I &II, S. Chand & Co, New Delhi, 2005.
4. Venkataraman. M. K., “Engineering Mathematics”-Volume I &II, Revised enlarged 4th Edition, The National Publishing Company-Chennai, 2004.

APPLIED PHYSICS
(Common to B.E. / B.Tech all Branches)

XIT103 APPLIED PHYSICS

3 1 0 4

SEMESTER I

UNIT-I Acoustics and Ultrasonics

9

Acoustics: Classification of sound – Characteristics of musical sound – Loudness – Weber-Fechner law – Decibel – Absorption Coefficient – Reverberation – Reverberation time – Sabine's Formula (growth & decay) – Factors affecting acoustics of buildings (reverberation time, loudness, focusing, echo, echelon effect, resonance and noise) and their remedies.

Ultrasonics: Production: Magnetostriction and Piezo electric methods –Applications

UNIT-II Wave Optics, Lasers and Fibre Optics

9

Wave Optics: Photo elasticity: Birefringence – Stress-optic law - Effect of a stressed model in a plane polariscope – Isoclinic and Isochromatic fringes (definitions) – Photoelastic bench.

Laser: Nd – YAG laser, CO₂ laser, semiconductor laser (homojunction) – Uses of lasers – Holography.

Fibre Optics: Principle and propagation of light in optical fibres – Numerical Aperture and Acceptance angle – Types of optical fibres (material, refractive index, mode) – Applications: Fibre optics communication system (block diagram only).

UNIT-III Crystal Physics and NDT

9

Crystal Physics: Lattice – Unit cell – Bravais lattice – Lattice planes – Miller indices – 'd' spacing in cubic lattice – Calculation of number of atoms per unit cell – Atomic radius – Coordination number – Packing factor for SC, BCC, FCC and HCP structures.

NDT: Liquid penetrant method – Ultrasonic flaw detection – Ultrasonic flaw detector (block diagram)– X-ray Radiography: displacement method – X-Ray Fluoroscopy– Merits and Demerits of each method

UNIT- IV Conducting Materials

9

Conductors: Wiedermann Franz law - Lorentz number –Fermi distribution function – Density of energy states – carrier concentration - effect of temperature on fermi energy level

Semiconductors: Semiconductor-properties- types of semiconductor, Hall effect – Determination of Hall co-efficient.

Superconductors: Super conducting phenomena – Properties of superconductors – Meissner effect , Isotope effect – Type I and Type II superconductors– Applications – Magnetic levitation and SQUID

UNIT–V Dielectrics and New Engineering Materials_

9

Dielectrics: Electrical susceptibility - Dielectric constant – Electronic, ionic, orientational and space charge polarization – Frequency and temperature dependence of polarization – Internal field – Claussius-Mosotti relation (derivation) - Dielectric loss – Dielectric breakdown – Uses of dielectric materials (Capacitor and Transformer).

Introduction to New Materials: Metallic glasses – Nano materials – Shape memory alloys – Bio-materials.

L:45; T:15; Total:60

TEXT BOOKS:

1. Avadhanulu M.N. and Kshirsagar P.G., “A Text Book of Engineering Physics”, S.Chand & Company Ltd., 7th Enlarged Revised Ed., 2005.
2. Gaur R. K. and Gupta S. L., “Engineering Physics”, Dhanpat Rai Publishers, New Delhi, 2001.

REFERENCES:

1. Pillai S. O., “Solid State Physics”, New Age International Publication, New Delhi, Fifth Edition, 2003.
2. Rajendran V. and Marikani A., “Materials Science”, Tata McGraw Hill Publishing Company Ltd, New Delhi, 2004.

UNIT I WATER TECHNOLOGY**9+3**

Source and types of water – water quality parameters – definition and expression – hard water – estimation of hardness (EDTA method) and alkalinity – boiler feed water – requirements – disadvantages of using hard water in boilers – internal conditioning (phosphate, calgon and carbonate conditioning methods) – external conditioning – demineralization process – desalination (RO method) – domestic water treatment.

UNIT II ELECTROCHEMISTRY**9+3**

Electrode potentials – difference between electrolytic cells and electrochemical cells – Standard electrodes (H_2 and calomel electrodes) – Determination of pH using glass electrodes – Nernst equation – problems – electrochemical series – emf – measurements and its applications – Galvanic cells – Concentration cell – problems – reversible and irreversible cells – conductometric titrations.

UNIT III CORROSION AND ITS INHIBITION**9+3**

Corrosion – principles of chemical corrosion – Pilling – Bedworth rule – principles of electrochemical corrosion – difference between chemical and electrochemical corrosion – types of corrosion – factors influencing corrosion – corrosion control methods – pre-treatment of metal surface – electroplating and electroless plating.

UNIT IV NUCLEAR ENERGY AND ENERGY STORAGE DEVICES**9+3**

Nuclear fission process – definition, mechanism and characteristics – chain reactions – nuclear energy and its calculations – types of nuclear fission reaction – atom bomb – light water nuclear power plant – breeder reactor – batteries – introduction – types of batteries – primary and secondary batteries – dry cell – lead acid, Ni-Cd and Li batteries – alkaline batteries – principles and applications of solar cells.

UNIT V POLYMERS**9+3**

Monomers and polymers – types of polymerization reaction – mechanism of polymerization (free radical) – engineering plastics – PVC, teflon, polycarbonate, polyurethane and thermocole – properties – applications – compounding of plastics, moulding methods – injection, compression moulding and blow moulding – polymer blends and alloys.

L:45; T:15; Total: 60

TEXT BOOKS:

1. P.C. Jain and Monicka Jain, Engineering Chemistry, Dhanpat Raj Publishing Company (P) Ltd, New Delhi – 2002.
2. S.S. Dara. A Text book of Engineering Chemistry, S. Chand & Company Ltd, New Delhi – 2003.

REFERENCES:

1. B.K. Sharma, Engineering Chemistry, Krishna Prakasam Media (P) Ltd., Meerut, 2001.
2. Mars G. Fontana, Corrosion Engineering, Tata McGraw Hill Publishing Co., New Delhi, 2005.

TEXT BOOKS:

1. K.Venugopal “Engineering Graphics”, New Age International (P) Limited, 2002.
2. K.V. Natarajan “A text book of Engineering Graphics”, Dhanalakshmi Publishers, Chennai, 2006.

REFERENCES:

1. N.D. Bhatt “Engineering Drawing” Charotar publishing House 46th Edition, 2003.
2. K.R. Gopalakrishnana. “Engineering Drawing” (Vol. I & II) Subhas Publications – 1998.
3. Luzadder and Duff, “Fundamentals of Engineering Drawing” Prentice Hall of India Pvt Ltd, XI Edition - 2001.

STANDARDS:

1. IS10711 – 2001 Technical products Documentation – Size and Layout of Drawing sheets.
2. IS9609 (Parts 0 & 1) – 2001 Technical product Documentation – Lettering.
3. IS11669 – 1986 Dimensioning on Technical Drawings.
4. IS15021 (Parts 1-4) – 2001 Technical Drawings – Projection Methods.

NOTE:

1. Five questions, each of either or type covering all units of the syllabus.
2. All questions will carry equal marks of 20 each making a total of 100.
3. The answer paper shall consist of drawing sheets of A3 size only. The students will be permitted to use appropriate scale to fit solution within A3 size.

UNIT I DIGITAL CONCEPTS**8**

Digital Computer Fundamentals – Block diagram of a computer – Components of a computer system – Digital and Analog quantities – Binary digits – Logic Levels – Digital Waveforms – Basic Logic operations – Digital Integrated Circuits.

UNIT II NUMBER SYSTEMS**12**

Number Representaion – Decimal, Binary, Octal, Hexadecimal and BCD number – Binary Arithmetic – Binary addition – Unsigned and Signed numbers – one's and two's complements of Binary numbers – Arithmetic operations with signed numbers – Number system conversions – Digital codes.

UNIT III BOOLEAN ALGEBRA AND LOGIC SIMPLIFICATION**16**

Logic gates – AND, OR,NOT,NAND, NOR, XOR and XNOR Gates – Laws and Rules of Boolean algebra – DeMorgan's Theorems – Standard forms of ?Booleans Expressions – Sum of products – Product of sums – Boolean Expression and Truth Tables – Boolean Expression Minimization using Boolean laws – The kamaugh Map – Sum of Products and Products of Sum Minimization.

UNIT IV HARDWARE AND SOFTWARE**10**

Proceession Devices – Memory Devices – Input and Output Devices – Optical Input Device – Audiovisual Input Devices – Monitors – Printing Devices – Storage Devices – Magnetic and Optical Storage Devices – System – Application Software – Graphics and Multimedia.

UNIT V NETWORKING FUNDAMENTALS**14**

Data Communication with Standard Telephone Lines – Modems – Digital Data Connections – Broadband Connections – DSL Technologies – Cable Modem Connections – Computer Networking Basics – Common Type of Networks – Structuring of Networks – Network Media and Hardware

L: 60; Total : 60

TEXT BOOKS:

1. Thomas L.Floyd and R.P.Jain, "digital Fundamentals", 8th Edition, Pearson Education,2007.
2. Peter Norton. "Introduction to Computers". 6th Edition, Tata Mc Graw Hill, New Delhi, 2006.

REFERENCES:

1. Morris Mano, "Digital Design", 3rd Edition, Pearson Education, 2006.
2. Raj kamal, "Digital System: Principles and Design", 1st Edition, Pearson Educaion, 2007.
3. Albert Paul Malvino, Donald p.Leech,"Digital Principles and Applications", 6th Edition, Mc Graw Publishers, 2007.

PHYSICS LABORATORY
(Common to all branches of B.E. / B.Tech)

Semester I

LIST OF EXPERIMENTS

1. Torsional Pendulum – Determination of moment of inertia of disc and rigidity modulus of the material of a wire.
2. Non -Uniform Bending – Determination of Young’s Modulus.
3. Viscosity – Determination of Co-efficient of Viscosity of a liquid by Poiseuille’s flow.
4. Spectrometer – Dispersive power of a prism.
5. Air wedge - Determination of thickness of thin wire.
6. Lee’s Disc – Determination of thermal conductivity of a bad conductor.
7. Spectrometer – Determination of wavelength of Hg source using Grating.
8. Band gap determination of a semiconductor.
9. Spectrometer – id curve.
10. Semiconductor laser –
 - i. Determination of wavelength of Laser using grating.
 - ii. Particle size determination.
 - iii. Determination of numerical aperture and acceptance angle of an optical fibre.

LIST OF EXPERIMENTS (Any 10 Experiments)

- 1) Determination of total hardness, temporary & permanent hardness of water by EDTA method.
- 2) Determination of alkalinity of water sample.
- 3) Determination of chloride content of water sample by argentometric method.
- 4) Determination of DO content by Winkler's method.
- 5) Estimation of copper in brass.
- 6) Determination of strength of Hydrochloric acid by pH metric method.
- 7) Conductometric titration between strong acid and strong base.
- 8) Conductometric titration of mixture of acids.
- 9) Conductometric precipitation titration using barium chloride and sodium sulphate.
- 10) Determination of strength of iron by potentiometric method using dichromate.
- 11) Estimation of iron (1,10 – phenanthroline / thiocyanate method) or Ni (DMG) in the given solution by spectrometric method
- 12) Determination of sodium and potassium ions in water sample by flame photometric method.
- 13) Determination of molecular weight of a polymer by viscometry method.
- 14) Determination of percentage of calcium in limestone by EDTA method.

P: 45**References for Chemistry Lab**

- (1) J. Mendham, R.C. Denney, J.D. Barnes and N.J.K. Thomas, Vogel's Textbook of Quantitative Chemical Analysis, 6th Edition, Pearson Education, 2004.
- (2) D.P. Shoemaker and C.W. Garland, Experiments in Physical Chemistry, McGraw Hill, London.

- A) WOOD WORK** : Sawing, planing and making common joints like TEE, Half lap and dovetail (any two)
- B) PLUMBING** : Basic pipe connection using valves, taps, couplings, unions, reducers, elbows in household fitting - Practice in mixed pipe connections: Metal, plastic and flexible pipes used in household appliances Preparation of line sketches for (i) water supply lines (ii) sewage lines.
- C) DEMONSTRATION (CIVIL ENGINEERING)** : Study of pipe connections on the suction and delivery pipe layouts.
Study of joints in door panels, wooden furniture.
Bar bending -Straightening of rods and cutting- 90°, 130° bend formation - 45°, 30° crank formation-Stirrups fabrication-Binding and placing of steel reinforcement
- D) FITTING** : Square, dovetail and hemisphere fitting of metal plate of 3mm
- E) WELDING** : (i) Preparation of arc welding of butt joints, lap joints and tee joints.
(ii) Gas welding practice.

P: 45

XIT201 MATHEMATICS -II 3 1 0 4

UNIT I MULTIPLE INTEGRALS 9+3

Double integration – Cartesian and polar coordinates – Change of order of integration – Area as a double integral – Triple integration in Cartesian coordinates – Change of variables between Cartesian and polar coordinates and between Cartesian and cylindrical / spherical polar coordinates.

UNIT II VECTOR CALCULUS 9+3

Gradient, divergence and curl – Line, surface and volume integrals – Green's, Gauss divergence and Stoke's theorems (without proof) – Verification of the above theorems and evaluation of integrals using them.

UNIT III ANALYTIC FUNCTIONS 9+3

Function of a complex variable – Analytic function – Necessary conditions – Cauchy – Riemann equations in Cartesian coordinates – Sufficient conditions (Proof not included) – Properties of analytic function – Determination of harmonic conjugate by Milne – Thomson method – Conformal mapping – $z \rightarrow w$ bilinear transformation

UNIT IV COMPLEX INTEGRATION 9+3

Statement and application of Cauchy's theorem and Cauchy's integral formula – Taylor and Laurent expansion – Singularities – Classification – Residues – Cauchy's residue theorem – Contour integration – Unit circle and semi-circular contours (excluding poles on real axis).

UNIT V LAPLACE TRANSFORM 9+3

Laplace Transform – Sufficient conditions – Transforms of elementary functions – Basic properties – Inverse transforms – Derivatives and integrals of transforms – Transforms of derivatives and integrals – Convolution theorem – Transform of periodic functions – Application to solution of linear ordinary differential equations up to second order with constant coefficients.

L: 45; T:15; Total: 60

TEXT BOOKS:

1. Grewal, B.S., "Higher Engineering Mathematics", Thirty Sixth Edition, Khanna Publishers, Delhi, 2001.
2. Kreyzig, E., "Advanced Engineering Mathematics", Eighth Edition, John Wiley & Sons (Asia) Pte, Ltd., Singapore, 2001.

REFERENCE:

1. Narayanan, S., Manicavachagom Pillay, T.K. and Ramaniah, G., "Advanced Mathematics for Engineering Students", Volumes I and III, S. Viswanathan (Printers and Publishers) Pvt. Ltd., Chennai, 2002.

UNIT I UNIX ARCHITECTURE AND COMMAND USAGE**9**

The UNIX Operating System- Knowing Your Machine-A Brief Session-How It All Clicked-Linux and GNU-The UNIX Architecture-Features of UNIX-POSIX and the Single UNIX Specification-Locating Commands-Command Structure-Flexibility of Command Usage-Man Browsing the Manual Pages on-line-Understanding the man Documentation.

UNIT II GENERAL PURPOSE UTILITIES**8**

The calendar-Displaying the System Date-Displaying a Message-An Alternative to echo-The Calculator-Recording Your Session-Email Basics-The Universal Mailer- Changing Your Password- Knowing Your Machine's Characteristics-Knowing Your Terminal-Displaying and Setting Terminal Characteristics.

UNIT III THE FILE SYSTEM**10**

The File-The Parent-Child Relationship-The HOME Variable The Home Directory – Checking Your Current Directory-Changing the Current Directory-Making Directories-Removing Directories-Absolute Pathnames-Relative Pathnames-Listing Directory Contents-The UNIX File System.

Displaying and Creating Files-Copying a File-Deleting Files-Renaming Files-Paging Output-The IP Subsystem: Printing a File-Knowing the File Types-Counting Lines, Words and Characters-Displaying Data in Octal-Comparing Two Files-Converting and Archival Program-Compressing and Archiving Together.

UNIT IV THE VIBASICS**9**

Vi Basics-Input Mode-Entering and Replacing Text –Saving Text and Quitting –the ex Mode-Navigation-Editing Text-Undoing Last Editing Instructions -Repeating the Last Command -Searching for a Pattern -Substitution-Search and Replace.

UNIT V THE SHELL**9**

The Shell's Interpretive Cycle-Shell Offerings-Pattern Matching- the Wild-cards-Escaping and Quoting-Redirection:The Three Standard Files-Two Special Files-Pipes-Creating Tee-Command Substitution-Shell Variables.

L: 45; Total : 45

TEXT BOOK:

1. Unix: Concepts and Applications, Sumitabha Das, 4th Edition, Tata McGrawHill, 2006.

REFERENCES:

1. Using LINUX: Simple Solutions and Essential Skill, Bill Ball, Prentice Hall of India (PHI), 2000.
2. Mastering LINUX, Premium Edition, Auman Danesh, BPB Publications, New Delhi, 2000.

TEXT BOOKS:

1. Byron Gottfried, "Programming with C", II Edition, (Indian Adapted Edition), TMH publications, 2006.
2. Yeshwant Kanethker, "Let us C", BPB Publications, 2004

REFERENCES:

1. Brian W. Kernighan and Dennis M. Ritchie, "The C Programming Language", Pearson Education Inc. (2005).
2. Behrouz A. Forouzan and Richard. F. Gilberg, "A Structured Programming Approach Using C", II Edition, Brooks–Cole Thomson Learning Publications, 2001.
3. Johnsonbaugh R. and Kalin M., "Applications Programming in ANSI C", III Edition, Pearson Education India, 2003.

**XIT204 FUNDAMENTALS OF ELECTRIC AND
ELECTRONIC CIRCUITS**

4 0 0 4

UNIT 1 BASICS OF CIRCUITS

12

Charge - Current – Voltage – Power – Voltage source – Current source- resistor – Network – Circuit – Ohm's Law Single loop circuit – Single node pair circuit- Series and parallel connected sources – resistors in series and parallel – Voltage and current division

UNIT II CIRCUIT ANALYSIS

12

Kirchoff's current law – Kirchoff's voltage law –Nodal analysis – mesh analysis – linearity and superposition - Source transformation – Thevenin and Norton equivalent Circuits – Maximum power transfer – delta to y conversion.

UNIT III ELECTRON DEVICES

12

Conduction in semiconductors – Holes and electrons in intrinsic semiconductor – Carrier concentration in intrinsic semiconductor. Fermi level in intrinsic semiconductor; Impurities and Fermi levels in impure semiconductor; Diffusion. Characteristics - PN Junction Diode,Zener diode,BJT,FET,MOSFET,SCR

UNIT IV TRANSISTORS

12

Transistor construction- Transistor biasing-Operation of NPN Transistor- Operation of NPN Transistor-Types of configurations-CB,CE and CC-Transistor as a Amplifier-Break down in transistor.

UNIT V AMPLIFIERS AND OSCILLATORS

12

Amplifiers-Single Stage, MultiStage Amplifiers-CE,CC,CS.Operational Amplifiers-feedback amplifiers.Oscillators- Conditions for oscillations LC,RC, Phase shift, Colpitts, Clapp, Crystal Oscillator- Break down in transistors.

L : 60; Total : 60

TEXT BOOKS:

1. Sudhakar, A. and Shyam Mohan S.P., 'Circuits and Network Analysis and Synthesis', Tata McGraw-Hill Publishing C.Ltd., New Delhi, 1994.
2. Paranjothi S.R., 'Electric Circuit Analysis', New Age International Ltd., Delhi, 2nd Edition, 2000.
3. David A. Bell – Electronic Devices and Circuits - Prentice Hall of India Pvt. Ltd., Fourth Edition-2003.
4. Edminister, J.A., 'Theory and Problems of Electric Circuits', Schaum's outline series McGraw Hill Book Company, 2nd Edition, 1983.
5. Millman and Halkias. C., "Integrated Electronics", Tata McGraw-Hill 1991.

REFERENCES:

1. Hyatt, W.H. Jr and Kemmerly, J.E., 'Engineering Circuits Analysis', McGraw Hill International Editions, 1993.
2. Edminister, J.A., 'Theory and Problems of Electric Circuits', Schaum's outline series McGraw Hill Book Company, 2nd Edition, 1983.
3. Robert L. Boylestad, Louis Nashelsky – Electronic Devices and Circuit Theory, Prentice Hall of India Pvt. Ltd., Sixth Edition-2000.
4. David A. Bell – Electronic Devices and Circuits - Prentice Hall of India Pvt. Ltd., Fourth Edition-2003.

UNIT I BOOLEAN ALGEBRA AND LOGIC GATES**8+3**

Review of binary number systems - Binary arithmetic – Binary codes – Boolean algebra and theorems - Boolean functions – Simplifications of Boolean functions using Karnaugh map and tabulation methods – Logic gates

UNIT II COMBINATIONAL LOGIC**9+3**

Combinational circuits – Analysis and design procedures - Circuits for arithmetic operations - Code conversion – Introduction to Hardware Description Language (HDL)

UNIT III DESIGN WITH MSI DEVICES**8+3**

Decoders and encoders - Multiplexers and demultiplexers - Memory and programmable logic - HDL for combinational circuits

UNIT IV SYNCHRONOUS SEQUENTIAL LOGIC**10+3**

Sequential circuits – Flip flops – Analysis and design procedures - State reduction and state assignment - Shift registers – Counters - HDL for sequential logic circuits, Shift registers and counters.

UNIT V ASYNCHRONOUS SEQUENTIAL LOGIC**10+3**

Analysis and design of asynchronous sequential circuits - Reduction of state and flow tables – Race-free state assignment – Hazards.

L: 45; T: 15; Total : 60**TEXT BOOK:**

1. M.Morris Mano, “Digital Design”, 3rd edition, Pearson Education, 2002.

REFERENCES:

1. Charles H.Roth, Jr. “Fundamentals of Logic Design”, 4th Edition, Jaico Publishing House, 2000.
2. Donald D.Givone, “Digital Principles and Design”, Tata McGraw-Hill, 2003.

UNIT I BASICS AND STATICS OF PARTICLES 13

Introduction - Units and Dimensions - Laws of Mechanics –Coplanar and Non Coplaner Forces - Resolution and Composition of forces - Equilibrium of a particle - Equivalent systems of forces - Principle of transmissibility – single equivalent force.

UNIT II EQUILIBRIUM OF RIGID BODIES 7

Free body diagram - Types of supports and their reactions - requirements of stable equilibrium – Equilibrium of Rigid bodies in two dimensions - Equilibrium of rigid bodies in three dimensions.

UNIT III PROPERTIES OF SURFACES AND SOLIDS 12

Determination of Areas and Volumes - First moment of area and the centroid - second and product moments of plane area - Parallel axis theorems and perpendicular axis theorems - Polar moment of inertia – Mass moment of inertia - relation to area moments of inertia.

UNIT IV DYNAMICS OF PARTICLES 16

Displacement, Velocity and acceleration their relationship - Relative motion - Curvilinear motion - Newton's Law - Work Energy Equation of particles - Impulse and Momentum - Impact of elastic bodies.

UNIT V ELEMENTS OF RIGID BODY DYNAMICS AND FRICTION 12

Translation and Rotation of Rigid Bodies - Velocity and acceleration - General Plane motion - Moment of Momentum Equations - Rotation of rigid Body - Work energy equation.
Frictional Force - Laws of Coulomb friction - Simple Contact friction - Rolling Resistance - Belt Friction.

L:45; T: 15; Total : 60

TEXT BOOKS:

1. Beer and Johnson, " Vector Mechanics for Engineers ", Vol. 1 " Statics " and Vol. 2 " Dynamics ", McGraw Hill International Edition, 1995.
2. Merriam, "Engineering Mechanics", Vol.1 "Statics" and Vol.2 "Dynamics 2/e", Wiley International, 1988.

UNIT I EXTENSIVE LISTENING**12**

Listening and typing –Listening and sequencing of information – Filling in the blanks – Listening and answering the question. Close Exercises- Vocabulary building – Dictionary habits a brief note on Thesaurus.

Listening to specific speeches, discussions, interviews, debates, lectures. (Instructional Aids: Audio cassettes, Tape recorders, Language Software)

Suggested Activities

- Gap filling activities while listening to a text
- Listening and identifying the missing words in a given text
- Listening to a brief conversation and answering questions orally
- Listening to commentaries on television or radio to improve listening skills
- Paying attention to speaker's appearance, expressions, body movements and posture that convey meaning to his/her words.

UNIT II INTENSIVE LISTENING**12**

List for specific information – note taking-guided and open – listening comprehension – listening to specific speeches – interviews – debates lectures.

Suggested Activities

- Taking notes during lectures.
- Listening to a discourse and filling up gaps in a work sheet.
- Informational comprehension and literal comprehension tasks based on listening- post listening quiz.
- Listening to a passage preferably technical and answering questions choosing appropriate options (multiple choice)

Note : These listening activities can be done using a work sheet in a language laboratory or in the class room using a tape recorder.

UNIT III SPEAKING

12

Oral practice –developing confidence-introducing oneself-asking for or eliciting information-offering suggestions and recommendations.

Analysing problems and providing solutions- expressing opinions (agreement and disagreement) Role of idioms in Spoken Communication Pronunciation Practice-Stress intonation, accent, questions for oral discussions, describing objects, presenting information, Process description, narrating events, giving introduction, welcome speech and proposing a vote of thanks.

Suggested Activities

- Introducing oneself and others
- Role play activities based on real –life situations
- Discussing travel plan / industrial visit
- Giving oral instructions for performing tasks at home, at class-room and at work place
(use of imperatives)
- Participating in a short classroom-discussion on a controversial topic (eg. For and against reservation policy in educational institutions)
- Oral presentation on topics related to science and technology.

UNIT IV CONVERSATION

12

Face to Face conversation- Telephonic conversation- Role play activities (Students take on roles and engage in conversation) participating in an interview situational dialogues.

Suggested Activities

- Making either telephonic conversations or face to face conversation- making request- Asking questions-making recommendations using modal verbs- Giving instructions using imperatives – Expressing purpose and function- obligation and preference- Accepting and offering counseling .

Resume/ Report preparation / Letter writing

Structure the resume/ report letter writing/ E-mail communication samples

Presentation skills

Elements of an effective presentation – structure of presentation- presentation tools- voice modulation- audience analysis – body language- video samples.

Soft skills

The management- articulation – assertiveness – psychometrics- innovation and creative – stress management and poise- video samples

Group discussion

Why is GD part of selection process?- Structure of GD- moderator – led and other GDs – Strategies in GD- Team spirit- Body language(gestures)- Mock GD- Video samples.

Interview skills

Kinds of interviews- required key skills – corporate culture – mock interview- video samples.

L: 30; P: 30 Total: 60

TEXT BOOK:

1. Meenakshi Raman, Sangeetha Sharma: Technical Communication Principles and Practice, Oxford University Press.

REFERENCES:

1. Jeremy Comfort, Pamela Rogerson, Trish Stott and Derek Utley: Speaking Effectively, Cambridge University Press.
2. Jayashree Balan; Spoken English, Vijay Nicole Imprints Private Ltd., Chennai.
3. Jean Naterop and Rod Revell (1988) Telephoning in English (Cambridge University Press
4. David Martur (1994), Tough Talking, University Press, Hyderabad

LIST OF EXPERIMENTS

1. PN Junction Diode Characteristics
2. Zener Diode Characteristics
3. Half Wave and Full Wave Rectifier
4. CE Transistor Characteristics
5. UJT Characteristics
6. FET Characteristics
7. SCR Characteristics
8. Frequency Response of CE,CB and CC Amplifier with self-bias, fixed bias and controller to feedback bias.
9. Applications of 555 Timer
10. Applications of Operational Amplifier
11. RC and LC Oscillators

P:45

XIT301 PROFESSIONAL ETHICS AND HUMAN VALUES**3 0 0 3****UNIT I HUMAN VALUES****10**

Morals, Values and Ethics – Integrity – Work Ethic – Service Learning – Civic Virtue – Respect for Others – Living Peacefully – caring – Sharing – Honesty – Courage – Valuing Time – Co-operation – Commitment – Empathy – Self-Confidence – Character – Spirituality

UNIT II ENGINEERING ETHICS**9**

Senses of 'Engineering Ethics' - variety of moral issued - types of inquiry - moral dilemmas - moral autonomy - Kohlberg's theory - Gilligan's theory - consensus and controversy – Models of Professional Roles - theories about right action - Self-interest - customs and religion - uses of ethical theories.

UNIT III ENGINEERING AS SOCIAL EXPERIMENTATION**9**

Engineering as experimentation - engineers as responsible experimenters - codes of ethics - a balanced outlook on law - the challenger case study

UNIT IV SAFETY, RESPONSIBILITIES AND RIGHTS**9**

Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk - the three mile island and chernobyl case studies.

Collegiality and loyalty - respect for authority - collective bargaining - confidentiality - conflicts of interest - occupational crime - professional rights - employee rights - Intellectual Property Rights (IPR) - discrimination.

UNIT V GLOBAL ISSUES**8**

Multinational corporations - Environmental ethics - computer ethics - weapons development - engineers as managers-consulting engineers-engineers as expert witnesses and advisors -moral leadership-sample code of Ethics like ASME, ASCE, IEEE, Institution of Engineers(India), Indian Institute of Materials Management, Institution of electronics and telecommunication engineers(IETE),India, etc.

L:45; Total: 45

TEXT BOOKS:

1. Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw-Hill, New York 1996.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, "Engineering Ethics", Prentice Hall of India, New Delhi, 2004.

REFERENCES:

1. Charles D. Fleddermann, "Engineering Ethics", Pearson Education / Prentice Hall, New Jersey, 2004 (Indian Reprint)
2. Charles E Harris, Michael S. Protchard and Michael J Rabins, "Engineering Ethics – Concepts and Cases", Wadsworth Thompson Learning, United States, 2000 (Indian Reprint now available)
3. John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003.
4. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists

UNIT I LOGIC**9+3**

Statements – Connectives – Truth Tables – Normal forms – Predicate calculus – Inference Theory for Statement Calculus and Predicate Calculus – Automatic Theorem proving.

UNIT II COMBINATORICS**9+3**

Review of permutation and combination- Mathematical Induction – Pigeonhole principle – principle of inclusion and exclusion – Generating function – Recurrence relations.

UNIT III LATTICES**9+3**

Partial ordering – Posets – Hasse diagram – Lattices-Properties of Lattices-Sublattices – Boolean algebra.

UNIT IV GRAPH THEORY**9+3**

Definition and examples- subgraphs- - Vertex degree- Euler Trials and circuits- Planar Graphs-Hamiltonian paths and cycles.

UNIT V FORMAL LANGUAGES AND AUTOMATA THEORY**9+3**

Alphabet and Languages- Finite representation of Languages-Deterministic and Nondeterministic finite automata- Finite Automata and regular expressions- Context Free Grammars- Context Free Languages.

L:45; T:15; Total: 60**TEXT BOOKS:**

1. Hopcraft, J.E. Motrani, R and Ullman, J.D, “ Introduction to Automata Theory Languages And Computation”, Second edition, Pearson education, Delhi 2002.
2. Ralph.P. Grimaldi. Discrete and Combinatorial Mathematics, Fourth Edition, Pearson Education, New Delhi, 2002. (For Combinatorics and Graph)
3. Trembly, J.P. and Manohar, R. Discrete Mathematical structures in the application to computer science, Tata Mc Graw Hill, New Delhi

REFERENCES:

1. Graph Theory with Applications to Engineering And Computer Science, Narsingh Deo Prentice Hall of India Private Limited. New Delhi 2001.
2. Theory of Computer Science, K.L.P.Mishra N.Chandrasekaran, second edition Prentice Hall of India Private Limited, 1999.

XIT303 MICROPROCESSORS AND MICROCONTROLLERS 3 1 0 4

UNIT I THE 8085 MICROPROCESSOR 9+3

Introduction to 8085 – Microprocessor architecture – Instruction set – Programming the 8085 – Code conversion.

UNIT II 8086 SOFTWARE ASPECTS 9+3

Intel 8086 microprocessor – Architecture – Instruction set and assembler directives – Addressing modes – Assembly language programming – Procedures – Macros – Interrupts and interrupt service routines.

UNIT III 8086 SYSTEM DESIGN 9+3

8086 signals and timing – MIN/MAX mode of operation – Addressing memory and I/O – Multiprocessor configurations – System design using 8086

UNIT IV I/O INTERFACING 9+3

Memory Interfacing and I/O interfacing - Parallel communication interface – Serial communication interface – Timer – Keyboard /display controller – Interrupt controller – DMA controller – Programming and applications

UNIT V MICROCONTROLLERS 9+3

Architecture of 8051 – Signals – Operational features – Memory and I/O addressing – Interrupts – Instruction set – Applications.

L:45; T:15; Total: 45

TEXT BOOKS:

1. Ramesh S.Gaonkar, “Microprocessor - Architecture, Programming and Applications with the 8085”, Penram International publishing private limited, fifth edition.
2. A.K. Ray & K.M.Bhurchandi, “Advanced Microprocessors and peripherals- Architectures, Programming and Interfacing”, TMH, 2002 reprint.

REFERENCES:

1. Douglas V.Hall, “Microprocessors and Interfacing: Programming and Hardware”, TMH, Third edition
2. Yu-cheng Liu, Glenn A.Gibson, “Microcomputer systems: The 8086 / 8088 Family architecture, Programming and Design”, PHI 2003
3. Mohamed Ali Mazidi, Janice Gillispie Mazidi, “The 8051 microcontroller and embedded systems”, Pearson education, 2004.

UNIT I AMPLITUDE MODULATION:

TRANSMISSION AND RECEPTION

9+3

Principles of amplitude modulation – AM envelope, frequency spectrum and bandwidth, modulation index and percent modulation, AM power distribution, AM modulator circuits – low level AM modulator, medium power AM modulator, AM transmitters – low level transmitters, high level transmitters, Receiver parameters. AM reception: AM receivers – TRF, Superheterodyne receivers, Double Conversion AM receivers.

UNIT II ANGLE MODULATION: TRANSMISSION AND RECEPTION

9+3

Angle Modulation – FM and PM waveforms, phase deviation and modulation index, frequency deviation, phase and frequency modulators and demodulators, frequency spectrum of a angle modulated waves, Bandwidth requirement, Broadcast band FM, Average power FM and PM modulators – Direct FM and PM, Direct FM transmitters, Indirect transmitters, Angle modulation Vs. amplitude modulation. FM receivers: FM demodulators, PLL FM demodulators, FM noise suppression, Frequency Vs. phase Modulation.

UNIT III DIGITAL MODULATION TECHNIQUES

9+3

Introduction, Binary PSK, DPSK, Differentially encoded PSK, QPSK, M-ary PSK, QASK, Binary FSK, MSK, Duobinary encoding – Performance comparison of various systems of Digital Modulation.

UNIT IV BASEBAND DATA TRANSMISSION

9+3

Sampling theorem, Quadrature sampling of bandpass signals, reconstruction of message from its samples, Signal distortion in sampling, Discrete PAM signals, power spectra of Discrete PAM signals, ISI Nyquist Criterion for Distortionless baseband binary transmission, eye pattern, baseband M-ary PAM systems, adaptive equalization for data transmission.

UNIT V SPREAD SPECTRUM AND MULTIPLE ACCESS TECHNIQUES

9+3

Introduction, Pseudo-noise sequence, DS spread spectrum with coherent binary PSK, Processing gain, FH spread spectrum, multiple access techniques, wireless communications, TDMA and CDMA, wireless communication systems, source coding of speech for wireless communications.

L:45; T:15; Total: 60

TEXT BOOKS:

1. Wayne Tomasi, "Electronic Communication Systems: Fundamentals Through Advanced", Pearson Education, 2001.
(UNIT I Chapters- 3,4; UNIT II: Chapters-6, 7; UNIT III Chapters-12).
2. Simon Haykin, Digital Communications, John Wiley & Sons, 2003. (UNIT IV Chapters-3, 4; UNIT V Chapters-7,8)

REFERENCES:

- 1 Simon Haykin, Communication Systems, John Wiley & Sons, 4th edn., 2001.
2. Taub & Schilling, Principles of Communication Systems, TMH, 2nd edn., 2003.
3. Martin S.Roden, Analog and Digital Communication System, PHI, 3rd edn. 2002.
4. Blake, Electronic Communication Systems, Thomson Delman, 2nd edn., 2002.

UNIT - I REPRESENTATION OF SIGNALS**9 +3**

Continuous and discrete time signals: Classification of Signals – Periodic aperiodic even – odd – energy and power signals – Deterministic and random signals – complex exponential and sinusoidal signals – periodicity – properties of discrete time complex exponential unit impulse – unit step impulse functions – Transformation in independent variable of signals: time scaling, time shifting.

Determination of Fourier series representation of continuous time and discrete time periodic signals – Explanation of properties of continuous time and discrete time Fourier series.

UNIT-II ANALYSIS OF CONTINUOUS TIME SIGNALS AND SYSTEMS 9+3

Continuous time Fourier Transform and Laplace Transform analysis with examples – properties of the Continuous time Fourier Transform and Laplace Transform basic properties, Parseval's relation, and convolution in time and frequency domains. Basic properties of continuous time systems: Linearity, Causality, time invariance, stability, magnitude and Phase representations of frequency response of LTI systems -Analysis and characterization of LTI systems using Laplace transform: Computation of impulse response and transfer function using Laplace transform.

UNIT - III SAMPLING THEOREM AND z-TRANSFORMS 9+3

Representation of continuous time signals by its sample - Sampling theorem – Reconstruction of a Signal from its samples, aliasing – discrete time processing of continuous time signals, sampling of band pass signals
Basic principles of z-transform - z-transform definition – region of convergence – properties of ROC – Properties of z-transform – Poles and Zeros – inverse z-transform using Contour integration - Residue Theorem, Power Series expansion and Partial fraction expansion, Relationship between z-transform and Fourier transform.z

UNIT - IV DISCRETE TIME SYSTEMS 9+3

Computation of Impulse & response & Transfer function using Z Transform. DTFT Properties and examples – LTI-DT systems -Characterization using difference equation – Block diagram representation – Properties of convolution and the interconnection of LTI Systems – Causality and stability of LTI Systems.

**UNIT - V SYSTEMS WITH FINITE AND
INFINITE DURATION IMPULSE RESPONSE**

9+3

Systems with finite duration and infinite duration impulse response – recursive and non-recursive discrete time system – realization structures – direct form – I, direct form – II, Transpose, cascade and parallel forms.

L:45; T:15; Total: 60

TEXT BOOK:

1. Alan V. Oppenheim, Alan S. Willsky with S. Hamid Nawab, Signals & Systems, 2nd edn., Pearson Education, 1997.

REFERENCES:

1. John G. Proakis and Dimitris G. Manolakis, Digital Signal Processing, Principles, Algorithms and Applications, 3rd edn., PHI, 2000
2. M. J. Roberts, Signals and Systems Analysis using Transform method and MATLAB, TMH 2003.
3. Simon Haykin and Barry Van Veen, Signals and Systems, John Wiley, 1999

XIT306 DATA STRUCTURES

3 1 0 4

UNIT I PROBLEM SOLVING METHODS

9+3

Problem solving – Top-down Design – Implementation – Verification – Efficiency – Analysis – Sample algorithms.

UNIT II STACK, QUEUE AND LINKED LIST

9+3

Stack definition and examples – Primitive operations – Example - Representing stacks in C - Push and pop operation implementation.

Queue as ADT - C Implementation of queues - Insert operation - Priority queue - Array implementation of priority queue.

Inserting and removing nodes from a list-linked implementation of stack, queue and priority queue - Circular lists: Stack and queue as circular list -Primitive operations on circular lists. Header nodes - Doubly linked lists.

UNIT III TREES

9+3

Binary tree - Representation - Binary Search tree- Insertion deletion into a binary search tree - Binary tree traversal in C - Threaded binary tree - Representing list as binary tree - Finding the K^{th} element - Deleting an element.

Trees and their applications: C representation of trees - Tree traversals - Evaluating an expression tree - Constructing a tree.

UNIT IV SORTING AND SEARCHING

9+3

Preliminaries-Bubble sort-Quick sort- Selection sort- Binary tree sort; Heap sort-Simple insertion - Shell sort - Address calculation sort - Merge sort -Radix sort.

Sequential search: Indexed sequential search - Binary search - Interpolation search.

UNIT V GRAPHS

9+3

Definitions – Topological Sort – C Representation of Graph's – Transitive closure - Warshall's Algorithm - Shortest-Path Algorithms – Unweighted Shortest Paths – Dijkstra's Algorithm – Minimum Spanning Tree – Prim's Algorithm – Applications of Depth-First Search – Undirected Graphs – Biconnectivity – Introduction to NP-Completeness

L: 45; T:15; Total: 60

TEXT BOOKS:

1. Aaron M. Tenenbaum, Yedidiah Langsam, Moshe J. Augenstein, 'Data structures using C', Pearson Education, 2004 / PHI.
2. R. G. Dromey, "How to Solve it by Computer", Prentice-Hall of India, 2002.
3. M. A. Weiss, "Data Structures and Algorithm Analysis in C", 2nd ed, Pearson Education Asia, 2002.

REFERENCES:

1. Robert L. Kruse, Bruce P. Leung Clovis L.Tondo, 'Data Structures and Program Design in C', Pearson Education, 2000 / PHI.
2. Ellis Horowitz & Sartaj Sahani, "Fundamentals of Data Structures in C ", W.H.Freeman and Co., 1992.

LIST OF EXPERIMENTS

1. Programming with 8085 – 8-bit / 16-bit multiplication/division using repeated addition/subtraction
2. Programming with 8085-code conversion, decimal arithmetic, bit manipulations.
3. Programming with 8085-matrix multiplication, floating point operations
4. Programming with 8086 – String manipulation, search, find and replace, copy operations, sorting. (PC Required)
5. Using BIOS/DOS calls: Keyboard control, display, file manipulation. (PC Required)
6. Using BIOS/DOS calls: Disk operations. (PC Required)
7. Interfacing with 8085/8086 – 8255, 8253
8. Interfacing with 8085/8086 – 8279,8251
9. 8051 Microcontroller based experiments – Simple assembly language programs (cross assembler required).
- 10.8051 Microcontroller based experiments – Simple control applications (cross assembler required).

P:45

LIST OF EXPERIMENTS

1. Queue implementation using arrays.
2. Stack implementation-using arrays.
3. Singly, doubly and circular linked list implementation and all possible operations on lists
4. Queue and Stack implementation using linked list.
5. Implement the application for checking 'Balanced Parenthesis' using array implementation of Stack ADT.
6. Implement the application for 'Evaluating Postfix Expressions' using array and linked list implementations of Stack ADT.
7. Binary search tree implementation using linked list and possible operations on binary search trees.
8. In-order, preorder and post order traversals.
9. Quick sort.
10. Heap Sort.
11. Binary Search implementation.
12. Depth first and Breadth first traversal in graphs.

P:45

**UNIT I INTRODUCTION TO ENVIRONMENTAL STUDIES
AND ENERGY****12**

Definition, scope and importance – Need for public awareness – Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – Role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles.

UNIT II ECOSYSTEMS AND BIODIVERSITY**12**

Concept of an ecosystem – Structure and function of an ecosystem – Producers, consumers and decomposers – Energy flow in the ecosystem – Ecological succession – Food chains, food webs and ecological pyramids – Introduction, types, characteristic features, structure and function of the (a) Forest ecosystem (b) Grassland ecosystem (c) Desert ecosystem (d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to Biodiversity – Definition: genetic, species and ecosystem diversity - Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT III ENVIRONMENTAL POLLUTION**8**

Definition – Causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – Soil waste Management: Causes, effects and control measures of urban and industrial wastes – Role of an individual in prevention of pollution – Pollution case studies – Disaster management: floods, earthquake, cyclone and landslides.

UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT**7**

Urban problems related to energy – Water conservation, rain water harvesting, watershed management – Resettlement and rehabilitation of people; its problems and concerns, Climate change, global warming, acid rain, ozone layer

depletion, nuclear accidents and holocaust, Wasteland reclamation – Consumerism and waste products – Environment Protection Act – Air (Prevention and Control of Pollution) Act – Water (Prevention and control of Pollution) Act – Wildlife Protection Act – Forest Conservation Act – Issues involved in enforcement of environmental legislation – Public awareness

UNIT V HUMAN POPULATION AND THE ENVIRONMENT

6

Population growth, variation among nations – Population explosion – Family Welfare Programme – Environment and human health – Human Rights – Value Education - HIV / AIDS – Women and Child Welfare – Role of Information Technology in Environment and human health – Case studies.

L:45; Total: 45

TEXT BOOKS:

1. Gilbert M.Masters, Introduction to Environmental Engineering and Science, Pearson Education Pvt., Ltd., Second Edition, ISBN 81-297-0277-0, 2004.
2. Miller T.G. Jr., Environmental Science, Wadsworth Publishing Co.
3. Townsend C., Harper J and Michael Begon, Essentials of Ecology, Blackwell Science.
4. Trivedi R.K. and P.K. Goel, Introduction to Air Pollution, Techno-Science Publications.

REFERENCES:

1. Trivedi R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media.
2. Cunningham, W.P.Cooper, T.H.Gorhani, Environmental Encyclopedia, Jaico Publ., House, Mumbai, 2001.
3. Wager K.D., Environmental Management, W.B. Saunders Co., Philadelphia, USA, 1998.
4. S.K.Dhameja, Environmental Engineering and Management, S. K. Kataria and Sons, New Delhi, 1999.

XIT402 PROBABILITY AND STATISTICS**3 1 0 4****UNIT I PROBABILITY AND RANDOM VARIABLES****9+3**

Axioms of probability – conditional probability – Total Probability – Baye’s theorem – Random Variable – Moments – Moment generating functions.

UNIT II STANDARD DISTRIBUTIONS**9+3**

Binomial – Poisson, Geometric, uniform, Exponential, Weibull and Normal distributions and their properties – Functions of random variable.

UNIT III TWO DIMENSIONAL RANDOM VARIABLES**9+3**

Distributions – Marginal and conditional distributions – Covariance – Correlation and Regression – Transformation of random variables.

UNIT IV TESTING OF HYPOTHESIS**9+3**

Sampling distributions – Testing of hypothesis for mean, variance, proportions and differences using Normal, t, chi – square and F distribution – Tests for independence of attributes and Goodness of fit.

UNIT V DESIGN OF EXPERIMENTS**9+3**

Analysis of Variance – One way classification – CRD – Two way classification – RBD –Latin Square design.

L:45; T:15; Total: 60**TEXT BOOKS:**

1. J. N. Kapur And H. C. Saxena S. Chand and Company Ltd, New Delhi – 110 005, 2001.
2. R.A. Johnson, Miller. R. And Freund J.E., “Probability and Statistics for Engineers”, 6th edition Pearson education, Delhi 2002.

REFERENCES:

1. Gupta, S. C and Kapur, J. N “ Fundamentals of Mathematical Statistics”, Sultan Chand, Ninth Edition, New Delhi, 1996.
2. Veerarajan. T., Probability Statistics and Random Process ,Tata McGraw Hill Pub Co. Ltd, Delhi, 2004.
3. Kandasamy. P., Thilagavathy. K, and Gunavathy. K Probability and Statistics, S. Chand & Co, New Delhi, 2004.

UNIT I INFORMATION ENTROPY FUNDAMENTALS**9+3**

Uncertainty, Information and Entropy – Source coding Theorem – Huffman coding – Shannon Fano coding – Discrete Memory less channels – channel capacity – channel coding Theorem – Channel capacity Theorem.

UNIT II DATA AND VOICE CODING**9+3**

Differential Pulse code Modulation – Adaptive Differential Pulse Code Modulation – Adaptive subband coding – Delta Modulation – Adaptive Delta Modulation – Coding of speech signal at low bit rates (Vocoders, LPC).

UNIT III ERROR CONTROL CODING**9+3**

Linear Block codes – Syndrome Decoding – Minimum distance consideration – cyclic codes – Generator Polynomial – Parity check polynomial – Encoder for cyclic codes – calculation of syndrome – Convolutional codes.

UNIT IV COMPRESSION TECHNIQUES**9+3**

Principles – Text compression – Static Huffman Coding – Dynamic Huffman coding – Arithmetic coding – Image Compression – Graphics Interchange format – Tagged Image File Format – Digitized documents – Introduction to JPEG standards.

UNIT V AUDIO AND VIDEO CODING**9+3**

Linear Predictive coding – code excited LPC – Perceptual coding, MPEG audio coders – Dolby audio coders – Video compression – Principles – Introduction to H.261 & MPEG Video standards.

L:45; T:15; Total: 60**TEXTBOOKS:**

1. Simon Haykin, "Communication Systems", John Wiley and Sons, 4th Edition, 2001.
2. Fred Halsall, "Multimedia Communications, Applications Networks Protocols and Standards", Pearson Education, Asia 2002; Chapters: 3,4,5.

REFERENCES:

1. Mark Nelson, "Data Compression Book", BPB Publication 1992.
2. Watkinson J, "Compression in Video and Audio", Focal Press, London, 1995.

XIT404 OBJECT ORIENTED PROGRAMMING 3 0 0 3

UNIT I INTRODUCTION 9

Object-oriented paradigm, elements of object oriented programming – Merits and demerits of OO methodology – C++ fundamentals, Classes and objects

UNIT II PROGRAMMING IN C++ 9

Constructors and destructors, operator overloading – inheritance, virtual functions and polymorphism

UNIT III FILE HANDLING 9

C++ streams – console streams – console stream classes-formatted and unformatted console I/O operations, manipulators - File streams - classes file modes file pointers and manipulations file I/O – Exception handling

UNIT IV JAVA INTRODUCTION 9

An overview of Java, data types, variables and arrays, operators, control statements, classes, objects, methods.

UNIT V JAVA PROGRAMMING 9

Inheritance Packages and Interfaces, Exception handling Strings, Input /Output, Applet programming

Total: 45

TEXT BOOKS:

1. K.R.Venugopal, Rajkumar Buyya, T.Ravishankar, "Mastering C++", TMH, 2003 (Unit I, Unit II, Unit III)
2. Herbert Schildt, "the Java 2 : Complete Reference", Fourth edition, TMH, 2002 (Unit IV, Unit-V)(Chapters 1-11,13,17)

REFERENCES:

1. Ira Pohl, "Object oriented programming using C++", Pearson Education Asia, 2003
2. Bjarne Stroustrup, "The C++ programming language", Addison Wesley, 2000
3. John R.Hubbard, "Programming with C++", Schaums outline series, TMH, 2003
4. H.M.Deitel, P.J.Deitel, "Java: how to program", Fifth edition, Prentice Hall of India private limited.
5. E.Balagurusamy " Object Oriented Programming with C++", TMH 2/e

XIT405 DIGITAL SIGNAL PROCESSING

3 1 0 4

UNIT I SIGNALS AND SYSTEMS

9+3

Basic elements of digital signal Processing –Concept of frequency in continuous time and discrete time signals – Sampling theorem –Discrete time signals. Discrete time systems – Analysis of Linear time invariant systems –Z transform –Convolution and correlation.

UNIT II FAST FOURIER TRANSFORMS

9 +3

Introduction to DFT – Efficient computation of DFT Properties of DFT – FFT algorithms – Radix-2 and Radix-4 FFT algorithms – Decimation in Time – Decimation in Frequency algorithms –Use of FFT algorithms in Linear Filtering and correlation.

UNIT III IIR FILTER DESIGN

9 +3

Structure of IIR – System Design of Discrete time IIR filter from continuous time filter – IIR filter design by Impulse Invariance. Bilinear transformation – Approximation derivatives – Design of IIR filter in the Frequency domain.

UNIT IV FIR FILTER DESIGN

9+3

Symmetric & Antisymmetric FIR filters – Linear phase filter – Windowing technique – Rectangular, Kaiser windows – Frequency sampling techniques – Structure for FIR systems.

UNIT V FINITE WORD LENGTH EFFECTS

9+3

Quantization noise – derivation for quantization noise power – Fixed point and binary floating point number representation – comparison – over flow error – truncation error – co-efficient quantization error - limit cycle oscillation – signal scaling – analytical model of sample and hold operations – Application of DSP – Model of Speech Wave Form – Vocoder.

L:45; T:15; Total: 60

TEXT BOOK:

1. John G Proakis and Dimtris G Manolakis, "Digital Signal Processing Principles, Algorithms and Application", PHI/Pearson Education, 2000, 3rd Edition.

REFERENCES:

1. Alan V Oppenheim, Ronald W Schafer and John R Buck, "Discrete Time Signal Processing", PHI/Pearson Education, 2000, 2nd Edition.
2. Johny R.Johnson, "Introduction to Digital Signal Processing", Prentice Hall of India/Pearson Education, 2002.
3. Sanjit K.Mitra, "Digital Signal Processing: A Computer – Based Approach", Tata

UNIT I BASIC STRUCTURE OF COMPUTERS**10+3**

Functional units - Basic operational concepts - Bus structures - Software performance – Memory locations and addresses – Memory operations – Instruction and instruction sequencing – Addressing modes – Assembly language – Basic I/O operations – Stacks and queues.

UNIT II ARITHMETIC UNIT**8+3**

Addition and subtraction of signed numbers – Design of fast adders – Multiplication of positive numbers - Signed operand multiplication and fast multiplication – Integer division – Floating point numbers and operations.

UNIT III BASIC PROCESSING UNIT**9+3**

Fundamental concepts – Execution of a complete instruction – Multiple bus organization – Hardwired control – Microprogrammed control - Pipelining – Basic concepts – Data hazards – Instruction hazards – Influence on Instruction sets – Data path and control consideration – Superscalar operation.

UNIT IV MEMORY SYSTEM**9+3**

Basic concepts – Semiconductor RAMs - ROMs – Speed - size and cost – Cache memories - Performance consideration – Virtual memory- Memory Management requirements – Secondary storage.

UNIT V I/O ORGANIZATION**9+3**

Accessing I/O devices – Interrupts – Direct Memory Access – Buses – Interface circuits – Standard I/O Interfaces (PCI, SCSI, USB).

L:45; T:15; Total:60**TEXT BOOK:**

1. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, 5th Edition “Computer Organization”, McGraw-Hill, 2002.

REFERENCES:

1. William Stallings, “Computer Organization and Architecture – Designing for Performance”, 6th Edition, Pearson Education, 2003.
2. David A.Patterson and John L.Hennessy, “Computer Organization and Design: The hardware / software interface”, 2nd Edition, Morgan Kaufmann, 2002.
3. John P.Hayes, “Computer Architecture and Organization”, 3rd Edition, McGraw-Hill, 1998.

C++

1. Programs Using Functions
 - Functions with default arguments
 - Implementation of Call by Value, Call by Address and Call by Reference
2. Simple Classes for understanding objects, member functions and Constructors
 - Classes with primitive data members
 - Classes with arrays as data members
 - Classes with pointers as data members – String Class
 - Classes with constant data members
 - Classes with static member functions
3. Compile time Polymorphism
 - Operator Overloading including Unary and Binary Operators.
 - Function Overloading
4. Runtime Polymorphism
 - Inheritance
 - Virtual functions
 - Virtual Base Classes
 - Templates
5. File Handling
 - Sequential access
 - Random access

JAVA

6. Simple Java applications
 - For understanding reference to an instance of a class (object), methods
 - Handling Strings in Java
 - Constructor in Java
7. Simple Package creation.
 - Developing user defined packages in Java
8. Interfaces
 - Developing user-defined interfaces and implementation
 - Use of predefined interfaces
9. Exception Handling Mechanism in Java
 - Handling pre-defined exceptions
 - Handling user-defined exceptions

P:45

1. Generation and detection of Amplitude Modulation
2. Generation of Frequency modulation and its detection
3. Generation and detection of PAM
4. Generation of BFSK and its detection
5. Pseudo Random Noise sequence generation with digital IC's.
6. Generation of i/p Signals.
7. Analysis of linear system [with convolution and deconvolution operation]
8. FIR filter design. [any one Technique]
9. IIR filter design [any one Technique]
10. Implementation of FFT, Interpolation and decimation
11. Simulation of DS spread spectrum [Experiments 6 to 11 are to be implemented with MATLAB]

P:45