

SYLLABUS OF COMPUTER TECHNOLOGY DEPARTMENT
8.3 SCHEME OF EXAMINATION (SEMESTER PATTERN):

8.3.a B.E. 1st year ANNUAL PATTERN – (Common to All Branches, Except in Architecture)

Year	Sub.Code	Subject Name	L	T	P	D	Period .per week	Max marks theory	Paper	College Asses.	Max marks pract	Pract	College Asses.	Paper Duration
1	1-1	Applied Mathematics-I	3	1			4	100	80	20	0			3
1	1-2	Applied Mathematics-II	3	1			4	100	80	20	0			3
1	1-3	Applied Physics	2	1	4		7	100	80	20	50	25	25	3
1	1-4	Applied Chemistry	2	1	4		7	100	80	20	50	25	25	3
1	1-5	English	1	1			2	100	80	20	0			3
1	1-6	Social Sciences	1	1			2	100	80	20	0			3
1	1-7	Engineering Mechanics	2	1	1.5		4.5	100	80	20	50	25	25	3
1	1-8	Engineering Drawing	1	0		3	4	100	80	20	50	25	25	4
1	1-9	Electrical Engineering	2	1	1.5		4.5	100	80	20	50	25	25	3
1	1-10	Workshop	0	0	4		4				100	50	50	
		Total	17	8	15	3	43	900			350			Total Max Marks 1250

8.3.b SEMESTER PATTERN – BRANCH : COMPUTER TECHNOLOGY , Direction No. 17 of 2001

Sem	Sub.Code	Subject Name	L	T	P	Period .per week	Max marks theory	Paper	College Asses.	Max marks pract	Pract	College Asses.	Paper Duration
3	3-CT-1	Applied Mathematics-III	4	1	0	5	100	80	20				3 Period
3	3-CT-2	Network Analysis	3	1	0	4	100	80	20				3 Period
3	3-CT-3	Introduction To Programming	4	1	2	7	100	80	20	50	25	25	3 Period
3	3-CT-4	Electronic Devices & Circuits	4	1	2	7	100	80	20	50	25	25	3 Period
3	3-CT-5	Digital Electronics	4	1	2	7	100	80	20	50	25	25	3 Period
3	3-CT-6	Computer Workshop – I	0	0	2	2				50		50	
		Total	19	5	8	32	500			200			Total 700
		Credit Points: 19+6.5=25.5											

Sem	Sub.Code	Subject Name	L	T	P	Period .per week	Max marks theory	Paper	College Asses.	Max marks pract	Pract	College Asses.	Paper Duration
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8.3.b SEMESTER PATTERN – BRANCH : COMPUTER TECHNOLOGY , Direction No. 17 of 2001

Sem	Sub.Code	Subject Name	L	T	P	Period .per week	Max marks theory	Paper	College Asses.	Max marks pract	Pract	College Asses.	Paper Duration
6	6-CT-1	Ind. Management/Economics	3	1	0	4	100	80	20				3 Period
6	6-CT-2	Software Engineering	4	1	2	7	100	80	20	50	25	25	3 Period
6	6-CT-3	Design & Analysis Of Algorithms	4	1	0	5	100	80	20				3 Period
6	6-CT-4	Data Processing & File System	4	1	2	7	100	80	20	50	25	25	3 Period
6	6-CT-5	Design Principles Of Programming Languages	4	1	0	5	100	80	20				3 Period
6	6-CT-6	Mini Project	0	0	3	3	500			50	25	25	
		Total	19	5	7	30				150			Total 650
		Credit Points: 19+6=25											

Sem	Sub.Code	Subject Name	L	T	P	Period .per week	Max marks theory	Paper	College Asses.	Max marks pract	Pract	College Asses.	Paper Duration
7	7-CT-1	Operating Systems	4	1	0	5	100	80	20				3 Period
7	7-CT-2	Database Management System	4	1	2	7	100	80	20	50	25	25	3 Period
7	7-CT-3	Computer Comm. & Networking	4	1	2	7	100	80	20	50	25	25	3 Period
7	7-CT-4	Elective – I	4	1	0	5	100	80	20				3 Period
7	7-CT-5	Elective – II	4	1	0	5	100	80	20				3 Period
7	7-CT-6	Project Seminar	0	0	3	3				50	25	25	
		Total	20	5	7	32	500			150			Total 650
		Credit Points: 20+6=26											

Sem	Sub.Code	Subject Name	L	T	P	Period .per week	Max marks theory	Paper	College Asses.	Max marks pract	Pract	College Asses.	Paper Duration
8	8-CT-1	Computer Graphics	4	1	2	7	100	80	20	50	25	25	3 Period
8	8-CT-2	Compiler Construction	4	1	2	7	100	80	20	50	25	25	3 Period
8	8-CT-3	Elective – III	4	1	0	5	100	80	20				3 Period
8	8-CT-4	Elective – IV	4	1	0	5	100	80	20				3 Period
8	8-CT-5	Project	0	0	6	6				150	75	75	
		Total	16	4	10	30	400			250			Total 650
		Credit Points: 16+7=23											

ELECTIVE-I

- 1] Advanced Computer Architecture
- 2] Embedded Systems
- 3] Digital Signal Processing

ELECTIVE-II

- 1] Artificial Intelligence
- 2] Neural Networks & Fuzzy Logic
- 3] Digital Image Processing

ELECTIVE-III

- 1] TCP/IP
- 2] Network Security
- 3] E-Commerce

ELECTIVE-IV

- 1] Multimedia & Web Designing
- 2] Data Mining & Warehousing
- 3] CAD/CAM

SYLLABUS FOR EACH SUBJECT

FIRST YEAR

1-1 Applied Mathematics-I

Section-A

1. Differential Calculus:

Unit I: Successive differentiation, Taylor's and Maclaurin's series for one variable. Tangents and Normals, subtangent and subnormal (Cartesian form), Curvature and Radius of curvature (Cartesian, Parametric and polar form), centre of curvature (Cartesian form only), L'Hospital's rule. Maxima and Minima of function of one variable.

Unit II: Partial differentiation, Function of several variables, first and higher order derivatives, Euler's theorem, chain rules and total differential co-efficient, Jacobians, Taylor's and Maclaurin's series of two variables, Maxima & Minima of function of two variables, Lagrange's method of undetermined multipliers. (22 Periods)

2. Analytical Trigonometry:

Unit III: Cartesian and polar forms of complex numbers, D-Moivre's theorem, hyperbolic functions and their inverse, Logarithm of complex quantities, summation of series. (C + is Method) (10 Periods)

Section-B

3. Theory of equations:

Unit IV : General properties of polynomial equations, relation between roots & coefficients, transformation of equations, Horner's method of synthetic division.

(7 Periods)

4. Integral Calculus :

Unit V: Beta Gamma functions, Differentiation of definite Integral, Tracing of curves (Cartesian & Polar curves) rectification of simple curves, quadrature, volumes and surface of solids of revolutions (Cartesian, Polar & parametric forms). Theorem of Pappus and Guldin, mean value and root mean square values.

5. Analytical solid Geometry:

Unit VI: Cartesian, cylindrical and spherical system of co-ordinates and their transformations, Detail study of lines of planes in Cartesian system. Shift of origin, projection of segment, projection of plane closed curve, projection of lines and planes. Shortest distance between two lines, Equations of sphere, Right circular cylinder and right circular cone.

BOOKS RECOMMENDED:

1. Engg. Mathematics : H.K.Das. (S.Chand & Co)
2. Plane Trigonometry Part II : S. L. Loni, (S.Chand & Co)
3. Higher Algebra: Hall & Knight
4. Analytical solid Geometry : Shantinakaran. (S.Chand & Co)
5. Applied Mathematics : Ramana murthy Srinivas

REFERENCE BOOKS:

1. Mathematics for Engineers: Chandrika Prasad (Prasad Mudranalaya, Allahabad)
2. Higher Engineering Mathematics: B. S. Grewal (Khanna Publishers, N Delhi)
3. The text book Applied Mathematics vol. I & II : Prof. D. T. Deshmukh

1-2 Applied Mathematics-II

Section A

Unit I: Scalar triple product, vector triple product, quadruple product of vectors. First order first degree differential equation, variable separable, homogeneous reducible to homogeneous, linear, reducible to linear and exact differential equations (excluding the cases of integrating factor).

Unit II: Linear differential equation with constant coefficients, the operator $1/f(D)$, method of variation of parameters, simple simultaneous diff. equation, homogeneous differential equations, differential equations of the type $d^2y/dx^2 = f(Y)$, Cauchy's Application of differential equations to simple Electrical circuits and Mechanics. (only up to second order) (20 periods)

Unit III: Differentiation of vectors, Gradient of Scalar point function, directional derivatives, divergence and curl of vector point function, solenoidal motion and irrotational motion. Vector integration, line, surface and volume integrals, stoke's theorem, Gauss divergence theorem, Green's theorem in plane (statement only), Greens identities and their simple applications.

Section B

Unit IV: Finite Differences:

Difference table, operator E and factorials, functions Newton's forward and backward inter-polation formula, central differences, stirling's formula (without proof), Lagrange's interpolation formula, Numerical differentiation and integration, difference equations with constant coefficients. (15 Period)

Unit V: Statistics and Probability:

Fitting of a straight line $Y = a + bx$, parabola $y = a + bx + cx^2$, and the curves $Y = ab^x$ And $Y = ax^b$ by method of Least square, Linear regression and correlation, rank correlation, Binomial, Poisson and Normal distribution. (9 periods)

Unit VI: Multiple Integrals and Their Applications:

Elementary double integrals, change of variable a (simple transformation) change of order of integration (Cartesian and polar), applications to mass, area, volume and center of gravity (Cartesian & polar form), elementary triple integrals. (10 periods)

TEXTBOOKS :

1. Advanced Engg. Mathematics: H.K.Das (S.Chand & Co)
2. Vector analysis: M. R. Spiegel. (McGraw Hill)
3. Finite Differences: H. C. Saxena (S.Chand & Co)
4. Applied Mathematics : Ramana Murthy

REFERENCE BOOKS:

1. Text book of Engineering Mathematics: Deshpande & Ghangrekar (Asmita Publishers, Nagpur)
2. Finite Differences: H. C. Saxena (McGraw Hill)
3. Mathematics for engineers: Chandrika prasad, (Prasad Mudranalaya, Allahabad)
4. Higher Engineering Mathematics: B. S. Grewal (Khanna Publishers, N Delhi)
5. A Text Book of Engineering Mathematics: Prof. D.T.Deshmukh

1-3 Applied Physics

Unit I: The quantum nature of radiation, Photoelectric effect, Compton effect, Wavelike character of particle, Davisson and Germer's experiment, De Broglie wavelength, Heisenberg's uncertainty principle, Schrodinger's wave equation (qualitative aspect),

Unit II: Crystal structure (s.c., b.c.c. & f.c.c.), Atomic packing, coordination & numbers, Miller indices, Bragg's law.

Unit III: Formation of energy bands in solids (energy level approach), classification of solids in conductors, insulators and semiconductors, Energy band diagram for silicon and germanium semiconductors; Fermi energy, Fermi level in intrinsic and extrinsic semiconductors Dependence of fermi level on impurity concentration and temperature, p-n junction, Transistor, Hall effect.

Unit IV : Motion of charged particles in uniform electric and magnetic fields, Thomson's method for determination of e/m of the electron, electrostatic and magnetostatic focusing (qualitative idea) . Elementary ideas of C.R.O. and electron microscope, Bainbridge mass spectrograph, cyclotron.

Unit V: Spontaneous and stimulated emission of radiation. Coherence, Laser: Working principle, different types and applications, Interference in thin films.

Unit VI: Polarization: Double refraction, production and detection of gap plane, circularly and elliptically polarized light, quarter and half wave plates, Babinet compensator.

TEXTBOOKS:

1. A Text Book of Engineering Physics by M.N.Avadhanulu Kshirsagar. (S.Chand & Co.)
2. Fundamentals of Physics by David Halliday and Robert Resnick. (Jonn Wiley & Co.)
3. Modern Physics by B.L.Theraja. (S.Chand & Co.)
4. Lasers theory application by M.N.Avadhanulu.
5. Modern Engg. Physics by A.S.Vasudeva. (S.Chand & Co.)
6. Optics by Brijlal and Subramaniam (S.Chand & Co.)
7. Lasers and their application by M. L. Beesley (Tayler and France Ltd.)

REFERENCE BOOK:

1. Electronics Engineering Materials and Devices by Allison .
2. Electronics Devices & Circuits by Milman and Halkias.
3. Materials Science by Raghawan.
4. Optics by Ajay Ghatak.(TMH)
5. Physics I & II by Resnick and Halliday. (Wiley Eastern)
6. Modern Physics by Sproull (Jonn Wiley & Co.)
7. Optics by Hecht.
8. Modern Physics by Richtmayer Kennard.(TMH)
9. Problem in Physics by M.N.Avadhanulu (S.Chand & Co.)

Applied Physics:

Practical

1. e/m for electron.
2. C.R.O. and its basic capabilities, measurement of amplitude phase and frequency.
3. Characteristic of junction diode and its use as rectifier.
4. Characteristics of transistor.
5. Photo cell, work function, Detection and measurement of optical radiation
6. Activation energy of semiconductor.
7. Band gap determination with reverse biased p-n junction.
8. Newton's ring use of thin film interference in micro measurement and surface topography

9. Rydberg constant determination from hydrogen spectrum.
10. e and o of birefringent material prism and the study of plane of polarization of ordinary and
11. extraordinary ray.
12. Biprism.
13. Hall effect in p-type and n-type semiconductor, Hall probe and magnetic field measurement
14. Diffraction Grating.

Scope of Syllabus III 'Physics' For First B. E.

(Wherever necessary)

1. Schrodinger wave Equation: Derivation not required, Emphasis on physical significance. Application of Schrodinger equation for one dimensional (infinite) potential well.
2. Crystal structure: Crystal structure on cubic system (s.c.c., b.c.c. and f.c.c.) Number of atoms per unit cell, coordination number. Relation between atomic radius and lattice cell parameters. Packing fraction and density calculation.
3. P.N. Junction: Formation, characteristics and application as half wave rectifier only.
4. Transistor: Transistor action. Elementary idea of CB & CE configurations. Transistor as an amplifier.
5. CRO: Block diagram, Brief description of various blocks. More emphasis on CRT and time base (Circuit details not required). Application for frequency and phase measurement.
6. Electron Optics: Electron refraction, Bethe's Law, Lens action of electric and magnetic field, Electron Microscope.
7. Interference: Interference in thin film by reflection. Uniform thickness and wedge shaped film and Newton's ring. Application of thin film in reflection and antireflection coating.
8. Lasers: Concept of three level and four level lasers, Working of Ruby, He-Ne and Semiconductor lasers.

List of Experiments

1. Determination of the resistivity of a semiconductor wafer and a study of its variation with temperature using four probe method.
2. Determination of the band gap in a semiconductor using a p-n junction diode in reverse bias condition.
3. A study of the characteristics of a thermistor.
4. A study of a single beam cathode ray oscilloscope :
 - (i) Familiarization
 - (ii) Verification of calibration of vertical amplifier:
 - (iii) Determination of dc and ac voltages;
 - (iv) Verification of calibration of the time base and determination of frequency of ac signals.
5. Determination of e/m of an electron using Thomson's method.
6. Determination of e/m of an electron using helical method.
7. A study of the Hall effect:
 - (i) Determination of Hall coefficient
 - (ii) Determination of the majority carriers and.
 - (iii) Determination of the charge carrier density.
8. A study of dual trace CRO :
 - (i) Familiarization
 - (ii) Determination of phase difference by direct method.
 - (iii) Determination of phase and frequency using Lissajous patterns.
9. A study of the characteristics of germanium and silicon diodes and their comparison.
10. A study of the characteristics and verification the stabilizing action of zener diode.
11. A study of the rectifier and filter characteristics.
12. A study of the input, output and transfer characteristics of a pnp / npn transistor in common base configuration.
13. A study of the input, output and transfer characteristics of a pnp / npn transistor in common emitter configuration.
14. A study of the common emitter amplifier characteristics.
15. Determination of the wavelength of sodium light using fresnel's biprism.
16. Determination of the radius of curvature of a plane-convex lens using Newton's rings.
17. Determination of the principle refractive indices of quartz crystal.
18. Determination of the wavelengths of spectral lines using a plane transmission grating.

Note: Minimum of Ten experiments are to be performed out of which at least two should be from optics.

List of Experiments for Demonstration:

1. A study of atomic packing and the three cubic unit cells.
2. Determination of the thickness of a thin foil using wedge.
3. A study of production and analysis of polarized light.
4. A study of solar cell characteristics.
5. A study of interference, diffraction and double refraction by using a laser source.

6. Familiarization with LDR, LED, Photo cell and Phototransistors.

BOOK: Experiments in Engg. Physics by M.N.Avadhanulu,Dani,Pakee.

1-4 Applied Chemistry (Theory)

Unit I:

(17 periods)

Water Treatment:

1. Brief introduction regarding sources, impurities in water.
2. Hardness of water, types, determination of hardness using EDTA method.
3. Brief discussion and chemistry involved in the process of sedimentation, coagulation, filtration and sterilization, UV, Ozone, chlorination including break point chlorination.
4. Softening of Water:
 - (i) Lime-soda, process: Principles in hot, cold, lime-soda process. Problems based On-
 - (a)lime-soda calculation,(b)Zeolite,(c) Hardness of water by complexometry.
 - (ii) Zeolite softener, demineralization by synthetic ion exchange resins, Comparison between lime-soda, Zeolite and ion exchange process.
5. Cooling water characteristics and Langelier index.
6. Boiler Troubles:

Carryover priming, foaming, scales, sludges, caustic embrittlement, boiler corrosion-causes and effects on boiler operation and methods of prevention. External and internal conditioning, i.e. phosphate, carbonate and calgon conditioning, Requirements of feed water for modern high-pressure boilers.

Unit-II:

(10 periods)

Corrosion of Metals and Alloys:

1. Electrochemical corrosion- General revision of concept of electrode potential, galvanic cells, electrochemical and galvanic series, causes of corrosion, mechanism of direct chemical attack, pilling- Bed worth rule, concentration cells.
2. Differential aeration theory of corrosion, types of corrosion, pitting corrosion, intergranular stress, waterline and microbial corrosion.
3. Corrosion prevention: (a) Design and material selection,
 - (b) Anodic and Cathodic inhibitors,
 - (c) Cathodic and Anodic protection,
 - (d) Protective coatings- types of surface, coatings and its application.

Unit-III:

(10 Periods)

Cement:

1. Manufacture of Portland Cement- Raw materials, chemical composition , proportion and roll of microscopic constituents, cement modulus i.e. lime saturation factor, Silica modulus and alumina factor, dry and wet processes of manufacture.
2. Setting and hardening of cement.
3. Types of cement i.e. pozzolanic, white, rapid hardening, high alumina, low heat cement,additives i.e. accelerators, retarders air entrainment and water repellants and their different properties.

Environmental Chemistry and Control of Environmental Pollution:

Earth's radiation balance, particles, ions and radicals in atmosphere-formation and significance, greenhouse effect, consequences of depletion of ozone layer by human activities, temperature inversion.

Air Pollution:

Natural and man made pollutants, (CO, NO_x, HC, SO_x, SPM) Acid rain, effect of pollutants on humans, general idea of pollution control techniques, lead free petrol and catalytic converters.

Water Pollution:

Classification of pollutants (organic and inorganic); sediments, insecticides, heat and their effects on humans, methods for waste water treatment-only general idea of preliminary, primary and tertiary treatment techniques, pollution due to paper, sugar, steel and cement industries.

Unit IV:

(15 periods)

Fuels:

Introduction, calorific value, higher and lower calorific value, determination of calorific value by Bomb calorimeter and Boy's calorimeter. .

Solid Fuels:

Carbonization of coal: Low temperature and high temperature carbonization, manufacture of coke-by otto-Hoffman's by-product recovery process. Ultimate analysis of coal, its significance, storage of coal, spontaneous, combustion, pulverized

coal as fuel.

Liquid Fuels: Use of gasoline and diesel in internal combustion engine, knocking and chemical constitution, octane number, cetane number, doping agents, Mining & Fractional distillation of crude petroleum (boiling point wise separation only). Fisher-tropsch process for manufacture of synthetic gasoline. Thermal catalytic cracking of petroleum, Aviation petrol.

Gaseous Fuels:

Study of natural gas L.P.G.

Non- conventional energy sources:

Wind energy, solar, tidal waves energy.

Unit V:

(10 periods)

Lubricants & Combustion Calculations:

1. Introduction, lubrication mechanism, hydrodynamic, boundary and extreme pressure lubrication.
2. Classification of lubricants- solid, semisolid and liquid lubricants, blended oils, synthetic lubricants, lubricating emulsions.
3. Properties of greases, drop point and consistency test, properties of liquid lubricants with more stress on flash point, viscosity and viscosity index, Aniline point, Cloud & Pour point, criteria of selection of lubricants for specific purposes. Significance of flue gas, analysis by Orsat apparatus, simple combustion calculations.

Unit-VI:

(8 periods)

Polymers And Plastics As Engineering Materials:

1. Polymer-Definition, classification (on structural aspects only) of polymers, types of polymerization, explanation with examples of addition and condensation polymerization.
2. Characteristics of polymers, structure and properties of polymers.
3. Moulding of plastics, thermosetting and thermoplastic resins.
4. Preparation from monomer, properties and industrial applications of polyethylene, PVC Teflon, polystyrene, Bakelite.
5. Silicones and their industrial applications.
6. Natural rubber-structure, preparation and properties, compounding of rubber, vulcanization and uses.
7. Synthetic rubber- study of SBR, Nitrile rubber, Neoprene, Silicone rubber, polyurethanes properties and uses.
8. Fiber glass and composite materials, Fiber and glass reinforced plastic-properties and uses, optical fibers a brief idea.

1-4 Applied Chemistry Practical Syllabus

The chemistry practical syllabus is proposed to contain, 15 experiments of which a minimum ten should be performed. Six should be performed from Group I and Four from Group-II. In addition to these experiments DEMONSTRATIONS should be carried out of the following experiments. :

1. Determination of calorific value of a solid fuel using Bomb Calorimeter.
2. Gas analysis using Orsat Apparatus. .

In addition to the above TWO experiments, if time permits, demonstration of any one or more of the following experiments may be undertaken.

- (i) Determination of PH of water sample by PH meter.
- (ii) Determination of conductivity and conductometric titration.
- (iii) Determination of Iron by colorimeter.
- (iv) Potentiometric titrations.

3. If possible, visit to industries should be arranged.

LIST OF EXPERIMENTS

Any TEN experiments out of following should be performed in academic session. Any SIX experiments from group- I and any Four from group-II should be performed

Group-I:

1. To estimate the amount of ferrous and ferric ions present in the given solution or from ore.
2. Determination of hardness of water by complexometric method.
3. To estimate the amount of Ni^{2+} ions in a given solution by complexometric method.
4. Estimation of free chlorine in the water by iodometry.
5. Type and extent of alkalinity by Warder's method.
6. Determination of dissolved oxygen in a water sample
7. Removal of Ca^{2+} by ion-exchange resin.
8. Determination of C.O.D. in waste Water
9. Determination of Copper by Iodometry.

Group-II:

1. Determination of Viscosity of lubricating oil at different temperatures by Redwood Viscometer No.1 or No.2.
2. Determination of flash point of lubricating oil by two different flash point apparatus close cup or by open cup.
3. Proximate analysis of coal.
4. Determination of Al_2O_3 and Fe_2O_3 ratio of cement.
5. Saponification number of animal/vegetable oil.
6. Neutralization number of animal/vegetable oil.
7. Determination of molecular weight of a polymer by viscosity measurements.
8. Determination of carbon residue of a lubricating oil by Conradson's Apparatus.
9. Determination of rate of corrosion by weight loss by corrossometer.

BOOKS RECOMMENDED:

Theory:

TEXT BOOKS:

1. A Text Book of Engineering Chemistry by S.S. Dara(S. Chand & Co. New DELHI, 1985, first Edition, 1985).
2. Engineering Chemistry by P.C. Jain and Monika Jain(Dhanpat Rai & Sons, New Delhi, Fifth Edition).
3. Engineering Chemistry (volume I &II) by Rajaram and Kuriacose (Tata McGraw Hill Publication).

Practical:

Text Book on Experiments and Calculation in Engineering Chemistry by S.S.Dara, (S. Chand & Co. New Delhi).

REFERENCE BOOKS:

1. Engineering Materials by Jastrzebsiki (Tokyo).
2. Corrosion Engineering by Fontana and Green (McGraw Hill International Book Co. 2nd edition).
3. Chemistry of Engineering Materials by Robert G.Leighou (McGraw Hill, New York).
4. Chemistry of Engineering Materials by Loyd A. Munro (Prentice Hall Inc. N.J.).
5. Chemistry for Engineers by Edward Cartmell by Butterworths, London.
6. Water treatment for industrial and other uses by Eskel Nordell (Reinhold, New York).
7. Applied chemistry for engineers by T.S. Gyngell.
8. Water Treatment by F.I Bilane (Mir Publishers, Moscow).
9. Elements of Fuel Technology by G.W. Himus (Leonard Hill Ltd., London).
10. Chemtech Vols I to IV Editor D. Venkateshwarlu, Chemical Development Center IIT Madras, 1979.

1-5 English

A.1. Composition:

Unit I: Exercises of free essay writing with particular emphasis on clear self expression (Free essay of about 400 words on any topic). 10 marks.

Unit II: Principles and Practice of letter writing and business correspondence.

07 Marks.

Unit III: 3.Technical report writing.

08 Marks

B.1. Grammar:

Unit IV:

1. Correction of common errors
2. Exercise on rewrite as directed
3. Correct use of words, idioms, phrases, prepositions etc.

15 Marks

Unit V:

C. Principles of public speaking

13 Marks

Precise writing

07 Marks

Text Book:

Unit-VI:

1. English prose for Pleasure and Profit by R.N. Roy 20 Marks
2. Public speaking and influencing men in business by Dale Carnegie.

13 Marks

Syllabus With Patter of Question Paper:

(A) Text for detailed study : English prose for pleasure and profit by R.N.Roy

(B) Public speaking and influencing men in business : Dale Carnegie.

Q.1. One question out of two on the essays (3, 4, 5,8,9) of R. N. Roy's text to be answered from. (10 Marks)

Q.2. One question out of two on essays (10,12,14,15,16) of R. N. Roy's text from.

(10 Marks)

- Q.3. Two out of four questions to be answered from the following chapters from the book of public speaking(1,2,4,6,7,8,9,11) (13 Marks)
- Q.4. Précis writing of passages outside the text book. (07 Marks)
- Q.5. One letter out of two to be written. (07 Marks)
- Q.6. Technical Report writing (one out of two) . (08 Marks)
- Q.7. One Essay out of four to be written in about 300 words. (10 Marks)
- Q.8. Grammar:
1. Active and passive Voice . (02 marks)
 2. Direct and indirect speech (02 marks)
 3. Transformation of sentences. (05 marks)
 4. Use of phrases and idioms. (03 marks)
 5. Correction of sentences. (03 marks)

TEXTBOOKS:

1. High School English Grammar and Composition by Wren & Martin S. Chand & Co.
2. Modern English Grammar Usage and Composition by N. Kishnaswamy. The Macmillan
3. Co. or India Limited.
4. Professional Communication Skills by P.Bhatia and Sheikh.

1-6 Social Sciences

Unit I: Concept of culture and civilization. Social sciences and its utility, Applied Humanities and Social Engineering.

Unit II: Development of Human Civilization with specific reference to monumental studies of Engineering skill, Ancient Indian Civilization, Evolution of Indian Civilization during 19th and 20th Century.

Unit III: Meaning and scope of Industrial Psychology and Industrial Sociology. Fatigue in industry. Selection and Training of workers, Motives for work, Legislative measures for workers welfare.

Unit IV: Environment in Industry: Internal and External, Emerging industrial culture in India. Organizational behavioral dynamics: Leadership in Industry.

Unit V: Indian Constitution and Federal System. Fundamental Rights and Directive principles, Role of bureaucracy in modern Society.

Unit VI: Concept of industrial democracy, Works organization: power, authority, and status system, formal and informal organization, Industrialization and Urbanization : Study of slums.

TEXTBOOKS:

1. A New Look in to Social Sciences by Sheikh Shabbir, (S Chand & Co)
2. A History of World Civilization by J.E.Swain, (Eurasta Publishing House)
3. Sociology by Rao, (Kitab Mahal Publications)

REFERENCE BOOKS:

1. Vidya Bhushan & Sachdeva : An Introduction to Sociology Kitab Mahal Publication.
2. Yogesh Atal : Social Science: The Indian Scene Abhinav Publication, New Delhi.
3. Rajni Tandon : Applied Humanities, Sterling Publication.
4. J.E.Swain: A History of World Civilization, Eurasia Publication, New Delhi.
5. J.M.Roberts: The Hutchinson History of the World, B. T. Publication, Bombay.
6. Waddell: The Makers of Civilization in Race & History, S. Chand & Co. Ltd.
7. Mason, Haire: Industrial Social psychology (In Handbook Psychology -VoI.II)
8. Durga Dass Basu : Introduction to Constitution of India Prentice Hall of India.
9. Pascual Gisbert SJ. : Fundamentals of Industrial Sociology Tata McGraw Hill.
10. Schnieder Egnc : Industrial Sociology.
11. N.R.Sheth: Industrial Sociology in India, Allied Publication, New Delhi.
12. G. Humans: Juman Group.
13. Jacobson, H.B. & Roucak, .I .S. : Automations & Society (Edited).

1-7 Engineering Mechanics

Section-A

Unit I:

1. Important Vector Quantities:

Position-vector, moment of a force about a point about an axis, couples, Couple moment as a free vector.

(3 Periods)

2. Equivalent force systems.

Resultant of a 2 dimensional distributed loads and three-dimensional general force system Wrench.

(3 periods)

UNIT II: Equations of Equilibrium: Free body diagrams, Equations of equilibrium coplanar concurrent and Non-concurrent systems, General spatial force system; simple machines (Differential axle and wheel, single and double purchases Crab). Velocity, Ratio, Mechanical advantage, efficiency etc.

Unit III: Application of graphic statistics to reactions of simple supported beams and trusses. Analysis of simple pin jointed frames by method of joints method of sections and graphical methods. (18 periods)

4. Friction forces:

Law of Coulomb friction, problems involving dry friction, simple applications like

wedges and band brakes. (06 periods)

Section-B

Unit IV:

5. Centroids and Moments of Inertia:

Second Moment and products of inertia of plane areas, Moment of inertia of masses. Transfer theorems for moment of inertia and Product of inertia, Polar moment of inertia, Principal axes, Mohrs circle of inertia. (6 periods)

6. Introduction of Virtual work theorem:

Principle of Virtual work applied to equilibrium of Mechanisms, simple beam, pinjointed frames.

(5 periods)

7. Dynamics of a particle:

Unit V: Rectilinear motion of a particle with constant and variable acceleration. Rectangular components of curvilinear motion Radial and tangential components of acceleration, Kinetics of particle and several interconnected particles. Translation of bodies-force inertia method, D'Alambert's Principle, work Energy method, (Expressions based on center of mass)

(12 periods)

8. Methods of Momentum:

Unit VI: Linear impulse momentum, considerations for a system of particles, Consideration of linear momentums, Elastic impact of two bodies, Direct central impact.

List of Experiments:

(Any 8 out of the following)

1. Reactions at the supports of a simple beam.
2. Study of forces in jib crane and shear leg.
3. Coil Friction.
4. Determination of coefficient of friction by inclined plane.
5. Equilibrium of vertical Mast under general spatial force system.
6. Moment of Inertia of flywheel.
7. Verification of Newton's second law of motion by Fletchers trolley.
8. Single and Double purchase crab.
9. Differential wheel and axel.
10. Study of gear trains.
- 11 Graphic statistics - one problem on resultant of coplanar forces/ Beam reactions/ stress diagram for simple truss.

TEXTBOOKS:

1. Engineering Mechanics: R.S.Khurmi
2. Engineering Mechanics: F. L. Singer
3. Engineering Mechanics: Askhedkar & Kulkarni

REFERENCE BOOK:

1. Engineering Mechanics: Timoshenko & Young
2. Engineering Mechanics: Bear & Johnstom
3. Engineering Mechanics: I. H. Shames

1-8 Engineering Drawing

Unit I: Use of various drawing instruments, lettering and I.S.I. Standards for drafting. *Plane Geometry:* Construction hand use of

various scales, construction of drawing curves such as Parabola, ellipse, hyperbola, involutes, cycloids, spiral and helix, Loci of points on links of simple mechanisms.

Unit II: Solid Geometry: Methods of orthographic projections, projections on auxiliary planes. Projection of Points, lines and plane.

Unit III: Projections of simple solids, such as cylinders, cones, prisms and Pyramids with varying position of axes and ground lines.

Unit IV: Section of solids. Development, of plane and curved surfaces.

Unit V: Interpenetrating of solids such as cylinders, cones and prisms,

Unit VI : Introduction to isometric projections. Blue Print: Reading of blue prints such as building plan, machines etc.

Practical:

Each Candidate shall submit a set of sketches, drawing sheets based on the above syllabus.

TEXTBOOKS:

1. Engg. Drawing by R.K.Dhawan
2. Fundamentals of Engg. Drawing by Warren Luz.
3. A text book of Engg. Drawing by N.D.Bhatt.

1-9 Electrical Engineering

Unit I: Electric circuits: Circuits Elements (R,L,C), Kirchof's Laws, Superposition Theorem, Voltage source, (definition, characteristics, of practical source, equivalent current source)Star-Delta transformation.

Magnetic Circuits: Flux, mmf, reluctance, analogous electric circuits, simple calculations for composit magnetic circuits.

Unit II: A. C. Circuits: Periodic functions, average & rms values, Steady state behavior with sinusoidal, excitation, phasor representation, reactance and impedance, series and parallel a.c. circuits, resonance, power in a.c. circuits, power factor, principle of generation of single phase & Three phase voltages. Power in Balanced three phase AC systems.

Unit III: Electrical Measurement:Definitions of indicating, integrating and recording instruments, deflecting controlling and damping mechanisms. Ammeters and voltmeters of permanent magnet moving coil type and moving iron type, electro-dynamometer type Wattmeters, Induction type single phase energy meter.

Unit IV: Transformers: Introduction, basic principles, construction, phasor diagram for transformer under no load and transformer on load, Balance of mmf on two sides, phasor diagram, equivalent Circuit, losses, efficiency, regulation, Open-circuit & short-circuit tests.

Unit V: Rotating Electrical Machines:

D. C. Machines: Introduction, construction, EMF & Torque equation, classification, self excitation of d.c. shunt generators, EMF voltage, current relations in Generator and motor. Characteristics, starting and speed control of d.c. motors.

Unit-VI: Three phase induction motor: Construction, rotating field, synchronous speed, Rotor current, torque Principle of Single phase Capacitor Start motor.

Note: The scope of the topics will be as contained in the Reference book.

TEXTBOOKS:

1. A text book of electrical technology Vol. I&II by B.L.Theraja (M/s S.Chand & Co., W. Delhi 1959).
2. Principle of Electrical Engineering by B.R.Gupta (M/s S.Chand & Co., N. Delhi 1985).

REFERENCE:

Elements of Electrical Science by P. Mukhopadhyaya et. al-Nem Chand & Bros. Roorkee - 7 published in 1989.

Practical Work:

Based on above course.

Text book for Practical Work:

A text Book on Laboratory Course in Electrical Engineering by S.G. Tarnekar & P.K. Kharbanda, M/s.S. Chand & Co., NEW DELHI 1980.

1-10 Workshop Practice

1. **Carpentry:** Identifying some common types of timber and their engineering application, Names and uses of Carpenter's Tools Various types of wood working joints and their application. (2 jobs).
2. **Smithy:** Use of various tools and equipments in Smithy shops Demonstration of various operations and their applications. Operation of the hearth and various other hand and power forging equipments. (1 job).
3. **Fitting:** Use of fitting tools, equipment and measurement instruments, Practice in the method of making and use of measuring instruments, Chipping, filing, drilling, tapping scraping operation practice. (1 job)
4. **Welding:** Name and uses of gas and electric welding, tools and equipment; gas and electric welding, operation practice. (1 job)
5. **Hand Tool:** Use and handling of common hand tools.

BOOKS:

1. Text book of Workshop Technology by R.S.Khurmi and J. Gupta (S. Chand & Co. Ltd.)
2. Elements of Workshop Technology Vol-I & Vol-II by Hazra Choudhari (Media PROMO. &PUB. PVT)

3. Course in Workshop Technology BY B.S.Raghuwanshi (Dhanpat Rai & Sons).
4. Workshop Technology by H.S.Bawa (McGraw Hill)

SEMESTER-III

33CT-1

APPLIED MATHEMATICS-III

Unit 1 : Laplace Transforms : Laplace transforms and their simple properties. Simple applications of Laplace transforms to solve ordinary differential equations including simultaneous equations, Application to one dimensional partial differential equation. (10)

Unit 2 : Fourier and Z transforms: Fourier integral theorem, Fourier sine and cosine integrals, Fourier transforms, finite Fourier and sine and cosine transform.

Z-transform definition and properties; Inversion by partial fraction decomposition, Relation with Laplace transforms. Application of Z-transform to solve differential equations with constant coefficients. (7)

Unit 3: Matrices : Inverse of a matrix by partitioning method, Inverse of a matrix by adjoint method and its use in solving simultaneous equation, Rank of matrix, Consistency of a system of equations, Linear dependence, Linear and Orthogonal transformations. (6)

Unit 4 : Matrices : Characteristic equation, Eigenvalues. Eigenvectors, Reduction of a diagonal form, Statement and verification of Cayley-Hamilton theorem, Sylvester's theorem, Association of matrices with linear differential equation of second order with a constant coefficient, Determination of largest eigen value by iteration method. (7)

Unit 5: Theory of Probability: Axioms and models, Conditional probability Baye's Rule examples, Random variables -simple examples, Discrete and Continuous random variables, Jointly distributed random variables. (8)

Unit 6 : Distribution of random variables: Examples, expectations -Moments, Conditional distributions and conditional Expectations, Stochastic Process -Bernoulli and Poisson process. (7)

TEXT BOOKS:

1. Higher Engineering Mathematics, B. S. Grewal.
2. Theory and Problems of Probability and Statistics, M. R. Spiegel (McGraw Hill) Schaum Series.
3. Advanced Engineering Mathematics, Kreyszig

REFERENCE BOOKS:

1. Applied Mathematics for Engineering and Physics, A. Pipes and Harvile.
2. Mathematics for engineers, Chandrika Prasad.
3. Advanced Mathematics for Engineers, Chandrika Prasad.
4. Probability and Statistics for Engineering 4th Ed., Miller Freund and Johnson;
5. Probability, Statistics with Reliability, Queuing and Computer' Sciences Application, K. S. Trivedi.

33CT-2

NETWORK ANALYSIS

Unit. I : Nodal & Mesh basis equilibrium equation, Matrix approach of complicated network containing voltage & current sources & inductances, Sources Transformation, Duality.

Unit. II: Network Theorems, Super-position, Reciprocity, Thevenin's, Norton's Maximum Power transform, Compensation & Tellegen's as applied to A. C. circuits.

Unit III : Two Port Networks Parameters & Interconnections, Scattering Parameters. Basic ideas of network graph, Network Tree, Tie-Sets, Equilibrium equations on Tie-set & model basis using topological method.

Unit. IV : Trigonometric & Exponential Fourier Series, Discrete Spectra & Symmetry of waveforms. Steady State response of a network to non-sinusoidal periodic inputs, Power-Factor, effective values, Fourier transforms & Continuous spectra, Three phase unbalanced circuits & power calculations.

Unit V: Laplace Transform & properties, partial fractions, Singularity functions & wave form synthesis, Analysis of RC, RL & RLC

network without initial conditions with Laplace transforms, Evaluation of initial conditions.

Unit VI: Transient behavior, concept of complex frequency, Driving Point transfer function, Poles & Zeros of immittance Functions, their properties, Sinusoidal Response from pole zero locations, Convolution Theorem & Integral Solutions.

TEXT BOOKS:

1. Kelker & Pandit : Linear Network Theory, Saroj Prakashan
2. Van Valkenburg : Network Analysis, Prentice Hall
3. Reza & Silly: Modern Network Analysis, McGraw Hill

33CT-3

INTRODUCTION TO PROGRAMMING

Unit I: Fundamentals of Computers: Introduction, Basic Structure of a Computer, input process Output system, Input/Output Devices, Memories, Hardware, Software, System Software, Application Software, Applications of Computers, Types of Computers Programming Languages, Errors in Languages, Algorithms & Flowcharts.

Unit II: Programming Language 'C': Variables, Datatypes, Declarations, Operators, Expressions, Input Output Operations, Formatted I/O, Hierarchy of Operations, Decision Making, The While, The For, The Do While Loops, Nesting of loops, Switch, Continue, Break statements, Jumps in loops, GoTo statements.

Unit III: Defining & Using Functions, Parameter Passing, Recursion, Pointers, Pointers to functions, Global, Static, local variables, Command Line Arguments.

Unit IV: Array variables, syntax. rules for arrays, Multiple subscripts in arrays, reading & writing multidimensional arrays Pointers & Arrays, Array of Pointers, Manipulation in array, String Handling.

Unit V: Using Structures, Structures in arrays, arrays in structures, Pointers for structure, pointer to pointer, Enumerated Data Type, Union, Preprocessor, Macros, Compilers controlled Directives.

Unit VI: File Management, Sequential files, Unformatted files, Text Files, Binary Files, Bitwise Operators. Graphics Programming Lines, Drawing & Filling images, Patterns, Drawing & Filling Shapes, Palettes & Colors, Text in Graphics.

TEXT BOOKS:

1. Programming in ANSI C by E. Balguruswamy
2. The ANSI C Programming by Kernighan and Ritchie
3. Let Us C by Y. P. Kanetkar
4. Turbo C Reference Manual
5. C in depth by Srivastava, BPB Pub.
6. C by Aitken BPB Pub

RECOMMENDED BOOKS:

1. Theory and Problems of programming with C By Gottfried Byron S. McGrath Hill Pub.

33CT-4

ELECTRONIC DEVICES & CIRCUITS

Unit I: Semiconductor Diodes and Power Supplies

Intrinsic & Extrinsic semiconductors, Theory of PN Junction diode, junction capacitance, Zener diodes, Varactor diodes, Tunnel Diodes.

Power Supplies, Half Wave & Full Wave Rectifiers, Voltage Doublers, Filters, Ripple Factor, Zener & Emitter Follower type & Series Regulators.

Unit II: Junction Transistors

Theory of Operation, static characteristics, Break Down Voltages, current voltage power limitations, Biasing of *BJT* different biasing arrangements, stability factor, Thermal Runaway, Power Transistors.

Unit III : BJT Analysis

Small Signal analysis of CE, CB, CC amplifiers & Comparison. High frequency analysis, calculation of frequency response, gain bandwidth product.

Unit IV : Power Amplifiers

Classification A, B, AB, C classes efficiency, Push Pull configuration (A, B, AB), Complimentary Symmetry, Second harmonic & Cross Over Distortion.

Unit V: Positive & Negative Feedback Amplifiers

Feedback Amplifiers, classification, Practical circuits, applications, advantages.

Oscillators, Stability, Barkhausen Criterion RC, LC & *Crystal* Oscillators.

Unit VI: FET & its Analysis

Field Effect Transistor & MOSFET, Principles of operation & Characteristics, biasing arrangements, Small Signal Analysis of CG, CD, CS, High Frequency analysis. ,

Note : Emphasis to be given on Theoretical aspect & Not Mathematical Aspect.

Practicals based on above syllabus

TEXT BOOKS:

1. Integrated Electronics By Millman & Halkis
2. Electron Devices & Circuits by Millman & Halkis

REFERENCE BOOKS :

1. Electronic Circuits-Discrete & Integrated by Schilling & Belove
2. Micro Electronics by Millman & Gabrel

33CT-5

DIGITAL ELECTRONICS

Unit I: Analog Vs. Digital Circuits, Transistor as Switch, Boolean Algebra, Boolean identities, Logic problems, Binary, Gray, Octal, Hex and ASCII Codes, Logic Gates & truth Tables, DeMorgan's Law, Sum of Product & Product of Sum, K-Maps, Solution of problems using K-Maps

Unit II: Quine Mc Cluskey's Method.

Unit III: Basic Combinational Circuits: Logic Operated Switch, Totem Pole Output & Tri State Output Decoders, Encoders, Multiplexers, Demultiplexers, Code Converters.

Unit IV : Introduction to Flip-flops, Latches, Concept of Clock, Memory organisation with Flip Flop as a basic cell, RAM, ROM, EPROM, & EEPROM -an overview, Master Slave Combination & conversion of one type to another type flip flop.

Unit V: Excitation tables & introduction to Sequential Circuits, Counters Synchronous/asynchronous, different modulo counters with reset/clear facility, design of counters of arbitrary modulo with K-maps, Lock Free Counters.

Unit VI : Arithmetic Circuits : Adders(Half & Full), Subtractors (Half & Full), BCD adders/Subtractor, Carry Look Ahead Adders, Concept of ALU & its Design.

TEXT BOOKS :

1. Digital Circuits & Microprocessors by Herbert Taub
2. An Introduction to Digital Computer Design by Rajaraman & Radhakrishnan
3. Digital circuits by M. Mano
4. Digital Electronics Principles by Malvino.

33CT-6

COMPUTER WORKSHOP-I

1. Introduction to PC Hardware
2. Introduction to Networking Environment
3. Working Under DOS Environment
4. Working Under Windows Environment S
5. Mini Project

SEMESTER-IV

44CT I

DISCRETE MATHEMATICS & GRAPH THEORY

Unit I : Set Theory :Operations on sets -relation and functions, partial order, equivalence relations, Peano axioms and induction.

Unit II : Mathematical Logic :

Propositions, predicate logic, formal mathematical systems, algebra, homomorphism, automorphism.

Unit III: Groups

Elements of theory of some algebras, semigroups, monoids, groups.

Unit IV : Rings :

Rings, fields, lattices, Boolean Algebra.

Unit V : Graph Theory

Graphs, hypergraphs, transitive closure, spanning trees.

Unit VI : Combinatorics :

Generating functions, recurrences, counting theorem and applications.

TEXTBOOKS :

1. Discrete Mathematics Structure with application for Computer Science By Koman & Busby (PHI)
2. Combinatorial Mathematics By C.L.Liu. (MGH)

REFERENCE BOOKS :

1. Elements of Discrete Mathematics By C.L. Liu.
2. Discrete Mathematics By Lipschutz
3. Discrete Mathematics By R. Johnsonbaugh.

44CT 2**DATA STRUCTURES**

Unit I: Introduction to Data Structures: Basic Concepts of Data, How to Create programs.

Arrays: Ordered Lists, Sparse Matrices, Quick Sort, Merge Sort, Heap Sort, selection & Bubble Sort, Linear Search, Binary Search.

Unit II: Stacks & Queues: Fundamentals, Evaluation of expressions, Polish expressions & their compilation, Application of stacks, Multiple stacks & Queues, priority queues.

Unit III: Linked Lists: Singly Linked List, Linked Stacks & Queues, the polynomial addition, Examples on linked list, circular linked list, doubly linked list & dynamic Storage management, Generalized list.

Unit IV : Trees: Basic Terminology, Basic trees, Binary tree representations, threaded storage representation, binary tree traversals, binary search trees, Application of trees. Preliminary treatment of AVL Trees, B-Trees.

Unit V: Graphs: Definition & terminology, Graph representation: matrix representation of Graph, List of structure, other representation of graphs, Breadth First Search, Depth First Search, Spanning trees, Shortest path algorithm, topological sorting, Critical path.

Unit VI: Files: Storage structures on tapes & disks, sorting with disks & Tapes, sequential files, indexed sequential files, Direct Access files, Hashing techniques,

TEXT BOOKS:

1. Fundamentals of Data Structures by Horowitz & Sahani
2. Algorithms, Data Structures & Programs by Ni Claus Worth
3. Data Structures in C/C++ by Tenanbaum
4. An Introduction to Data Structures with Applications by Trembley & Sonerson
5. Data Structure & program Design in C by Kruse, Leung & Tondo, pm
6. Data Structure & Algorithm by Lafore, BPB
7. Data Structure Through C, BPB Pub.

REFERENCE BOOK :-

C And Data Structures By Dr.O.G.Kakde, Mr.P.S.Deshpande.

RECOMMENDED BOOKS:

1. Data Structure By Lipschutz

44CT-3**FUNDAMENTALS OF MICROPROCESSORS**

Unit I: Introduction to Intel's 8085A, Architecture Description, memory and Input/Output, Instruction set.

Unit II: Addressing Modes, Timing Diagrams, Assemblers & Disassemblers (by Hand Coding), Flag structure, concept of PSW, Stacks, Subroutines, PUSH & POP instructions & CALL/RETURN instructions, Stack Manipulations. Simple Programs.

Unit III: Programming Techniques, Looping, Counting, Indexing, Counters & timing delays, interrupt concept & structure in 8085.

Interrupt Service routines. Advanced Instructions of 8085.

Unit IV: Methods of data transfer Serial, Parallel, Synchronous & asynchronous. IN/OUT instructions. Timing Diagrams, Simple Hardware interface to 8085 of standard latches/Buffers/Keys/display devices as I/O ports. Handshaking concepts. Architecture and interface of 8155, 8255 & 8253 to 8085. Interfacing of ADC & DAC.

Unit V: Hardware considerations -bus contention, slow memory interfacing, complete signal description of 8085. Multiplexed Keyboard/Display interface and assembler Directives.

Unit VI: Introduction to 8086, Architecture of 8086

TEXT BOOKS:

- 1) Microprocessors Architecture Programming & Application with 8085 By R. S. Gaonkar
- 2) Microprocessor & Interfacing: D. V. Hall
- 3) Microcomputer System: 111e 8086/8088 Family: Liu Gibson

RECOMMENDED BOOKS:

1. Introduction to Microprocessor for Engineers And Scientist
By P.K.Ghosh & P.R.Shridhar, PrenticeHall of India

44CT-4

COMPUTER ARCHITECTURE & ORGANISATION

Unit I: Basic Structure of Computer Hardware and Software: Functional Units, Basic Operational concepts, Bus Structures, Software, Distributed computing, Concluding remarks. Addressing Methods and Machine Program Sequencing: Memory Locations, Addresses and Encoding of Information, Main Memory Operations, Instructions and Instruction Sequencing, Addressing Modes, Assembly Language, Stacks. Subroutines.

Unit II: Instruction Sets : Instruction Formats, Limitations of Shortword- length machines, High Level Language considerations, The IBM -370.

The Processing Unit : Some Fundamental Concepts, Execution of a complete Instruction , Sequencing of Control Signals, Concluding Remarks.

Unit III: Microprogrammed Control: Microinstructions, Grouping of control signals, Micro program Sequencing, Micro instructions with next address field, Perfecting Microinstructions, Emulation, Bit Slices, Introduction to Microprogramming .

Unit IV: Arithmetic: Number Representation, Addition of Positive Numbers, Logic Design for Fast Adders, Addition and Subtraction, Arithmetic and Branching Conditions, Multiplications of positive numbers, Signed -Operand Multiplication, Fast Multiplication, Integer Division, Floating Point Numbers and Operations.

Unit V: The Main Memory: Some Basic Concepts, Semiconductor RAM Memories, Memory System Considerations, Semiconductor ROM Memories, Multiple module Memories and Interleaving, Cache Memories, Virtual Memories, Memory Management Requirements .

Unit VI: Computer peripherals: I/O Devices, Online Storage, File Services. Processors: Families of Microprocessor chips, Introduction to RISC Processors, Array Processors, Loosely coupled, Tightly coupled Systems.

TEXT BOOKS:

Computer Organisation IIIrd Edition- V. Carl Hamacher, McGrawHill

REFERENCE BOOKS:

Computer Architecture & Organisation by J. P. Hayes

RECOMMENDED BOOKS:

Computer Architecture By Kai Hwang

44CT-5

ELECTRICAL MACHINES & MEASUREMENT

Unit I: Measuring Instruments Classification: Absolute & Secondary instruments, Indicating Instruments, General Principle of working of Permanent Magnet Moving Coil, Moving Iron, Dynamometer & Induction Instruments, Power & Energy Measurements..

Unit II: Potentiometers: D. C. & A. C. Potentiometers, Application for measurement of voltage, Current & Power Resistance: Inductance & Capacitance, Measurement of Low, Medium & high resistance, Elementary method of measurement of inductance & capacitance, Generalized theory of A. C. Bridges,

Unit III: Electronics Instruments: Cathode Ray Oscilloscope, digital voltmeter & Multi-meter, Vacuum Tube Voltmeters, Transistor voltmeters (TVMS) A. C. millivoltmeters, concept of Instruments Amplifiers, x-y Recorders

Unit IV: Transformer: Single Phase & Three phase, effect of loading, regulation, Open Circuit & Short-circuit tests, efficiency, all day efficiency, parallel operation, Auto transformers.

Unit V: D. C. generators, series, shunt & compound, Commutator, armature EMF, armature reaction, & commutation.

D. C. Motors: Series, Shunt & Compound, Back emf, characteristics, starting, speed control & applications.

Unit VI: Three phase Induction Motors: Principle of operation, type, torque & slip, equivalent circuit, No load & Blocked rotor test, starting, speed control & Applications.

Single Phase Motors: Principle of operation of single phase induction motor, starting methods.

Three phase synchronous machines: Motor & generator action, synchronous impedance & excitation voltage, equivalent circuit, voltage regulation, starting of motor, effect of excitation variation in case of motor.

TEXT BOOKS:

1. Electrical Machines by Nagrath & Kothari
2. Electrical Measurement & Measuring Instruments by Golding
3. Electric Measurements & Measuring Instruments by Baldwin
4. Electrical Technology Vol- II by B. L. Theraja
5. Basic Electrical Engineering by Fitzgerald & Grable Higginbotham.

44CT-6

COMPUTER WORKSHOP-II

1. Introduction to MS-Word, Excel & PowerPoint
2. Introduction to Internet & World Wide Web
3. Introduction to FoxPro
4. Mini Project

SEMESTER-V

55CT-1

OBJECT ORIENTED METHODOLOGY

Unit I: Introduction to OOP methodology. Features of OOP languages like data encapsulation ,Inheritance ,Polymorphism and Late Binding.

Unit II: Concept of class, instantiating a class. Static and non-static members. Controlling accessibility ,overriding a method ,operator. Concept of Abstract class. Concepts of interface , implementing an interface.

Unit III: Building of data structures like lists, stacks, queues, trees, hash table.

Unit IV: Concept of exception and exception handling mechanism in OOP.

Unit V: Introduction to streams,use of stream classes, concept of serialization.

Unit VI: Case Studies of Object Oriented Systems in C++, Including Introduction to Templates.

BOOKS:

Object Oriented Programming : An Evolutionary Approach- Brad Cox : Ad. Weley

Mastering C++ Ravishankar, Venugopal,TMH

RECOMMENDED BOOKS:

1. Object Oriented Programming with C++ By Balagurswamy E.
2. Programming in C++ By Yeshwant Kanetkar

55CT-2

COMMUNICATION SYSTEM

UNIT I: Frequency spectrum of electromagnetic waves their properties, wave propagation etc. Tuned Amplifiers, gain and bandwidth, neutralization. Noise, types, source, noise, figure, calculation.

UNIT II: A. M. Modulation, series plate modulated class "C" Amplifiers, efficiency and power calculation, SSB modulation SSB-SC modulation, AM De modulators , square law detector, diode, peak detector , envelop detectors, detectors for SSB and SSB-SC A. M. signals, A. M. using transistors

UNIT III: Angle Modulation, Frequency Modulation, Spectrum ,Reactance Tube FET Modulators, Armstrong method, F. M. Transmitters, frequency stabilization method, F. M. discriminator, foster seely, PLL detectors ,stereo phonic FM.

UNIT IV: Pulse Modulation: Pulse Amplitude Modulation (PAM), Pulse Width Modulation(PWM), Pulse Position

Modulation(PPM), Pulse Code Modulation (PCM), Delta Modulation(DM)

UNIT V: Radio Receivers and its measurements : TRE Receiver, Superhetrodyne Receivers, detailed study of block schematic and circuits of mixer, RF –Stage , IF-Stage, Detector, Automatic Gain Control(AGC),FM Radio Receivers. Receivers measurements : Sensitivity, Selectivity, Image, Frequency Rejection etc. Communication Receivers, Block schematic and its special features.

UNIT VI: Line Telephony :Elemental Phone system, central switching, simple exchange, two and four wires connections, time division multiplexing, analog time division switching ,time slot interchanging (TSD),space array for digital signals, combined space time switching.

TEXT BOOKS:

1. Electronic Communication Systems by Kennedy
2. Modulation Theory by Black(Van Nostrand)
3. Electronic Communication by Loyd Temes (MGH)
4. Radio Engineering by Terman (MGH)
5. Radio Engineering by Mittal

RECOMMENDED BOOKS:

Communication System Analog ,Digital By : R.P.Singh,S.D.Sapre

55CT-3

ADVANCED MICROPROCESSORS

UNIT I: Architecture of 8086, Physical address formation, addressing modes, Segmentation of memory, Instruction set & programming.

UNIT II: Different input/output techniques, Interfacing with latches, buffers,Interfacing of keyboard matrix, Seven-segment display,DAC,ADC,Interfacing of 8253.

UNIT III: Interrupts of 8086,Interfacing with PIC(8259A), CRT controller6845,Floppy disc controller 8272 and Hard disk controller.

UNIT IV: Maximum mode of 8086, co-processing and multiprocessing, I/O processing, numerical data processor 8087 architecture ,interfacing with 8086,instruction set and programming, PDMAC 8237, Interfacing with 8086,8279A, interfacing with 8086.

UNIT V: Introduction to 8 bit microcontroller 8051, architecture, instruction set and programming.

UNIT VI: 80386 microprocessor, addressing modes,instruction set, real mode, protection mode

TEXT BOOKS:

1. Microprocessor and interfacing : Douglas Hall
2. Microprocessor architecture , programming and application : Ramesh Gaonkar
3. Microprocessor System : The 8086/8000 family : Liu Gibson

RECOMMENDED BOOKS: The intel microprocessor 8086/8088,80186/80188, 80286/ 80386,80486/pentium processor Architecture Programming & interfacing By Barry B Berry

55CT-4

SYSTEM PROGRAMMING

UNIT I: Background, Machine Structure, Assemblers, Loaders, Macros, Compilers, Formal System, Operating System User Viewpoint : Functions, Operating system User Viewpoint : Batch Control Language, Operating System User Viewpoint: Facilities.

UNIT II: Machine Structure , Machine Language and Assembly Language, General machine structure, General Approach to a new machine, Machine structure: IBM 360/370, Architecture of Motorola 68000.

UNIT III: Assemblers, General Design Procedure, Design of Assembler, Macro Language and the Macro processor, Macro instructions, features of Macro Facility, Macro Instruction Arguments, Conditional Macro Expansion, Macro calls within macros, Macro instructions Defining Macros, Implementation, Implementation of a restricted Facility, A two pass Algorithm, A single Pass Algorithm, Implementation of Macro calls within Macros, Implementation within an assembler.

UNIT IV: Loaders: Loader schemes: “Compile and go”, Loaders, general Loader scheme, absolute loaders, subroutine linkages, relocating loaders, direct linking loaders, other loader schemes- Binders, Linking loaders, Overlays, Dynamic Binders, Design of absolute loaders, Design of a Direct-linking loaders.

UNIT V: Introduction to Device Drivers: accessing drivers, interface with kernel, study of mouse driver, Analog to Digital Interface, low level device controller considerations.

UNIT VI: Lexical Analysis, Role of lexical analysis, recognition of tokens, study of tools like lex.

TEXT BOOKS:

1. System Programming by L. Beck, Pearson Ed.
2. Unix device drivers by George Pajani, Pearson Ed.
3. Device Drivers for Windows by Norton, Ad Wisley.
4. Assembly and Assemblers by Gorshine , Prentice Hall.
5. System Programming by John J. Donovan.

RECOMMENDED BOOKS:

System Programming and Operating System By Dhamdhare

55CT-5**THEORY OF COMPUTATION**

Unit I: Strings, Alphabet, Language Operations, Finite state machine, definitions, Finite automation model, acceptance of strings and languages. Non deterministic Finite Automation, Deterministic Finite Automation, equivalence between NFA and DFA, Conversion of NFA into DFA, Minimization of FSM, Equivalence between two FSM's Moore and Mealy Machines.

UNIT II: Regular sets Regular expressions, Identity rules, Manipulation of regular expressions, Equivalence between RE and FA. Inter conversion, Pumping, lemma, closure properties of regular sets(Proofs not required), Regular grammars, Right linear and left linear grammars, Equivalence between regular linear grammar and F.A., inter conversion between RE and RG.

UNIT III: Context free grammar, Derivation trees, Chomsky Normal form, Greibach normal form, push down automata, Definition Model, Acceptance of CFL, Equivalence CFL and PDA, Interconversion, enumeration of properties of CFL(Proofs omitted).

UNIT IV: Turing Machine, Definition, Model, Design to TM, Computable function, Recursive enumerable language, Church's hypothesis, Counter machine, Types of TM's(Proofs not required), Chomsky hierarchy of language, Linear bounded automata and context sensitive language, introduction of DCFL and DPDA, LR(O), grammar, decidability of problems.

UNIT V: Undecidability, Properties of recursive and non-recursive enumerable language, universal turing machine, post-correspondance problem.

UNIT VI: Recursive function, Theory-Basis functions and operations on them, Bounded minimalization primitive μ recursive function-unbounded minimalization and recursive function. Equivalence of turing computable function and μ recursive function.

TEXT BOOK:

1. Introduction to automata Theory languages and computation by Hopcroft H.E. and Ullman
2. Introduction to languages and the Theory of Automata by John C. Martin.

RECOMMENDED BOOKS:

1. Introduction to Formal Theory & Automata- Peter Linz

55CT-6**CONTROL SYSTEMS**

Unit I: Introduction to need for automation control. Use of Feedback, board spectrum of system application, mathematical modeling (electric and electromechanical) diff.equation, transfer function, block diagram, single flow graph, application to elementary system, simplification. Effect of feedback on parameter variation, distribution signal, servo mechanism and regulators. Control system components, electrical, electromechanical their functional analysis and input output representation

UNIT II: Time response of system, first order and second order system, standard inputs, concept of gain and time constant steady state error, type of control system, for approximate methods for higher order system.

UNIT III: Stability of control systems, condition of stability, characteristics equation Routh Hurwitz criterion, special cases for determining relative stability.

UNIT IV: Root Location and its effects on time response, elementary idea of root locus, effect of addition of pole and zero on proximity of imaginary excess.

UNIT V: Frequency Response Method of analyzing linear systems, Nyquist and Bode Plot, stability and accuracy analysis from frequency response, Nyquist criterion, effect of variation of gain and addition of pole and zero on response plot, stability margin in frequency response

UNIT VI: State Variable Method of Analysis, characteristics of system state. Choice of state variable, representation of vector matrix differential equation, Standard form, relation between transfer function and state variables.

TEXT BOOKS:

1. Automatic Control System by B. C. Kuo(PHI)
2. Control System Analysis by Nagrath/ Gopal
3. Linear System Design by D'azz and Houppis(MGH)

SEMESTER-VI**66CT-1****IND. MANAGEMENT/ECONOMICS****UNIT I:**

Micro & Macro Economics : - Law of demand, price, income forecasting methods, advertising elasticity and practical uses, costs and

production functions, Cobb-Douglas production function.

UNIT II:

Money:- Constituents of money supply M1 ,M2,M3 etc. as used by RBI, demand for money , LM curve, Inflation, Deflation, Stagflation, Commercial banking, Central and price stability, Trade bills, RBI credit policy in recent years.

UNIT III:

Concept of national income:-Methods of calculating GDP, GNP,NMP etc.at factor cost, at market prices etc. , Numerical problems on National income, Capital formation, savings and Investment relationship, Economic estimation. Indian economic growth in rates and their estimation. Indian economic growth in recent years, Saving investment equality, LM, IS curves.

UNIT IV:

Definitions, nature and scope of management, Functions of management, Planning , Decision making, Organising, Controlling, Communicating.

UNIT V:

Definitions, Nature and scope of Marketing Management, Concepts of Marketing, Pricing of products, Advertising and sales promotion.

UNIT VI:

Definition , Nature and Scope of Financial Management, Balance sheet, Profit and Loss account, Principles of costing , Different budgets.

TEXT BOOKS AND REFERENCE BOOKS:

1. Micro Economics by M. L. Seth
2. Macro Economics by M. L. Seth
3. Business Organisation and Management by S. A. Sherlekar
4. Industrial Management by I.K. Chopde, A. M. Sheikh
5. Marketing Management by Philip Kotler
6. National Income and Accounting by
7. Financial Management by K. C. Kuchchal.

66CT-2

SOFTWARE ENGINEERING

UNIT I:

Software: characteristics, components and applications, Software engineering: A layered technology, software process, software process Models, Linear Sequential Model, Prototyping Model, RAD model and Evolutionary software models.

UNIT II:

Software process and Project metrics, Metrics in Projects and process domains, Software measurements and metrics for software quality. Project Planning objectives: Software scope, Resources, Software Project Estimation, Decomposition techniques, Empirical Estimation Models, Make by decision.

UNIT III:

Risk Management: Software risk, Risk identification, Projection. Defining Task set for Software project, Selecting software Engg. Task., Scheduling an project plan. Software Quality Assurance, Software reviews, Formal Approach to SQA, Software reliability, The SQA Plan.

UNIT IV:

Conventional Methods for Software Engineering: System Engineering, Product Engg., Modelling the system Architecture, System Specifications. Analysis Concepts and principles, Software Prototyping, Specifications, Analysis Modelling , Design Concepts, Principles and Methods, Design for real-time system, System testing methods.

UNIT V:

Object oriented software engg.: Object-oriented analysis, Object oriented design and testing.

UNIT VI:

Advanced topics in software engg:

Software reuse, reengineering, client-server engg. and computer aided software engg.

TEXT BOOK:

Software Engg. – A Practitioners approach (Fourth Edition) by Roger S. Pressman-McGraw Hill.

RECOMMENDED BOOKS:

Software Engineering By : Richard Fairley

66CT-3

DESIGN AND ANALYSIS OF ALGORITHMS

UNIT I:

Mathematical Foundations, Summation of arithmetic and geometric series, summation(n), summation(n²), Bounding summation using integration, Recurrence Relation, Solutions of recurrence relations using technique of characteristics equations and generating functions.

UNIT II:

Asymptotic Notations of analysis of algorithms, analyzing control structures, worst case and average case analysis, Amortised analysis, sorting algorithms such as selection sort , insertion sort , bubble sort, Heap sort, lower bound proof, elementary and advanced data structures with operations on them and their time complexity.

UNIT III:

Divide and Conquer basic strategy, Binary search, quick sort, merge sort, Fast Fourier Transform etc. Greedy Method- basic strategy, application to job sequencing with deadlines problem, minimum cost spanning trees, single source shortest path etc.

UNIT IV:

Dynamic Programming basic strategy , Multistage graphics, all pair shortest path, single Source shortest paths , Optimal binary search trees, Travelling salesman problems.

UNIT V:

Basic Traversal and Search Techniques, breadth first search, connected components, Backtracking basic strategy, 8-Queen's Problem, graph colouring, Hamiltonian cycles etc.

UNIT VI:

NP-hard and NP-complete problems, basic concepts, non-deterministic algorithms, NP-hard and NP-complete, Cook's Theorem, decision and optimization problems, Polynomial reduction.

BOOKS:

1. Introduction to algorithms by Thomas H. Cormen ,PHI
2. Computer Algorithms by Horowitz, Sahani, Rajsekharan, Galgotia Publications
3. Fundamentals of Algorithms Brassard , Bratley ,PHI

66CT-4**DATA PROCESSING AND FILE SYSTEM****UNIT I:**

File Characteristics : File functions, file and File record, File record and its contents, File and File Volume, File and Device records: Blocking and deblocking, Buffering for sequential Files, File protection, Errors in file processing. File Organization and access methods: Sequential file organization, Indexed file organization, Relative file organization, Comparison of File Organization methods, Selection of File Organization.

UNIT II:

Elements of COBOL: structure of COBOL Programs, COBOL coding rules, Identification and Environment division of COBOL. Data division, Features of COBOL : Picture, Blank when Zero, currency and decimal points, synchronized justified clause, multiple data records, redefine, rename, value clauses.

UNIT III:

Procedure Division Features : Input/Output File and data Oriented , data movement, arithmetic operations, statement for control of execution flow.

UNIT IV:

Arrays and Occurs Clause, Condition names, PERFORM statement, Subroutine call functions.

UNIT V:

Sequential File Handling in COBOL, Indexed and Relative File Handling in COBOL, Creation, Maintenance and handling of master and transaction files.

UNIT VI:

Sorting and merging in COBOL: Application of COBOL with different examples

TEXT BOOKS:

1. COBOL programming with business applications : N. L. Sarda
2. COBOL Programming : Roy and Dastidar
3. Structured COBOL Programming: Stern and Stern.

RECOMMENDED BOOKS:

Information systems through COBOL By : Philiphakis Leenard

66CT-5**DESIGN PRINCIPLES OF PROGRAMMING LANGUAGES****UNIT I:**

Languages design issues: - why study programming language, role of programming languages, programming environment, impact of machine architectures: operations of computer, virtual computers & Binding times.

UNIT II:

Language translation issues:- programming language syntax, stages in translation, formal translation models, modeling language

properties: formal properties of languages ,languages semantics.

UNIT III:

Elementary Data types: Properties of types & Objects, scalar data types, composite data types.

UNIT IV:

Encapsulation:- Structured data types ,Abstract data types, encapsulation by subprograms, type definition, inheritance, polymorphism.

UNIT V:

Sequence Control: Implicit and Explicit Sequence control , Sequencing with arithmetic expressions , Sequence control between statements, Sequencing with non-arithmetic statements , Subprogram Control:- Subprogram Sequence control , Attributes of data control, parameters transmission.

UNIT VI:

Storage management: Elements requiring storage , Programs and system controlled storage, static storage management, Distributed Processing :-Variations in subprogram control , Parallel programming.

BOOKS:

- 1.Programming Languages Design and Implementation by Terrence Pratt, Marvin Zelkowitz , Pearson Ed
- 2.Programming Languages: Programs and Paradigms by Appleby, TMH.

RECOMMENDED BOOKS:

Essentials Of Programming Languages By: D. P. Friedman & Wand M. (PHI & MHI)

SEMESTER-VII

77CT1

OPERATING SYSTEMS

UNIT I :

Introduction, evolution of OS, basic h/w support necessary for modern operating systems , Services provided by OS, system calls, introduction to distributed OS.

UNIT II:

File systems- introduction, disk space management and space allocation strategies , directory structures , disk caching ,file system consistency and log structured file system , Disk arm scheduling strategies: FCFS, SSTF , SCAN, CSCAN, LOOK,CLOOK, Selecting a disk scheduling algorithms, sector queuing.

UNIT III:

Process management-introduction , process control block, process states ,process context switch, threads: user level and kernel level, CPU scheduling,

Goals of scheduling, CPU scheduling in batch OS, interactive OS and real time OS, algorithmic evaluation.

UNIT IV:

Interprocess communication: Process cooperation and synchronization, race condition , critical regions , mutual exclusion and implementation, semaphores , conditional critical regions and monitors, classical interprocess communication problems, message passing.

UNIT V:

Memory management techniques – contiguous and non-contiguous , paging and segmentation , translation look aside buffers (TLB) and overheads , virtual memory and demand paging , page faults and instruction restart , problems of large address spaces , page replacement algorithms and working sets.

UNIT VI: Deadlocks : necessary conditions , deadlock avoidance , deadlock prevention , recovery from deadlock.

Protection and Security: Goal of Protection, Mechanism and policies, domain of protection, access list, capability list, access matrix and its implementation, dynamic protection structures, revocation.

TEXT BOOKS:

- 1.Modern Operating Systems – A.S. Tanenbaum, Pearson Edu. 2nd Edn.
- 2.Operating System concepts – Silberchatz & Galvin, Addison Wesley ,5th Edn.

REFERENCE BOOKS:

- 3.Operating System Concepts & Design – By Milan Milenkovic (TMH)

RECOMMENDED BOOKS:

Operating System : A Design Oriented Approach By Crowley C.(TMH)

77 CT-2

DATABASE MANAGEMENT SYSTEMS

UNIT I:

Drawback of general file processing system, data processing through COBOL, Basic concepts of database system, Architecture of a Database system, Data structures and Corresponding Operators. The Hierarchical Approach to DBMS: Architecture to IMS, IMS data structure, External Level to IMS, IMS, Data manipulation, defining PCB, DL/1, Operations, Construction SSA and SSA command codes, The Network Approach to DBMS : Architecture to DBTG Systems, DBTG data structures, Hierarchical and Network Set constructs, Singular Sets, Membership Classes and set selections.

UNIT II:

Entity- Relationship Model : Entities and Entity Sets, Relationships and Relationship Sets, attributes ,mapping constraints, keys, entity relationship diagrams reducing E-R diagrams to Tables, Generalization, Aggregation, Design of an E-R Database Scheme.

Relational Model: Structure of Relational Databases, The relational Algebra, The Tuple Relational Calculus, The domain Relational Calculus, Modifying the database, Views.

UNIT III:

Relational Commercial Languages : SQL, Query-by Example, QUEL, Summary. Integrity Constraints : Domain Constraints, Referential Integrity, Functional Dependencies, Assertions and Triggers.

UNIT IV:

Relational Database Design : Pitfalls in Relational Database Design, Normalization using Functional Dependencies. Normalization using Multivalued Dependencies, Normalization using Join Dependencies, Domain – Key Normal Form, Alternative Approaches to Database design.

Indexing and Hashing : Basic Concepts, Indexing, B+ Tree Index Files, B- Index Files, Static Hash Functions, Comparison of Indexing and Hashing Index Definition in SQL, Multiple-Key Access.

UNIT V: Query Processing : Query Interpretation, Equivalence of Expressions, Estimation of Query Processing Cost, Estimation of Cost of Access using Indices, Join Strategies, Join Strategies for Parallel Processors, Structure of a Query Optimizer. Crash Recovery : Failure Classification, The storage Hierarchy, Transaction Model, Log Based Recovery, Buffer Management, Checkpoints, Shadow Paging, failure With Loss of non-volatile Storage, Stable Storage Implementation.

Concurrency Control: Schedules, Testing of Serializability, Lock – based Protocols, Time Stamp Based Protocols, Validation Techniques, Multiple Granularity, Multi-version Schemes, Insert and Delete Operations.

UNIT VI:

Database System Architectures and Distributed Databases : Centralized Systems, Client/Server Systems, Parallel systems, Distributed data storage, Network transparency, Distributed query processing, Distributed transaction model, Commit Protocols, Concurrency controls, Deadlock handling, Multidatabase Systems.

TEXT BOOKS:

1. Data base system Concepts : Korth, Silberschatz : Mcgraw-Hill
2. Database Management System : Majumdar & Bhattacharya
3. Principles of Databases : Jeffrey D. Ullman
4. An Introduction To Database Systems : C.J.Date (Adison Wesley – Nerosa)

RECOMMENDED BOOKS:

Database Systems –Design,Implementation & Management 4th Ed.By Rob. Coronel (Thomson Course Technology)

77 CT-3

COMPUTER NETWORKS**UNIT I:**

Introduction: The Use of Computer Network – Network Hardware, LANs, WANs, Wireless network, Internetworks, Network software Protocol Hierarchies, Design issues for Layers, Interfaces and services, CO & CL services, service primitives, relationship of services to protocol, OSI reference model, TCP/IP reference model, Example networks – Novell NetWare, Internet, X.25

UNIT II:

The physical Layer: The theoretical basis of data communication-Fourier Analysis, Bandwidth-limited signals. The maximum data rate of a channel. Transmission Media – magnetic media, twisted pair, Baseband Coaxial Cable, Broad-band coaxial cable, fibre optics. Line of Sight transmission, Communication satellites. Analog Transmission, tree Telephone system, Modems, RS – 232 & RS – 449.

The medium Access Sublayer : Local and Metropolitan Area's Networks Static Channel allocation in LAN's and MAN's Dynamic channel allocation in LAN's and MAN's Network Protocols-persistent and Non Persistent CSMA, CSMA with collision detection, BRAP-broadcast recognition with alternating priorities.MLMA-the multilevel multi-access Multi-access protocol, binary countdown. Limited Contention protocol – The adaptive tree walk protocol. IEEE standard 802 for local area network – IEEE standard 802.3 and

Ethernet , IEEE standard 802.5 token bus,IEEE standard 802.5 token ,ring, comparison of local area networks, FDDI, Wireless LAN – 802.11

UNIT III:

The Data Link Layer : data link layer issues-services provided to the network Layer, Framing Error Control, Flow control, Link Management, error detection and Correction-Error-Correcting Codes, error-detecting codes. Elementary data link protocols – An Unrestricted simplex, Protocol, A simple Stop and wait protocol, A simplex protocol for a noisy channel, Sliding window protocols – A one bit sliding window protocol, A protocol using Go back N, A protocol using selective repeat Protocol performance – performance of the stop and wait protocol. Performance of the sliding window protocol. Example of the data link layer – the data layer in public networks – the data link layer in the Internet.

UNIT IV:

The Network layer: Network Layer design issues – services provided to the transport layer, Internal organization of the network layer, Routing, Congestion, Internetworking, Routing Algorithms, Congestion – Control algorithms, Preallocation of buffers. Packet discarding, Isarithmic, Congestion Control, flow control, Choke packets, deadlocks. Examples of the network layer – the network layer in public networks, the network layer in Internet (IP).

UNIT V:

The Transport Layer: Transport layer design issues-services provided to the session layer, quality of services, the OSI transport service primitives, transport protocol, elements of transport protocols, addressing, establishing connection, releasing connection flow control & buffering, multiplexing, crash recovery, examples of transport layer, transmission Control Protocol TCP).

UNIT VI:

The presentation Layer: Presentation layer design issues-Data representation, text Compression, Network security and privacy. The OSI presentation, Service primitives,Substitution Ciphers, Transposition Ciphers, Public key Encryption, Secrecy and Digital Signature with Public Key encryption.

TEXT BOOKS :

1. Computer Networks - Second & Third Edition – By Andrew S. Tanenbaum (PHI Pub.)
2. Data & Computer Communication – Sixth Edition by William Stallings (PHI Pub.)

RECOMMENDED BOOKS :

Design and Analysis of Computer Network By Ahuja

77CT-4 (Elective-I)

ADVANCED COMPUTER ARCHITECTURE

UNIT I:

Fundamentals : Technology and Computer usage trends, Cost, Performance measurements, Quantitative principles of computer design, Concept of memory hierarchy, Instruction set architectures, Memory addressing, Operations in the instruction set, Encoding, Role of compilers, DLX architecture.

UNIT II:

Pipelining : Basic pipeline for DLX, Various hazards : pipeline, data, control hazards. Implementation issues. Multicycle operations. Crosscutting issues. Instruction set design and pipelining.

UNIT III:

Advanced pipelining and instruction-level parallelism: concepts and challenges, Overcoming data hazards with dynamic scheduling, Dynamic hardware prediction, Compiler support for ILP, Hardware support for parallelism, studies of ILP.

UNIT IV:

Memory-hierarchy design : Basics of caches, Reducing cache miss and hit time, Main memory, Virtual memory. Protections and examples of virtual memory, Issues in the design of memory hierarchies.

UNIT V:

Storage systems: Types of storage devices, Buses and their types, I/O performance measures, Reliability, availability and RAID, Interfacing to an operating system, Designing an I/O system, Unix file system performance.

UNIT VI:

Interconnection networks: Introduction and basic concepts, Computer connection to interconnection network, interconnection network media, Practical issues, Examples of interconnection networks, Issues for interconnection networks, Internetworking, An ATM network of workstations.

TEXT BOOK :

Hennessy J.L. Patterson D.A. Computer Architecture : A quantitative approach 2/e (Harcourt Asia)

REFERENCE BOOKS :

1. Hayes J.P. Introduction to computer Architecture (McGrawhill)
2. Hamacher V.C. Computer Organization (McGrawhill).

RECOMMENDED BOOKS:

1. Advanced Computer Architecture : A Quantitative Approach : 2nd Ed.- Hennessy Patterson

77CT-4 (Elective-I)

EMBEDDED SYSTEMS

UNIT I:

Introduction : Definitions of embedded systems, Real time operating Systems and embedded computing platform. Applications of embedded system. Debugging tools: Use of assemblers, debugger kernels. Difference between compiler, interpreters & macros.

UNIT II:

Study and use of simulators, Embedded system design: Hardware and software design co-design, I/O Interface co-design for distributed systems. EPROM emulator : A micro controller architecture

UNIT III:

Real Time Environment : Real time I/O, R/T Multitasking and multithreading, processes, O/S, real time scheduling policies, Events, Memory management.

UNIT IV:

Embedded software development tools & debugging technologies, Host & Target machines, Linker/Loader for embedded software, getting embedded software into target system.

UNIT V:

Architecture of micro controller 8051. introduction, architecture, memory organization, pin definitions and functions timing parallel ports, timers/counters, serial port interrupt system.

UNIT VI:

Interfacing 8051 with analog circuits, digital circuits and personal computer, Instruction set & programming 8051. Networking : Routing interfacing with OS. Wireless Communication Protocols. Queuing model for networking traffic management, Routing methodologies.

TEXT BOOKS:

1. An Embedded Software Primer by David E. Simon (Pearson Edu. Asia)
2. Embedded system design with 805 I micro controller by Zdravko Karakehayov & winther
3. Computers as Components: Principles Embedded Computing System Design by W Wolf.

REFERENCE BOOKS:

1. Real – Time Systems : Design Principles for Distributed Embedded Applications by H. Kopetz.
2. Embedded system design by Krishna & Shinn

RECOMMENDED BOOKS:

Embedded systems:Architecture &programming By Rajkamal

77 CT-4 (Elective-I)

DIGITAL SIGNAL PROCESSING

UNIT I:

Discrete time signals and systems, linearity, time-variance, causality, stability properties of LTI casual system, response of LTI systems to various inputs, convolution, sampling theorem.

UNIT II:

Frequency domain description of signals & Systems. Fourier transform of discrete time signals, properties of DFT, DFTs of typical discrete signals.

UNIT III:

The Z-transform, properties ROC's relation with fourier transform, system function, inverse Z-transform, solution of difference equation using unilateral Z-transform.

UNIT IV:

Digital filter design techniques : design of FIR filters based on windows, design of IIR digital filters from analog filters.

UNIT V:

The discrete Fourier transforms: It's properties and computation, properties of the DFT, Efficient computation of the DFT.

UNIT VI:

Introduction of FFT algorithms: decimation in time – FFT algorithms, Decimation in frequency – FFT algorithms, DCT.

TEXT BOOKS:

1. Digital Signal Processing by Roman Kook
2. Digital Signal Processing : Alen V. Oppenheim W. Schaffer (PHI)
3. Digital Signal Processing : Proskies and Monalkies (PHI)

REFERENCE BOOKS:

1. Theory and Application of Signal Processing by Rabiner & Gold (PHI)
2. Digital Filter Design and Analysis by Andreas Antoniou, Tata McGraw Hill

RECOMMENDED BOOKS:

Digital Signal Processing By Rafael Gonzalez & Richard E. Woods

77CT-5 (Elective-II)

ARTIFICIAL INTELLIGENCE

UNIT I:

Introduction to AI : definition of AI, the importance of AI, AI and related fields, task domains of AI, physical symbol system and its hypothesis, AI technique, Turing test, Knowledge and Knowledge base systems.

UNIT II:

Problems, problem spaces and search: defining the problem on a state space search, production systems and control strategies, depth first and breadth first search, backtracking, problem characteristics, issues in the design of search programs. Heuristic search techniques: generate and test, hill climbing, best-first search, problem reduction, constraint satisfaction, means-ends analysis.

UNIT III:

Knowledge Representation : Issues, representation and mapping approaches, introduction to proposition logic, knowledge representation using predicate logic, unification and resolution. Representing knowledge using rules, procedural Vs declarative knowledge, logic programming, forward Vs backward reasoning, matching, control knowledge.

UNIT IV:

Knowledge representation using semantic nets, frames, conceptual dependency and scripts. Statistical reasoning : Probability and Bayes' theorem, certainty factors and rule – based systems, introduction to fuzzy logic.

UNIT V:

Learning: General learning model, types of learning, rote learning, learning by taking advice, learning by analogy, induction learning, learning by observation and discovery.

Expert systems: Rule based system architecture, non – production system architecture, expert system shell, knowledge acquisition and validation, knowledge system building tools.

UNIT VI: Natural Language Processing : Overview of linguistics, syntactic processing, semantic analysis, discourse and pragmatic processing.

Game playing : the minimax search procedure, adding alpha-beta cutoffs.

TEXT BOOK:

1. Artificial Intelligence by E.Rich & K. Knight (Tata McGraw Hill)
2. Introduction to Artificial Intelligence By D.W. Patterson(PHI)
3. Introduction to Artificial Intelligence by N.J. Nilsson (Narosa)

77 CT-5 (Elective II)

NEURAL NETWORKS AND FUZZY LOGIC

UNIT I:

Fundamental concepts and Models of Artificial Neural Systems: Biological Neurons and Their Artificial Models, Models of Artificial Neural Networks, Learning and Adaptation, Neural Network Learning Rules, Overview of Neural Networks.

UNIT II:

Single – Layer Perceptron Classifiers: Discriminate Functions, Linear Machine and Minimum distance Classification, Training and Classification using the Discrete Perceptron: Algorithm and example, Single Layer continuous Perceptron Networks for Linearly Separable Classifications.

UNIT III:

Multilayer Feedback Networks: Linearly Non-separable Pattern Classification, Delta learning Rule, Feedforward Recall and error Back-Propagation Training, Learning factors, Classifying and expert Layered Networks, Functional Link Networks, feedback Network, Hopfield Network.

UNIT IV:

From Classical (CRISP) Sets to Fuzzy Sets: Introduction, Crisp Sets : An overview, Fuzzy Sets: Basic Types, Fuzzy Sets : Basic Concepts, characteristics and significant of the paradigm Shift.

Fuzzy Sets Versus Crisp Sets: Additional Properties of Alpha-cuts, Representation of Fuzzy sets, Extension Principles for Fuzzy sets.

UNIT V:

Operations on Fuzzy sets: Types of Operations, Fuzzy Complements, Fuzzy Intersections: t-Norms, Fuzzy Unions : t-Conorms, combinations of operations, Aggregation Operations.

UNIT VI:

Fuzzy Arithmetic : Fuzzy Numbers, Linguistic Variables, Arithmetic Operations on Intervals and Arithmetic Operations on Fuzzy Numbers, Lattice Fuzzy Numbers And Fuzzy Equations.

TEXT BOOKS:

- 1.J.M. Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House, India
- 2.George J. Klir and Bo Yuan, Fuzzy sets and Fuzzy logic, Theory and Applications, Printice Hall of India Pvt. Ltd. –1997.

RECOMMENDED BOOKS:

Neural networks & fuzzy systems By B.Kosko (PHI)

77CT-5 (ELECTIVE-II)**DIGITAL IMAGE PROCESSING.****UNIT I :**

Introduction:Introduction,Fundamental steps in Image Processing,Elements of DIP Systems,Element of visual Perception.
Fundamental of image processing:A Simple Image model, Sampling and Quantization. some basic relationships between pixels, Image Geometry in 2D.

UNIT II:

Image Enhancement in the spatial domain : Introduction to spatial and frequency methods,basic gray level transformations, Histogram Equalization ,Histogram processing,local Enhancement,Image subtraction,Image Averaging,Basics of spatial Filtering ,Smoothing spatial filters,Sharpening spatial filters.

UNIT III:

Transforms:Introduction to Fourier Transformation ,Discrete Fourier transformation, fast Fourier transformation,Fourier properties,2D FT,Inverse Fourier transform.

UNIT IV :

Image Enhancement in the frequency domain : Filtering in the frequency domain,Correspondance between filtering in the spatial and frequency domain, smoothing frequency domain filters, sharpening frequency domain filters, homomorphic filtering,implementation.

UNIT V:

Image segmentation :point detection, line detection ,age detection, gradient operator,edge linking and boundary detection, thresholding ,region-oriented segmentation.

UNIT VI:

Representation: Chain codes ,polygonal approximations ,signatures, boundary segments ,skeleton of a region.

Description :Boundary descriptors, shape numbers, Fourier descriptors, regional descriptors ,simple descriptor ,topological descriptor :

TEXT BOOKS:

1. R.C. Gonzalez, R.E. Woods, “Digital image processing”,second Edition. Prentice Hall,2002.

REFERENCE BOOKS:

1. A.K.Jain,”Fundamental of Digital Image Processing”,Prentice Hall.
2. W.K.Pratt,” Digital Image Processing”3rd Edition,John Wielely and Sons,New York.
3. Chanda,Mazumdar,” Digital Image Processing”,Prentice Hall,India.

SEMESTER-VIII**88CT-1****COMPUTER GRAPHICS****UNIT I:**

Introduction : Introduction to Computer Graphics & its application -> Origin of Computer Graphics, interactive computer graphics. Overview of Graphics System. Graphics Input Devices, Graphics Output Devices, Display Devices: Common display devices, CRT Technology, storage Tube, Calligraphic, Raster refresh display. Basic concept: Refresh, Flicker, Scan Rate, Screen Size, Aspect Ratio, Interlacing and Non-interlacing techniques. Raster color graphics, Frame Buffer, Addressing a Raster. Adapters: Basic function, Video BIOS, Video RAM, operating Modes, Introduction to real time scan conversion cell and runlength encoding. Introduction & basic function of MGA,CGA,VGA,EGA,SVGA.

UNIT II:

Point Pixel Plotting. Line generation Algorithms: Dda, Bresenham’s Algorithm, Bresenham’s Parallel Line generation algo. For multiprocessor system, thick line generation, dotted & dashed line generation algorithm.

Circle Generation : Bresenham’s algorithm, Trigonometric method. Aliasing and antialiasing techniques. Polygons, Polygon representation, Polygon filling : Simple ordered edge list algorithm. Edge fill algorithm ,Edge flag algorithm,Seed fill algorithm.

UNIT III:

Graphics Primitives: Display devices, primitive operations, the display file interpreter. Normalized device coordinates, display files structure. Segments: The segment table, segment creation, closing a segment, detecting a segment, renaming a segment, visibility, image transformation, saving and showing segments, other display file structures, some raster techniques.

UNIT IV:

Transformation 2-Dimension Transformation: Basic Transformation: Scaling, Rotation, Translation, Matrix representation, Homogeneous Coordinates & Composite transformations, rotation about an arbitrary point, other transformation: Reflection Shear.

UNIT V:

Windowing & Clipping: The viewing transformations. Line Clipping: Sutherland-Cohen algo, Midpoint Subdivision algo, Cyrus Beck algo. Polygon Clipping: Sutherland-Hodgman algo.

UNIT VI:

3-Dimension Transformation – 3D geometry, 3D primitives, Scaling, Translating, Rotation about an arbitrary axis, parallel Projection, Viewing Parameters, Special Projections. Curves: Bezier & B-spline Curves.

TEXT BOOKS:

1. Procedural Elements for Computer Graphics : David F. Rogers, McGrawHill.
2. Principles of Interactive Graphics : Newman Sproull, Mc Graw Hill, International Student Publication.
3. Mathematical Elements for Computer Graphics by David F. Rogers and Adams

REFERENCE BOOKS:

1. Computer Graphics 2nd edition : Donald Hearn, M. Pauline Beker, Prentice Hall of India
2. Computer Graphics A programming approach : Steven Harrington, McGraw Hill, International student edition.
3. IBM PC and PS/2 Graphics Hand Book : E. Keja & Johns, Asian Edition.
4. Micro Computer Hardware Design : D. Protopapus, Prentice Hall Editions.

RECOMMENDED BOOKS:

1.Computer Graphics :Principles and Practice By Foley, Van Dam Feiner, Hughes (Pearson Ed.)

88 CT-2

COMPILER CONSTRUCTION

UNIT I:

Compilers & Translators, Structure of Compiler, phases of Compiler, Compiler writing tools, Programming languages: Lexical & Syntactic structure of a Language, Data elements, Data structures, Operators, Assignments, Program Units, Data environments. Parameter transmission, storage Management, Lexical Analyzer.

UNIT II:

Syntax Analysis: The role of Parser, Top-down parsing, predictive Parsers. Bottom-up parsing. L.R. Parsers (SLR, CLR & LALR), Implementation of LR Parsers.

UNIT III:

Syntax Directed Translation: Intermediate Code, Postfix notation, Parse tree and Syntax Trees, Three address codes, quadruples, triples, Translation of Assignment statements. Boolean expressions, statements that alter the flow of control. Array references in arithmetic expressions, Procedure Calls, Declarations, and Case Statements.

UNIT IV:

Symbol Tables: Contents, Data structures for symbol tables, representing scope information. Error detection and Recovery: Error handling. Lexical-phase, Syntactic phase and semantic phase.

UNIT V:

Code Generation : Issues in Code Generation, Target Machine, Runtime storage management, Basic block and flow graphs, Simple code generator, register allocation and assignment, DAG, Peephole Optimization, Generation Code from DAG's

Unit VI:

Code optimization: Principle source of optimization, optimization of basic blocks, blocks, loops in Flow graphs, Data-Flow analysis, code improving transformations, alias, Data flow algorithms.

TEXT BOOKS:

- 1.Principles of Compiler Design: Aho & Ullman
- 2.Compiler Principles, Techniques & Tools : Aho, Ullman & Sethi

RECOMMENDED BOOKS:

Compiler Construction:Principles and Practice By D.M. Dhamdhare; McMillan India & TMH

88 CT-3 (Elective-III)

TCP/IP

UNIT I:

Internetworking – Concepts, architecture & protocol

Internet protocol(IPv.4) – IP addresses, IP datagrams, IP datagram forwarding

Internet protocol(IPv.6) – Characterization of features, datagram frame format, base address format, addressing, internet control message protocol (ICMP)

UNIT II:

TCP: reliable transport service, client-server interaction, the socket interface, example of a client and a server

UNIT III:

Naming with the domain name system, electronic mail representation and transfer, file transfer and remote file access

UNIT IV:

World Wide Web pages and browsing, Technology for dynamic web documents, java technology for active web documents

UNIT V:

RPC AND MIDDLEWARE: Introduction, Programming Clients and servers, Remote procedure Call paradigm, RPC Paradigm, Communication Stubs, External Data Representation Middleware And Object-Oriented Middleware Multimedia: Introduction to digital audio, Audio Compression, Streaming Audio, Internal Radio, Voice over IP, Introduction to video, Video compression, Video on demand

UNIT VI:

Network Security CRYPTOGRAPHY: Introduction, Substitution transposition ciphers, one-time pads, two fundamental cryptographic principles.

SYMMETRIC KEY ALGORITHMS: DES, AES, Cipher modes, Other Ciphers, Cryptanalysis PUBLIC KEY ALGORITHMS:RSA, Other public key algorithms DIGITAL SIGNATURES:SYMMETRIC KEY Signatures, Public key signatures, Message digests, the birthday attacks.

COMMUNICATION SECURITY : IP sec, Firewalls, Virtual private networks, Wireless security E-MAIL SECURITY:PGP, PEM, S

I MIME WEB SECURITY: Threats, Secure naming, SSL, Mobile code Security.

TEXT BOOKS:

1. Computer networks and Internet By Douglas E. Comer, Second Edition
Pearson Education Asia
2. Computer Networks By Andrew S. Tanenbaum, Fourth Edition, PHI
3. TCP/IP Protocol Suite By Behrouz A. Forouzan, Tata Mc Graw Hill.

REFERENCE:

1. Internetworking With TCP/IP Volume I: Principles protocols and architecture, fourth Edition, 2000. (D. Stevens)
2. Internetworking With TCP/IP Volume II: Design ,implementation and internals with (D. Stevens), Third Edition.
3. Internetworking With TCP/IP Volume III: Client-Server programming and Applications, Linux / POSIX Socket Version (with D. Stevens)
4. Internetworking With TCP/IP Volume III: Client-Server programming and Applications, BSD Socket Version (with D. Stevens), Second edition
5. Internetworking With TCP/IP Volume III: Client-Server programming and Applications, Windows Socket Version (with D. Stevens)
6. TCP/IP illustrated Volume 1: The protocols: By W. Richard Stevens
Addison Wesley
7. Unix Network Programming, By W. Richard Stevens Prentice Hall, 1990.

RECOMMENDED BOOKS:

TCP/IP: Protocol suite (II ed) By Hughes

88 CT-3 (Elective-III)

NETWORK SECURITY

UNIT I:

Introduction – attacks, services, mechanisms, security attacks, security services, model for internet work security, conventional encryption-classical techniques-encryption model, stenography, classical encryption techniques, modern techniques-simplified DES, block cipher principles, data encryption standards strength of DES, differential and liner cryptanalysis, block cipher design principles, model of operation.

UNIT II:

Conventional encryption-algorithms, triple DES, international data encryption algorithm, Blowfish, RC5, CAST, RC2, characteristics of advanced symmetric block cipher, confidentiality using conventional encryption – placement of encryption function, traffic confidentiality, key distribution, Random number generation.

UNIT III:

Public key encryption-principles of public-key cryptosystems, the RSA algorithm, key management, Diffie – Hellman key exchange, Elliptic curve cryptography, Introduction to number theory prime & relatively prime numbers, modular arithmetic, Fermat's and Euler's theorems, testing of primarily, Euclid's algorithms. The Chinese remainder theorem, discrete algorithms.

UNIT IV:

Message authentication & hash functions – authentication requirements, functions, codes, hash functions, security of hash functions

and MACs, MD5 message digest algorithm, SHA-1, RIPEMD – 160 HMAC, Digital signatures, authentication protocols, digital signature standard

UNIT V:

Authentication application-Kerberos, X.509 Directory authentication service, E-mail security-pretty Good privacy, S/MIME, IP security – overview, architecture, authentication header, encapsulating security pay load, combining security Associations, key management.

UNIT VI:

Web security-requirements, secure sockets layer & Transport layer security, secure electronics transaction, network management security-SNMP, SNMPv1 Community Facility, SNMPv3, system security-intruders, viruses & related threats, firewalls-design principles, trusted systems.

TEXT BOOKS:

1. Cryptography and Network security principles and practices 2/3, by William Stallings (Pearson Education, Print ice Hall).
2. Network Security Essentials, Applications and standards by Willam Stallings (Pearson Education)
3. Cryptography in C and C++ by micahel Welschenbach (IDG India).

RECOMMENDED BOOKS:

Network security essentials applications & standards By William stallings(PHI)

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E-COMMERCE

UNIT I:

Introduction to E-Commerce: Overview , Traditional vs. Electronic Business Transactions, Benefit of Electronic commerce, Information Technology and Business, Internet structure and growth. Network infrastructure, other Networks.

UNIT II:

EDI- to E-Commerce: Electronic Data interchange, The UN/EDIFACT standard, The Internet and Extranet for E-Commerce, Identification and Tracking tools for Electronic Commerce. Transactions on the Internet, requirements of payment system. Types of electronic payment. Tools for implementation.

UNIT III:

Security and E-Commerce the benefit of Cryptography, The process of Encryption, The working of Public-Key Cryptography, The importance of digital Certificates, The Comparison of encryption methods, An overview of Internet Security Systems.

UNIT IV:

Consumer and Business Markets: Consumer Demographics, Loyalty and acceptance, Value chain and market place, Business evaluation on the internet.

UNIT V:

Electronic Customer Support: The web response system and PPI, security and software modules, Submitting and tracking Online Problems, Dividing process to protect corporate Information.

UNIT VI:

The Beginnings of a Virtual Factory; Virtual Co-ordination, Implementation CITIS operations Controlling Access to Shared Data and applications. Entrusting access to an intermediately.

TEXT BOOKS:

1. Bajaj & Nag – E-Commerce the cutting edge of business.
2. David Kosiur – Understanding electronics Commerce.

RECOMMENDED BOOKS:

Electronic_commerce By : Gary Sehneider& James Perry

88-CT-4 (Elective- IV)

MULTIMEDIA AND WEB DESIGNING

Unit I:

Introduction To Multimedia: Media and Data streams Medium: The perception Medium. The representation medium. The presentation Medium, The storage medium, The information Exchange Medium, Representation values and representation spaces. Representation dimensions Main properties of Multimedia System: Multimedia System definition, Combination of Media, Independence, Computer Supported Integration, Communication systems Traditional Data Streams characteristics: Asynchronous Transmission mode Synchronous Transmission mode, Isochronous Transmission mode.

UNIT II:

Sound / Audio / Images and Graphics : Basic Sound Concepts, Computer Representation of sound, Audio formats Music:MIDI Basic Concepts, MIDI Devices, MIDI Messages, MIDI and SMPTE Timing Standards, MIDI Software Speech Generation, Speech Analysis, Speech Transmission Images and Graphics: Basic Concepts, Digital Image Representation, Image format. Graphics format. Computer image processing, Image syntesis, Image analysis. Image transmission.

UNIT III:

Video and Animation: Video Signal Representation, Computer Video Format, Television Conventional system, Enhanced Definition Systems, High Definition Systems, Transmission. Computer based Animation, Animation Language, Methods of controlling Animation, Display of Animation, Transmission of Animation.

UNIT IV:

Data compression: Storage space, Coding requirements, Source, Entropy and Hybrid techniques JPEG Image presentation. Lossy Sequential DCT – based Mode, Expanded Lossy DCT – based Mode Lossless Mode, Hierarchical Mode H.261 (px64) Image preparation. Coding Algorithms, data streams MPEG video encoding, Audio Encoding, Data Stream DVI and still Image Encoding, Video Encoding, Data Stream.

UNIT V:

Multimedia Operating System Introduction: Real Time and multimedia Resource management. Resources, Requirement, Component and phases, Allocation scheme, Continuous media Resource model process Management Real Time Process Management in conventional operation system Real Time Processing requirement, Traditional Real Time Scheduling, Traditional Real Time Scheduling: System model Earliest Deadline First Algorithm Rate Monotonic Algorithm EDF and Rate Monotonic: Context switches, EDF and approaches for In-Time Scheduling, Preemptive versus Non-Preemptive Task Scheduling, File Systems, Additional Operating System Issue, System Architecture

UNIT VI:

Multimedia Communication Systems and Database Systems Application Subsystem Collaborative Computing, Session Management Transport Subsystem: Requirements, Transport Layer, Network layer quality of Service and Resource Management Basic Concepts, Establishment and closing of the Multimedia Call Management Resources during Multimedia Transmission, Architectural Issue Multimedia Database Management System Characteristics of an MDBMS, Data analysis. Operation on Data, Integration in database Model.

TEXT BOOK :

1. Multimedia System Design by K Andleigh, K. Thakkar (PHI Pub)
2. Multimedia Computing, Communications & Applications by Ralf Steinmetz and Klara Nahrstedt.
3. Advanced Multimedia Programming by Steve Rimmer (McGraw Hill)

RECOMMENDED BOOKS:

1. Multimedia Application Development Using Indeo Tm Video And Dvi (R) Technology By Bunzel Mark J.: Morris Sandra K(Mcgraw Hill International Book Co.)

88 CT-4 (Elective IV)

DATA MINING & WAREHOUSING

UNIT I:

Data Mining & Data Warehousing: Introduction to data mining, data warehousing. Introduction to KDD process, classifications and algorithms. Data mining tasks, machine learning basic concept. Data warehouse Architecture, Data modeling.

UNIT II:

Data Marts & OLAP : Data mart designing, data mart builder. Data Mart discovery. On-line analytical processing, OLTP VS. DW Environment.

UNIT III:

Relationship of Data mining and Data Warehousing: Application of Data mining, Application of Data Warehousing, A relationship between data mining and data warehousing according to need of business.

UNIT IV:

Statistical Analysis And Cluster Analysis: What is Statistics? Difference between statistics and data mining. Histograms, Statistic for predictions, clustering for clarity, Hierarchical and Non-Hierarchical clusters, Choosing Classics.

UNIT V:

Neural Networks & Mining Complex: What are Neural Networks? Where to use these Networks? Benefits and features of networks, Rule Introduction, Various mining complexities.

UNIT VI:

Next Generation of Information Mining & Knowledge Discovery : Business-Intelligence and Information Mining, Text Mining, Knowledge Management, Benefits and products of Text Mining, Customer Relationship Management in the e-Business World.

TEXT BOOKS:

1. Data Mining By Pieter Adrains.
2. Data Mining Technology for Marketing, Sales and Customer Support By Michel Berry.
3. Data Warehousing & Data Mining for telecommunication By Rob Mattison.
4. Distributed Data Warehousing using Web Technology by R.A. Moeller
5. Building Data Mining Applications for CRM By Alex Berson, Stephen Smith.
6. Data Warehousing With Oracle By Sima Yazdani & Shirley Wong.

RECOMMENDED BOOKS:

1. Building data mining applications for CRM By: berson (TMH)
2. Data warehousing ,Data mining&OLAP : Stephen J Smith (TMH)

88CT-4 (Elective-IV)

COMPUTER AIDED DESIGN / CAM

UNIT I:

Introduction to CAD/CAM defined, Product Cycle & CAD/CAM automat on CAD/CAM. Fundamentals of CAD-Design process, application of the computer for design, creating & manufacturing databases benefits of CAD.

UNIT II:

Hardware in CAD Design workstation, the graphics terminal Operator input devices, plotters their output devices, CPU, secondary storage. Computer graphics software and database–the software configuration of a graphics System. Functions of a graphics package, constructing the geometry, transformations, database structure contents.

UNIT III:

Conventional Numerical control: Fundamentals of CAM, NC concepts, Basic components of NC system, the NC procedure, NC co-ordinate system, NC motion control systems, application f NC, economics of NC.

UNIT IV:

NC part programming – The punched tape in NC tape coding & format, manual art programming, computer assisted part programming, art language MACRD statement, NC programming with interactive graphics, voice NC programming, MDT.

UNIT V:

Computer controls in NC-problems with conventional NC, CNC, DNC, combined NC/CNC systems, adaptive control machining systems.

UNIT VI:

Robot technology & applications. Production planning & control, Computer process interfacing & process control.

TEXT BOOKS:

1. CAD/CAM by P.Grover, Emory W. Zimmers Jr.(Mcgraw Hill Pub)

REFERENCE BOOK:

1. CAD/CAM: Theory and practice by I. Zeid (TMH)
2. Computer Aided Design: Software and Analytical Design tools by Rajiv S. Krishnamurthy. (Narosa Publications)]
3. CAD/CAM by P. Radhakrishnamurthy & Subramaniam (Wiley Eastern Pub).

RECOMMENDED BOOKS:

CAD/CAM By Suresh Daleja & P.K.Jain (S Chand)