

## SYLLABUS OF INFORMATION TECHNOLOGY DEPARTMENT

### 8.3.a B.E. 1<sup>st</sup> 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	
<b>Total</b>			<b>17</b>	<b>8</b>	<b>15</b>	<b>3</b>	<b>43</b>	<b>900</b>			<b>350</b>			<b>Total Max Marks 1250</b>

### 8.3.f SEMESTER PATTERN – BRANCH : INFORMATION TECHNOLOGY , Direction No. 7 of 2000

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	3IT15	Applied Mathematics	3	1	0	4	100	80	20				3
3	3IT16	Programming Language 'C'	3	1	2	6	100	80	20	50	25	25	3
3	3IT17	Electronic Devices & Circuits	3	1	2	6	100	80	20	50	25	25	3
3	3IT18	Electrical Sciences	3	1	0	4	100	80	20				3
3	3IT19	Digital Electronics & Design	2	1	2	5	100	80	20	50	25	25	3
3	3IT20	Managerial Economics & Accountancy	2	1	0	3	100	80	20				3
3	3IT21	Computer Workshop-I	0	1	2	2				50	25	25	
<b>Total</b>			<b>16</b>	<b>6</b>	<b>8</b>	<b>30</b>	<b>600</b>			<b>200</b>			<b>Total marks 800</b>

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
4	4IT22	Discrete Mathematics & Graph Theory	3	1	0	4	100	80	20	0			3
4	4IT23	Algorithms And Data Structures	3	1	2	6	100	80	20	50	25	25	3

4	4IT24	Communication Electronics	2	1	2	5	100	80	20	50	25	25	3
4	4IT25	Data Processing And File Organization	2	1	2	5	100	80	20	50	25	25	3
4	4IT26	Theory Of Computation	3	1	0	4	100	80	20	0			3
4	4IT27	Computer Architecture And Organization	3	1	0	4	100	80	20	0			3
4	4IT28	Computer Workshop-II	0	0	2	2	0	0	0	50	25	25	
		<b>Total</b>	<b>16</b>	<b>6</b>	<b>8</b>	<b>30</b>	<b>600</b>			<b>200</b>			<b>Total marks 800</b>

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
5	5IT29	Information Theory & Data Communication	3	1	2	6	100	80	20	50	25	25	3
5	5IT30	Discrete And Integrated Circuits	3	1	2	6	100	80	20	50	25	25	3
5	5IT31	Object Oriented Methodologies	3	1	2	6	100	80	20	50	25	25	3
5	5IT32	System Software	2	1	0	3	100	80	20	0			3
5	5IT33	Computer Graphics	3	1	2	6	100	80	20	50	25	25	3
5	5IT34	Principles Of Management	2	1	0	3	100	80	20	0			3
		<b>Total</b>	<b>16</b>	<b>6</b>	<b>8</b>	<b>30</b>	<b>600</b>			<b>200</b>			<b>Total marks 800</b>

**8.3.f SEMESTER PATTERN – BRANCH : INFORMATION TECHNOLOGY , Direction No. 7 of 2000**

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	6IT35	Microprocessors	3	1	2	6	100	80	20	50	25	25	3
6	6IT36	Visual Techniques	2	1	2	5	100	80	20	50	25	25	3
6	6IT37	Database Management Systems	3	1	2	6	100	80	20	50	25	25	3
6	6IT38	JAVA Programming	3	1	2	6	100	80	20	50	25	25	3
6	6IT39	Software Engineering	2	1		3	100	80	20				3
6	6IT40	Operating Systems	3	1		4	100	80	20				3
		<b>Total</b>	<b>16</b>	<b>6</b>	<b>8</b>	<b>30</b>	<b>600</b>			<b>200</b>			<b>Total 800</b>

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	7IT41	Computer Networks And Internet	3	1	2	6	100	80	20	50	25	25	3
7	7IT42	Digital Signal Processing	3	1	2	6	100	80	20	50	25	25	3
7	7IT43	Computer System Security	3	1		4	100	80	20				3
7	7IT44	Elective-I	3	1		4	100	80	20				3
7	7IT45	Elective-II	3	1		4	100	80	20				3
7	7IT46	Mini Project	0		4	4	0			100	50	50	
		<b>Total</b>	<b>15</b>	<b>5</b>	<b>8</b>	<b>28</b>	<b>500</b>			<b>200</b>			<b>Total</b>



## 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.

##### 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 )

##### 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 : Shantinayakan. (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)

## 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.

## 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.

## 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.

### 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 CR.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.)

### Practical

#### Applied Physics:

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., 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 :
5. Familiarization
6. Verification of calibration of vertical amplifier:
7. Determination of dc and ac voltages;
8. Verification of calibration of the time base and determination of frequency of ac signals.
9. Determination of e/m of an electron using Thomson's method.
10. Determination of e/m of an electron using helical method.
11. A study of the Hall effect:
12. Determination of Hall coefficient
13. Determination of the majority carriers and.
14. Determination of the charge carrier density.
15. A study of dual trace CRO :
16. Familiarization
17. Determination of phase difference by direct method.
18. Determination of phase and frequency using Lissajous patterns.
19. A study of the characteristics of germanium and silicon diodes and their comparison.
20. A study of the characteristics and verification the stabilizing action of zener diode.
21. A study of the rectifier and filter characteristics.
22. A study of the input, output and transfer characteristics of a pnp / npn transistor in common base configuration.
23. A study of the input, output and transfer characteristics of a pnp / npn transistor in common emitter configuration.
24. A study of the common emitter amplifier characteristics.
25. Determination of the wavelength of sodium light using fresnel's biprism.
26. Determination of the radius of curvature of a plane-convex lens using Newton's rings.
27. Determination of the principle refractive indices of quartz crystal.
28. 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**

##### **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**

##### **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

#### 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<sub>x</sub>, HC, SO<sub>x</sub>, 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

#### 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

#### 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

#### 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  $\text{Ni}^{2+}$  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  $\text{Ca}^{2+}$  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  $\text{Al}_2\text{O}_3$  and  $\text{Fe}_2\text{O}_3$  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 ROOKS:

1. Engineering Materials by Jastrzebsiki (Tokyo).
2. Corrosion Engineering by Fontana and Green (McGraw Hill International Book Co. 2<sup>nd</sup> 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:**

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 -Vol.II)
8. Durga Dass Basu : Introduction to Constitution of India Prentice Hall of India.
9. Pascual Gisbert S.J. : 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.

### 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.

#### 4. Friction forces:

Law of Coulomb friction, problems involving dry friction, simple applications like wedges and band brakes.

### 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. Introduction of Virtual work theorem:**

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

## **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)

## **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), Kirchoff'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 composite 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)

## 3IT15 APPLIED MATHEMATICS

### Unit-I

**Integral Transforms:** Fourier integral theorem, Fourier and, Laplace transforms and their simple properties. Simple applications of Laplace transforms to solve ordinary differential equations including - simultaneous equations, Solution of, one dimensional diffusion and wave equation by transform method.

## **Unit-II**

Z-transform definition and properties, Inversion, Relation with Laplace transform, Application of Z-transform to solve difference equations with constant coefficients.

## **Unit -III**

Matrices: Inverse of a matrix by adjoining method and its use in solving simultaneous equations, Rank of matrix, Consistency of a system of equation, Eigen values, Eigen vector, Reduction, of a diagonal form, Statement and verification of Cauchy Hamilton theorem, Determination of the roots of algebraic equation by matrix method, Sylvester's theorem, Association of matrices with linear differential equation of second order with a constant coefficient

## **Unit-IV**

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

## **Unit-V**

Distributions of random variables - examples, expectation - Moments, Conditional Distributions and conditional Expectations, Stochastic Process - Bernoulli and Poisson process.

## **TEXT BOOKS:**

- 1, Mathematics for engineers by Chandrika Prasad.
2. Advanced Mathematics for Engineers by Chandrika Prasad,
- 3, Matrix methods for Engineering by L.A. Pipes
- 4, Higher Engineering Mathematics by B. S. Grewal.
5. Probability, Statistics with Reliability, Queuing and Computer Science' Applications by K.S. Trivedi.

## **REFERENCES:**

1. Applied Mathematics for Engineers and Physics by L.A. Pipes Harvile.
2. Probability Theory by Spiegel Murrey Schaum Series.
3. Probability and Statistics for Engineers 4th Ed, by Miller, Freund and Johnson

## **3IT 16 PROGRAMMING LANGUAGE - 'C'**

### **Unit - I**

Algorithm, Flowchart, Program development steps, Basic structures of C language, C tokens. Data types, Declaration of variables. Assigning values, Arithmetic, Relational and logical operators. Increment and Decrement operators. Control operators, Expressions, Evaluation. I/O operations, If and SWITCH statements. WHILE, DO-WHILE and FOR Statements. Programming Examples.

### **Unit - II**

One and Two Dimensional Arrays, Initialization, String variables, Declaration, Reading, Writing, String handling functions, User defined functions, Variables and storage classes. Recursion, Preprocessor, Structure definition. Initializing, Assigning values, Passing of structure as arguments, Unions, Programming Examples.

### **Unit - III :**

Declaration and initializing pointers, Pointer based expressions, Arrays, Strings. FtmGt.io11s and structures, C program examples, File management in C, Opening and closing, I/O operations on files. Programming Examples.

### **Unit - IV**

Enumerated data types, Renaming data types with typedef( ), Type casting, Bit wise operators. and bit manipulation. pointer to pointer, Pointers to functions, Functions Returning pointers, Functions with variable number of arguments, Dynamic memory allocation. Programming Examples.

### **Unit - V**

Drawing lines. circle, rectangle. ellipse, arc using standard library function, line drawing using DDA algorithm, Displaying text in various styles and fonts, drawing and filling shapes. Pallets and colours. Programming Examples

PRACTICAL based on above syllabus.

## **TEXT BOOKS**

1. Programming in ANSI C by E. Balgurusamy
- 2 The C Programming Language by Kerningham and et.al.
3. LET US C by Y. C. Kanetkar

### **3IT17 ELECTRONIC DEVICES AND CIRCUITS**

#### **Unit - I**

Theory of PN junction diode" Junction capacitance, Breakdown Zener diodes, Varactor diodes, Tunnel Diode. Power Supplies : Half wave and full wave. Voltage doublers, Filter types L & PI, Regulation, Ripple factors, Voltage stabilizers.

#### **Unit - II**

Junction Transistor.: Theory of operation, Static characteristics, Breakdown voltages, Current, Voltage & Power. limitations, Photoirarisisters.

#### **Unit - III**

Biasing arrangements,. Voltage gain, Current gain, Input and output Impedence for . CS CG and CD, FET amplifiers, Brief discussion about UJT & SCR applications.

#### **Unit - IV**

Biasing of BIT : Different biasing arrangements' and stability factors. Thermal runaway in power transistors, voltage, current, power gain, input and output impedances in CE, CE & CC amplifiers and comparison.

#### **Unit – V**

Feedback amplifier, Oscillators using BJT, Barkhausen's criterion, RC phase shift, Wein bridge, LC oscillators, Crystal oscillators, Frequency stability.

Power amplifiers:..Classification, A,B and C classes, efficiency.

Pushpull class: A., B, All complimentary symmetric, Distortions and its calculations.

Practicals based on above syllabus. .

#### **TEXT BOOKS :**

1. Integrated Electronics by Millman & Halkias.
2. Electronic Devices & Circuits by Millman & Halkias.
3. Electronic Circuits-Discrete and Integrated by Schilling Below 4. Micro Electronics by Millman and Gabel.

### **3IT18 ELECTRICAL SCIENCES**

#### **Unit-I**

Network Theorems': Superposition, Reciprocity Thevenin's, Norton's, Maximum power transfer for AC circuits, Two port networks parameters and interconnections.

#### **Unit - II**

Nodal and Mesh analysis, Source transformation, Duality,

#### **Unit - III**

Measurement *of* Inductance, Resistance and Capacitance, Measurement *of* low, medium and high resistance, Elementary methods of measurements of inductance and capacitance, Generalized theory *of* A.C. ,bridges, Their uses for measurement of inductance and capacitance.

#### **Unit - IV**

Measuring Instruments: Classification, Absolute and Secondary Instruments, Electronics instruments (VTVM, CRG, DVM, etc.), Synchroscope.

#### **Unit - V**

Generalized principles *of* operation of alternators and synchronous motors, Stepper motor.

#### **TEXT BOOKS**

1. Electrical Techriology by B.L. Theraja.
- 2., Electrical & Electronics Measurement & Instrumentation by A. K. Sawhney
3. Control System Engineering by I.J. Nagarath and M.Gopal.

### **3IT19 DIGITAL ELECTRONICS AND DESIGN**

#### **Unit - I**

Analog Vs. Digital Systems, Transistor as a switch, Boolean Algebra. Boolean identities, Logic problems, Binary, Gray, Octal, Hex and ASCII codes, Gates and their truth tables, De-Morgan's Law, Sum of products & Product of sums. Combinational Logic: Concepts, SSI, MSI & VLSI circuit classification, Standard TTL, CMOS characteristics, Karnaugh map, Simplification of sum of products and product of sum, Solution to problems using K-maps.

#### **Unit - II**

Decoders, Encoders, Multiplexers, Demultiplexers, Code converters, Characteristics of display devices, Standard configuration of gates as SSI/ MSI/LSI circuits, Conversion of Decoders / MUX into one another, Use of MUX as a function generator.

#### **Unit - III**

Introduction, to flip-flop, Latches, Concept of clock, Memory organisation with flip-flop as basic cell, RAM, ROM, EPROM and EEPROM - an overview, Master slave combination and conversion of one type to another type flip-flops.

#### **Unit-IV**

Excitation tables and introduction to sequential circuits, Counters synchronous / asynchronous, Different modulo counters with reset/clear facility, Design of counters of arbitrary modulo with K-maps, Lock tree counter.

#### **Unit - V**

Arithmetic circuits – Adders Subtractors (Half and Full), BCD. Adder/subtractor Concept of ALU and its design, Integrated circuit versions of multivibrators and their design parameters,

Practicals based on above syllabus.

#### **TEXT BOOKS**

1. Digital Design by M.M.Mano
2. Digital Electronics Principles by Malvino,
3. Digital Integrated Electronics by Herbert Taub
4. Digital Circuit and Microprocessor by Herbert Taub
5. Introduction to Digital System by Ralmer,
6. Digital Electronics by Ryan

### **3IT20 MANAGERIAL ECONOMICS AND ACCOUNTANCY**

#### **Unit - I**

Meaning, Nature and Scope of managerial economics, Concepts used in managerial economics such as incremental concepts, Time perspective Discounting for time  
Opportunity cost equilibrium, Law of diminishing marginal utility, Methodology of Managerial economics, Simulation.

#### **Unit - II**

Demand Analysis : Types of demand, Consumers and producers, Goods perishable and durable goods, Determinants of demand, determinants of demand, price, income and cross elasticity of demand, Methods of demands forecasting.

#### **Unit -III**

Theory of production, Production function, Firm and industry, Laws of returns, Input output analysis, Break even analysis, Cost concepts, Fixed variable average marginal and total cost, depreciation cost.

#### **Unit -IV**

New economic policy liberalization, Globalization with respect to current Indian economic scenario, International trade balance of trade and payments. Price and Output determination under perfect competition, monopoly monopolistic competition, Oligopoly, Pricing strategies adopted by the Indian and foreign companies.

#### **Unit - V**

Accounting: Evolution of accounting, definition of accounting and book keeping, Accounting as an information system, Users of accounting information. Financial and managerial accounting, Accounting principles.

#### **TEXT BOOKS**

1. Managerial Economics by O. P. Chopre.



2. Managerial Economics by G.S. Gupta
3. Managerial Economics by D.N. Dwivedi & et.al.

## **REFERENCES**

1. Managerial Economics by P.N. Reddy
2. Managerial Accounting by S.P.Gupta
3. Managerial Economics by K.C. Shankarnarayan

## **31T21 COMPUTER, WORKSHOP I**

1. Introduction to PC Hardware.
2. Working under DOS Operating Environment.
3. Working under WINDOWS Operating Environment
4. Multimedia, IT in business.

## **4IT22 DISCRETE MATHEMATICS AND GRAPH THEORY**

### **Unit - I**

Mathematical Logic and Set Theory: Statement and Notation, Negation, Conjunction, Disjunction, Tautologies, Truth tables, Basic concepts of set theory, Inclusion and equality of sets, The power set, Ordered pairs and n-tuples.

### **Unit - II**

Relation and Functions Relation and Ordering, Properties of Binary Relations in a set.

Relation Matrix and the Graphs. a Relation, Partition and Covering of a set, Equivalence relation, Partial ordering, Partially ordered set, Functions (definition and introduction), Composition of functions, Inverse functions, Characteristic function of a set.

### **Unit - III**

Group Theory: Semigroups and Monoids (definitions and examples), Homomorphism of semigroups and monoids, Subsemi groups and submonoids, Groups (definitions and examples) Subgroups and Homomorphisms, Cosets and Lagranges theorem, Normal subgroups, Codes and group codes.

### **Unit - IV**

Rings (definitions and examples): Integral domains ring homomorphisms, Ideals of Ring polynomial.

### **Unit - V**

Graph Theory: Basic concepts of Graph Theory, Basic definitions, Paths and circuits. Reachability and connectedness, Matrix representation of graphs, Trees and their representation and operations, Rooted trees, Path lengths in rooted trees, Multi graphs and weighted graphs, Shortest paths in weighted graphs.

## **TEXT BOOKS :**

1. Discrete Mathematics Structures With application to Computer Science by J.P. Tremblay & R.Manohar.
2. Discrete Maths for Computer Scientists & Mathematicians, (Chapter 2,5,7) by J .L. Mott, A. Kandel, T.P. Baker

## **REFERENCES:**

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

## **4IT23 ALGORITHM AND DATA STRUCTURES**

### **Unit - I**

Introduction to Algorithms: Analysis of algorithms. The asymptotic notations, Features of structured program, Recursion, Top down and bottom-up programming techniques. Divide and conquer strategy. Stacks and Queues: Fundamentals, Evaluation of expressions, Polish expression and their compilation, Application of stacks, Multiple stacks and queues, Priority queues.

### **Unit - II**

Linked list: Single linked list, linked stacks and queues, The polynomial addition, Examples on linked list, Equivalence relation, Circular linked list, Doubly linked list and Generalised list

### **Unit - III**

Sorting Methods: Interhaland external sort, bubble sort, exchange, insertion, selection, merge, heap, radix and quick sort, Comparison with respect to their efficiency. . Searching Methods: Sequential. binary, indexed search, Hashing techniques and collision handling mechanism.

### **Unit - IV**

Trees: Definition and terminology, Representation. Tree traversal examples on trees. Threaded trees, Binary tree, Binary search tree, Operation on multi-way trees. B trees and B+ trees.

### **Unit - V**

Graph and their applications : Computer representation of Graphs. Traversal techniques like Breadth first search, Depth first search. Greedy algorithms-study with respect to shortest path, minimum cost spanning tree. .

Practicals based on above syllabus.

### **TEXT BOOKS**

1. An Introduction to Data Structures with Applications by Trembley J.P. & Sorenson P. G.
2. Algorithm, Data Structures & Programs by Niclalls Worth
3. Data structures using C/C++ by Tenanbaum: ' ' .

### **41T24 COMMUNICATION ELECTRONICS**

#### **Unit - I**

Analog Systems: Frequency spectrum of electromagnetic waves, Their properties, Properties of Fourier transform, Convolution in time and frequency domain, Sampling theorem, Noise types. Softwares

#### **Unit - II**

Mechanism of amplitude modulation and detection, SS13, SSB-SC, DSB; Various techniques of generation and detection of FM, Comparison of various system based on SNR.

#### **Unit - III**

Digital Systems: Bandwidth and rate of pulse transmission, Pulse spreading and interference, PSD of digital signals, Line coding, Digital multiplexing.

#### **Unit - IV**

Pulse Modulation : PAM. PWM, PCM and PPM systems, quantization and noise, Delta modulation.

#### **Unit - V**

Digital Carrier System SaLient features of ASK, FSK, PSK and DPSK systems, M-ary communication system.

Practical based on above syllabus :

### **TEXT BOOKS**

1. Modern Digital and Analog Comm.unication System by B.P. Lathi
2. Communication System by B.P. Lathi
3. Digital Communication by Proakis

### **REFERENCES**

1. Communication Systems by AB. Carlson. . .
2. Principle of Communication System by Taub & SchiUing~
3. Communication Electronics by Kennedy.

### **41T25 DATA PROCESSING AND FILE ORGANISATION**

#### **Unit - I**

Structural Organization of COBOL: Character set.: Words, Sentences, Identification Division Environment Division, Data Division, Data types - numerical, Alphabetic & alphanumeric; Input-output section Working storage sections Procedure division features:

ACCEPT, DISPLAY, MOVE, Arithmetic & COMPUTE . Verbs, Sample programs, PERFORM & GOTO verbs, STRING, UNSTRING, INSPECT & Copy verbs Sample programs using PERFORM, Miscellaneous COBOL statements.

### **Unit - II**

Conditional Statements & Table Handling Relation conditions, Nested conditions, Class conditions, Condition-name conditions, Structured programming forms, of program structure, Structural flow charts: Subscripting, OCCURS clause Multidimensional tables, Table handling with PERFORM verb.

### **Unit - III**

Business Files: Operation on files, Master files Transaction file. Report file, Batch processing, On-line processing, case studies, Sequential Access Files : Principles of magnetic storage & accessing, Blocking, Inter record gap, Label records, COBOL language instructions for sequential files.

### **Unit - IV**

Direct Access Files: Characteristics of disk storage, & timing index, Indexed sequential files, COBOL instruction "relative sequential files, relative file" organisation, Division-Reminder method, digital-analysis method, COBOL instructions for handling relative files,

### **Unit - V**

Sorting, Searching & Merging: Linear search sort, Merging sort. Chained record sort. Linear search, Binary search, File sorting & Merging using sequential files. Report Generation: Output layout design, Heading, Date & Detailed summaries, Control breaks, Language specifications for COBOL report writing:

Practicals based, on above, syllabus,

### **TEXT BOOKS**

1. Information System through COBOL by S. Philipakis, Leonard J.
2. COBOL Programming, by M.KRoy, D.Ghosh Dastidar.

## **4IT26 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 NF A and DF A. Conversion of NFA into DFA, Minimisation of FSM, Equivalence between two FSM's, Moore and Melay 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 of CFL and PDA, Interconversion, enumeration of properties of CFL (proofs omitted).

### **Unit - IV**

Turing Machine, Definition, Model, Design of TM, Computable functions, Recursive enumerable language, Church's hypothesis, Counter machine, Types of TM's (Proofs not required). Chomsky hierarchy of languages, Linear bounded automata and context sensitive language, Introduction of DCFL and DPDA LR(O), grammar, Decidability of problems.

### **Unit - V**

Undecidability: Properties of recursive & non-recursive enumerable languages, Universal Turing Machine, Post-correspondance problem. Introduction to recursive function theory.

### **TEXT BOOK**

1. Introduction to Automata Theory, Languages and computation by Hopcraft H.E. & Ullman J.
2. An Introduction to Formal Languages and Automata by Peter Linz (Chapter 1 to 12 except, 6.3 and 7.4)

### **REFERENCES**

1. Introduction to Languages and the Theory of Automata by John C. Martin

2. Elements of Theory of Computation by Lewis H.P. and Papadimition C.H.
3. Theory of Computation by Mishra & Chandrashekharan

#### **4IT 27 COMPUTER ARCHITECTURE AND ORGANIZATION**

##### **Unit – I**

Structure of Computer Hardware & Software Functional UNIT, Basic operational concepts, Bus structures, Software performance, Distributed computing. Addressing methods and machine Program Sequencing: Memory locations, Addresses and encoding of information, Main memory operations. Instructions & instruction sequencing, Addressing modes, Assembly language, Basic input-output operations, Stacks Subroutines.

##### **Unit – II**

The 68000 example: Registers & addressing, instructions, Assembly language, program flow control, Sorting example. Logic instructions, Program controlled I/O, subroutines. PC examples: Basic power PC organization, Load and Storing instruction, Arithmetic and logic instructions. Flow control instruction, Compare instructions, subroutines.

##### **Unit – III**

The Processing UNIT: Some fundamental concepts, Execution of complete instruction, Hardware control, Performance considerations, Micro programmed control.  
Input –Output Organisation: Accessing I/O devices, Interrupts, DMA .

##### **Unit - IV**

Arithmetic : Number representation, addition of positive numbers, Logic design of fast address, Addition & subtraction Signed operand multiplication, Fast Multiplication, Integer division.

##### **Unit – V**

The main Memory: Some basic concepts, Semiconductors RAM memories, Memory System consideration, Semiconductor ROM memories, Multiple-module memories and interleaving, Cache memories. Virtual memories. Memory management requirements Pipelining: Basic concepts, Instruction queue, Branching, Data Dependency. Influence of Pipelining on instruction set design. Multiple execution, UNITs, Performance considerations, Examples of CISC, RISC & stack processors.

#### **TEXT BOOKS:**

1. Computer Organisation by V.C. Hamacher. Z.G. Vranesic and S.G. Zaky , fourth Edition. McGraw Hill Publ.

#### **REFERENCES**

1. Computer Organisation & Architecture by William Stalling
2. Computer Architecture and Organisations by J.P. Hayes, Third Ed., McGrawHill Publication.

#### **4IT 28 COMPUTER WORKSHOP-II**

1. Introduction to Networking accessories.
2. Introduction to UNIX Operating System.
3. Introduction to MS-WORD & POWER POINT.
4. Familiarity with Internet and World Wide Web.

#### **5IT29 INFORMATION THEORY AND DATA COMMUNICATION**

##### **Unit - I**

Digital communication : Introduction, digital radio, digital amplitude modulation, frequency shift keying, phase shift keying, quadrature amplitude modulation bandwidth efficiency, carrier recovery. Clock recovery.

##### **Unit - II**

Probability random variable & stochastic processes, review of probability theory, random variables, probability density and distribution function, random processes, periodic processes, stationary processes auto correlation cross correlation applications to signal analysis.

##### **Unit - III**

Data communications : history and data communications circuits data communications error control, synchronization, data communication hardware, Data communication protocols and network configuration Open system interconnection, synchronous protocol.

#### **Unit - IV**

Digital transmission: differential pulse code modulation, pulse transmission, signal power in binary digital signals. Multiplexing: time division multiplexing, T1 digital carrier system, CCITT time division multiplexed carrier system.

#### **Unit V**

Shannon limit for information theory, channel capacity and discrete & continuous channels error control coding, Hamming distance, linear block codes, CRC, convolutional codes.

#### **TEXT BOOKS**

1. Advanced Electronics communication system by Wayne Tomasi.
2. Communication System Analog, Digital by R. P. Singh, S. D. Sapre
- 3 Modern Digital & Analog Communication System by B. P. Lathi
4. Digital Communication by Simon Haykin.

PRACTICALS based on above syllabus.

### **5IT-30 DISCRETE AND INTEGRATED CIRCUITS**

#### **Unit – I**

Linear waveshaping: RC, RL, and RLC circuits, High pass, low-pass circuits, response to step, ramp and exponential input, compensated attenuator.

#### **Unit – II**

Clipping and Clamping circuits : Diode clippers, Zener diode, Clipper compensation for temp. changes in diode, Clamping operation with and without source and diode resistance, Clamping circuits theorem effect of diode characteristics

#### **Unit - III**

Basic Operational Amplifier Circuits : Differential amplifier stages, current source, biasing, level shifting techniques, common mode and differential mode gains and impedance of a differential-stage, over load protection circuits, frequency response and compensation..

#### **Unit - IV**

Characteristics of ideal & non ideal operational amplifiers, error in measurement of various parameters, integrator & differentiator, instrumentation amplifier, bridge amplifier, introduction to 555, 565 & 723 ICs.

#### **TEXT BOOKS**

- 1 Microelectronics: Jacob Millam, McGraw Hill Book
- 2 Operational Amplifier & Applications by R. Gaikwad
- 3 OpAmp, Design and Application by Tobey, Gramme and Huelsoman, McGraw Hill, Kogakush.
- 4 Operational Amplifier by Roy & Choudhary.
5. Pulse, Digital and Switching Waveform by Millman and Taub.

PRACTICALS based on above syllabus.

### **5IT-31 OBJECT ORIENTED METHODOLOGIES**

#### **Unit - I**

Introduction object-oriented development, object oriented terms, object module, object & closes links and associations, generalization and inheritance, grouping constructs a sample object module. Advanced object modeling; aggregation abstract classes, multiple, inheritance, metadata, candidate keys, constraints.

#### **Unit - II**

Dynamic modeling, events & states, nested state diagrams, concurrency advanced dynamic modeling concepts, a sample dynamic module, relation of objects & dynamic module, functional models, data flow diagram, specifying operations, constraints, a sample functional module .

### **Unit - III**

Design methodology overview of analysis, problem statement, ATM network, object modeling, various phases, dynamic modeling, various phases, adding operations, refining the object model, system design, overview, sub systems, allocating subsystems, management of data stores, choosing software control, implementation, handling boundary condition, trade offs.

### **Unit - IV**

Object design, overview, designing algorithms, design optimization, optimization of control, adjustment of inheritance, design of associations, object representation, physical packaging, documenting, design decisions.

### **Unit - V**

Comparison of methodologies, information modeling notations, Implementation, programming languages, database systems, object oriented style, reusability, extensibility, robustness.

### **TEXT BOOKS**

1. Object Oriented Modeling and Design by James Rumbaugh, Michal Blaba, William Premerlani, Frederic Eddy, William Lorerson, PHI, 1997

Practicals based on Above Syllabus in C++

### **5IT-32 SYSTEM SOFTWARE**

#### **Unit – I**

Evaluation of components of programming system eg. Assemblers, loaders, macros, compilers, evaluation of operating system, functions of batch control language, facilities, machine structure, machine language, assembly language.

#### **Unit – II**

Design of Assembler: Pass 1 and pass 2 algorithms, symbol table construction & processing searching and sorting.

#### **Unit – III**

Microinstructions, features of macro facility, implementation of single and two pass algorithms, macro calls within macros

#### **Unit IV**

Loaders: Loader schemas, general absolute, subroutine linkage, relocating loaders, design of absolute and direct linking loaders, Programming language: functional modularity, asynchronous operation, multi tasking.

#### **Unit V**

Feature of HLL, functional modularity, asynchronous operation, multitasking, Compiler: General model of compiler, Phases of the compiler.

#### **Text Books**

System programming by J.J. Donovan.

System programming by D.M. Dhamdhare.

### **5IT-33 Computer Graphics**

#### **Unit – I**

Geometry and line generation : points, lines, planes, pixels and frame buffers, types of display devices, DDA, and bresenham's line algorithms, brasenham's algorithms for circle generation, algorithm for ellipse generation, aliasing and anti aliasing.

#### **Unit – II**

Graphics primitives: display files, Algorithms for polygon generation, Polygon filling algorithms, NDC(normalized device coordinates), pattern filling. 2D transformations: Scaling, rotation, transformation, rotation about arbitrary point reflections, zooming

#### **Unit – III**

Segment tables, operations on segments, data structures for segments and display files, Windowing and clipping: Window, viewport, viewing transformations, clipping, line and polygon clipping.

#### **Unit – IV**

3D Graphics : 3D primitives, projection, parallel, perspective, isometric, viewing transformations, hidden surfaces and line removal, painter's algorithm, Z-buffers, Wamocks, algorithm

### **Unit – V**

Curves and surfaces: Beziere and B-Spline, sweeping method of interpolation, Raster Graphics architecture: Simple Raster display, system, display processor system, standard graphics pipeline.

### **Text Books**

Procedural Elements for Computer Graphics by David F. Rogers, McGraw Hill.  
Computer Graphics Principles and Practice by Foley, Vandam, Feiner and Huges – Addison Wesley  
Principles of interactive Computer Graphics by Newman and Sproul  
Mathematical Elements for Computer Graphics by David F. Rogers and Adams.

### **5IT-34 Principles of Management**

#### **Unit – I**

Concept of management and administration, management process, management as a profession, task and responsibilities for a professional manager and managerial skill required for a professional manager, modern approach OR.

#### **Unit – II**

Function of management :- outline and significance of planning, decision making, directing, motivating, coordination, communication, time management.

#### **Unit – III**

Financial management- Financial statement, ratio analysis, budgets, organization and working of Indian capital market. Human Resource management

#### **Unit – IV**

Meaning, nature and scope of HRM Human Resource Planning, Procurement and development of human resources (HR), organizational behavior, organizational change and development, quality of working life, management of stress, conflict, counseling

#### **Unit – V**

Materials management: Meaning, nature and scope of materials management, inventory control – E-O-Q. and ABC analysis, Store keeping and purchasing, out line of ISO 9000 and ISO-14000. Marketing management : Nature and scope of marketing management marketing concepts, market research, market segmentation, consumer behavior and advertisement .

### **TEXT BOOK:**

Principles of Management by Kuntooz, O'Donnel  
Principles of Management by P. C. Tripathi & P.N. Reddy, TMH Pub.  
Financial Management by Chandra  
Human Resource Development Management by A. M. Sheikh  
Integrated Material Management by A. K. Mitra  
Marketing Management by Philipkatker, Ramaswamy.

### **IT-35 Microprocessor**

#### **Unit - I**

8085 microprocessor, architecture, instruction sets, addressing models, memory organization & interfacing.

#### **Unit –II**

Assembly language programming using 8085, 8085 interrupts, 8255 PPI and its organization.

#### **Unit –III**

8254 programmable timer, organization & interfacing 8085, 8279 keyboard & display, controller, organization & interfacing with 8085 & 8279.

#### **Unit -IV**

Serial Data Transmission, USART 8251 & its organization & interfacing with 8085, 8259 interrupt controller, its organization and interfacing with 8085, DMA controller 8257 & its organization.

#### **Unit -V**

8086/8088 microprocessor, architecture, instruction set, addressing modes, simple programs, memory organization and interfacing

## **TEXT BOOKS:**

1. Microprocessor Architecture Programming & Application with 8080/8085 by Ramesh S. Gaonkar
2. 16 bit Microprocessor by Triebel And A. Singh
3. 16 bit Microprocessor by Liu and Gibson

### **Reference Books:**

Microprocessor and Digital Systems by D. V. Hall

PRACTICALS based on above syllabus

## **6IT-36 VISUAL TECHNIQUES**

### **Unit - I**

Understanding user interface, basic considerations in designing a proper interface, consistency, robustness of interface, user-friendliness, feedback, providing default values.

### **Unit -II**

Identifying user tasks, method of accomplishing tasks, necessity of performing tasks, event –driven programming, traditional programming, advantages of event-driven interfaces, types of events in windows.

### **Unit -III**

Menus, file menu, edit menu, menu structure, examples, undo and redo features, graying a menu entry, TEXT buttons, graphic button, examples.

### **Unit -IV**

Principles of good dialog box design. Rules of thumb for dialog box design, kinds of dialog boxes, handling controls and radio buttons, using radio buttons, check boxes,

### **Unit - V**

Use of list boxes and combo boxes, rules of thumb in setting up list boxes and combo boxes, varieties of list & combo boxes, examples.

## **TEXT BOOK:**

- 1 Designing GUI application by Alex Leavens, BPB Publications, 1995
2. “ Visual Basic 6.0” by Evangelos Petroustos PBP Pub.

Practicals based on above syllabus using Visual Basic

## **6IT-37 Database Management**

### **Unit - I**

Introduction to database systems: Overview file systems Vrs DBMS, various data models. Level of abstraction, structure of DBMS, relation model, relations and integrity constraints, relational algebra and calculus.

SQL basic, SQL query, nested queries, aggregate operators, Embedded SQL, dynamic SQL, security, views.

### **Unit – II**

File Organization:

Storage media, buffer management, record and page formats, file organizations, various kinds of indexes and external sorting.

### **Unit - III**

Query optimization and evaluation : introduction to query processing, selection operation, projection operation, join operation, set operation and aggregate operation, relational query optimization, translating SQL queries, relational algebra, estimating the cost, relational algebra equivalence.

### **Unit - IV**

Database Design :

Overview of data base design, ER model, features of ER models, conceptual design using ER model, scheme refinement and normal forms, scheme refinement, use of decompositions, functional dependencies, normal forms, multi-valued dependencies.

### **Unit - V**



Concurrency control and recovery : concepts of transformation, Transactions and schedules, lock based concurrency control, lock management, specialized locking techniques, concurrency control without locking, crash recovery, introduction to crash recovery, log recovery, check pointing, media recovery.

**Text books :**

Database management system by Raghurama Krishnan, MGH, 1998

Database system concept, by Henry Korth and other

Reference book

Database management and design by G.W. Hansen and J.V. Pansen, PHI, 1999

An introduction to database system by C. Desai, Galgotia publication 1998

Practical based on above syllabus using Oracle.

**6IT 38 JAVA Programming**

**Unit - I**

Data types, variables, array, integers, floating point types, characters, Boolean, literal, operators: arithmetic operators, bitwise operators, relational, Boolean, logical, assignment, the ? operators precedence, use of parentheses. Control statements : IF, SWITCH, Do while, while, for, nested loop, break, continue, return. Classes: Fundamentals of classes, declaring objects, assigning objects, reference variables, methods, constructor, variable handling and garbage collection. Method and classes: Overloading methods, using objects as a parameter, arguments passing, returning objects, recursion, access control, understanding static, introducing final, inner classes, storage classes, command line arguments.

**Unit - II**

Packages and interface: Packages, access protection, importing packages, interfaces, Exception handling: Fundamental exception type, uncaught exception, try-catch, displaying description of exception, multiple catch clauses, nested try statement, throw, throws, finally, built in exception, creating own exception subclasses. Multithreaded programming: Java thread model, thread priorities, synchronization, Messaging, the thread class, run able interface, creating thread, creating, multiple thread, using isAlive(), join(), Thread priority, Synchronization, Interthread communication, suspending resuming, stoping threads, using multithreading.

**Unit - III**

I/O, applets: I/O stream, byte stream, character stream, predefined streams, reading console input, reading character, reading string, writing console output, the printwrite class, reading and writing files, applets fundamentals, transient and volatile modifiers, using instance of, strictfp, native method.

**Unit - IV**

String handling: string constructor, special string operator, character extraction, string comparison, searching string, modifying a string, data conversion usingvalueOf(), changing case of characters, within a string, string buffer.

**Unit - V**

Networking: networking basics, socket overview, client/Server, reserve socket, proxy server, internet addressing, networking classes and interfaces, factory methods, and instance method, TCP/IP client socket, URL, URL connection, TCP/IP servers, sockets, datagrams.

**Text books :**

The complete refrence java, 2-3<sup>rd</sup> edition, by Patrick Naughton, TMH Publ.

Practicals based on above syllabus.

**6IT-39 Software Engineering**

**Unit - I**

Software and software engineering. The importance of software, software-software myths, software engineering paradigms, generic view of software engineering, software metrics, measures, estimation, risk analysis, scheduling, size oriented metrics, function oriented metrics, metrics of software quality.

**Unit - II**

Software project estimation and planning, decomposition techniques, LOC and FP estimation, effect estimation, risk analysis, identification, projection, assessment, management and monitoring, software engineering, requirement analysis, tasks, analyst, software prototyping, specification principles, representation and the software requirements specification.

### **Unit - III**

Object oriented analysis and data modeling, object oriented concepts, identifying objects, specifying attributes, defining operations, inter object communication, finalizing object definition, object oriented analysis modeling, data modeling, data objects, attributes and relationships, entity relationship diagrams, alternative analysis techniques, requirement analysis methods, data structure oriented methods, data structured system development, warner diagrams and the DSSD approach, Jackson System development.

### **Unit - IV**

Software design fundamentals, The design process, design fundamentals, effective modular, design dataflow oriented design, transform analysis, transaction analysis, design heuristics, object oriented design, object oriented design concepts, object oriented design methods, refining operations, program components & interfaces, implementation detail design, User interface design, human factors, human computer interface design, interface-design guidelines, interface standards.

### **Unit - V**

Software quality assurance, software quality factors, quality assurance, quality matrices, Halstead's S/W science, software testing techniques, S/W testing fundamentals, White box testing, blackbox – testing , validation testing, system testing, debugging, software maintenance, maintainability, maintenance tasks, reverse engineering and re-engineering.

### **Text Books:**

Software engineering by Roger S. Pressman, McGraw Hill, Second Ed.

Software Engineering by D. Bell, I. Morrey –PHI Pub.

### **6IT-40 Operating Systems**

#### **Unit - I**

Introduction : What's an operating system, multiprogramming, time sharing, real time systems, multiprocessor system, operating system services :Types of the services, the user view, the operating system view. File system: concept, file support, access methods, allocation methods, directory system, file protection, implementation issues.

#### **Unit - II**

CPU Scheduling : Review of multiprogramming, concept, scheduling concept, scheduling algorithms, algorithm evaluation, multiple processor scheduling, disk and drum scheduling: Physical characteristics, first come first serve scheduling, shortest seek time first scheduling, SCAN, selecting a disk scheduling algorithm, sector queuing.

#### **Unit - III**

Memory management: Preliminaries: Bare machine, resident monitor, swapping, multiple partition, paging, segmentations, combined systems. Virtual memory:overlays, demand paging, performance of demand paging, page replacement, virtual memory concepts, page replacement algorithms, allocation algorithm, thrashing, other considerations.

#### **Unit - IV**

Deadlocks: The deadlock problem, deadlock characterization, deadlock presentation, deadlock avoidance, combined approach to deadlock handling.

Concurrent Process: Precedence graph, specification, review of process concept, hierarchy of process, the critical section problem, semaphores, classical process coordination problem, inter process communication.

#### **Unit - V**

Protection: goal of protection, mechanisms and policies, domain of protection, access matrix, implementation of access matrix, dynamic protection structures, revocation, Existing systems, language based protection, protection problems security.

### **Text Books:**

Operating System concepts by J.I. Peterson and Silberschatz.

### **Reference Books**

Operating system concept and design by Milan Milenkovic

Operating system by Madnick and Donovan  
An Introduction to Operating system by H. M. Dietel.

## **7IT41 Computer Networks and Internet.**

### **Unit - I**

Introduction : The use of computer networks, networks for companies, network for people, social issues. Network hardware, LAN's WAN's wireless networks, internetworks, network software, protocol hierarchies, design issues for layers, interfaces and services, connection oriented and connection less services, service primitives, relationship of services to protocols, the OSI reference model, TCP/IP reference model, comparison of OSI and TCP/IP reference model, critique of OSI model and protocols, critique of TCP/IP reference model. Example networks – Novell network, ARPANET, NSFNET, the internet, SMDS, X.25 network, frame relay, network standardization – Who's who in international standards world, who's who in the internet standards world.

### **Unit - II**

Physical Layer – The theoretical basis for data communication-fourier analysis, bandwidth limited signals, maximum data rate of a channel, transmission media, magnetic media, twisted pair coaxial cable, fiber optics. Wireless transmission, microwave transmission, infrared and millimeter waves, light wave transmission. Telephone system – structure, politics of telephones, local loop, trunks and multiplexing, switching, narrowband ISDN – Services, architecture, interface, perspective on N-ISDN, broad band ISDN and ATM – Virtual circuits, versus circuit switching, transmission in ATM networks, ATM switches.

### **Unit - III**

Data link layer- design issues – services provided to the network Layer, framing, error control, and wait simplex protocol, for noisy channel, sliding window protocols –one bit protocol, go back protocol, selective repeat protocol. The medium access sublayer static and dynamic channel allocation in LANs and MANs, Multiple access protocols. ALOHA, CSMA, collision free protocols, limited contention protocols, wavelength division multiple access protocols, wireless LAN protocols, IEEE standards 802 for LAN and MANs-802.3 & Ethernet, token bus, token ring, comparison 802.6, 802.2.

### **Unit - IV**

The Network Layer- Design issues, services provided to the transport layer, internal organization, comparison of virtual circuit and datagram subnets, routing algorithms, optimality principle, shortest path routing, flooding, flow-based routing, distance vector routing, link state routing, hierarchical routing, broadcast & multicast routing, congestion control algorithms, general principles, prevention policies, traffic shaping, flow specifications, congestion control for multicasting. Internetworking – how networks differ, concatenated virtual circuits, connectionless internetworking, tunneling, internet work routing, fragmentation, firewalls, the network layer in the internet IP protocol, IP address, subnets, internet control protocols, OSPF, BGP, internet multicasting.

### **Unit - V**

Transport and application layer- services provided to the upper layer, quality of services, transport service primitives, elements of transport protocols, addressing, establishing a connection, releasing a connection, flow control, and buffering, multiplexing, crash recovery, network security – traditional cryptography, fundamental principles, secret-key algorithms, public key algorithms, authentication protocols, digital signatures, social issues.

### **Text books:**

Computer Networks Third Edition by Andrew Tanenbaum(PHI Pub)

### **Reference Books:**

1. Data and Computer Communication, By William Stallings (PHI Pub)
2. Data and Network communication by Michael A. Miller
3. Computer Networks & E-Commerce by Parag Diwan (Pentagon Pub.)

Practicals based on above syllabus.

## **7IT-42 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 and system, fourier transform of discrete time signals, properties of DFT, DFTS of typical discrete time 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**

Introduction to FFT algorithms; decimation in time – FFT algorithms, decimation in frequency – FFT algorithms, DCT

### **Text Books:**

Digital Signal Processing : Alen V. Oppenheim, W. Schaffer (PHI Pub)

Digital Signal Processing : Proskies and Monalkies (PHI Pub.)

### **Reference Books:**

Theory and Application of Signal Processing by Rabiner & Gold (PHI Pub.)

Digital Filter Design and Analysis by Andreas Antoniou (TMH Pub.)

Practicals based on above syllabus using MATLAB and TMS C320 C50.

## **7IT43**

### **COMPUTER SYSTEM SECURITY**

#### **Unit - I**

Introduction: attacks, services, mechanisms, security attacks, security services, a model for internetwork. security, encryption model, steganography, classical encryption techniques, modern tecluuques -simplified DES. block cipher principles, data encryption standard, strength of DES, differential & linear cryptanalysis, block cipher design principles, block cipher modes of operation, Algorithm - triple DES, international data encryption algorithm, blowfish, RC5, CAST, RC2, characteristics of advanced symmetric block ciphers.

#### **Unit - II**

Confidentiality using conventional encryption: placement of encryption function, traffic confidentiality, key distribution. random number generation. Public key cryptography: principles, RSA algorithm, key management. diffie-hellman key exchange, elliptic curve remainder theorem, discrete logarithms,

#### **Unit - III**

Message Authentication & Hash functions: Authentication requirements, functions, codes, hash functions, security of hash function & MACs. Hash & Mac algorithms: MD5 message digest algorithm, secure hash algorithm (SHA-1), RIPEMD-160. HMAC digital signatures & authentication protocols: digital signatures, authentication protocols, digital signature standard.

#### **Unit - IV**

Networks security practice: authentication applications - kerberos, X.509 directory authentication service. kerberos encryption techniques. E-mail security: pretty Good privacy, S/MIME, data compression using ZIP Radix-64 conversion, PGP random number generation, IP security: overview, architecture. authentication header, encapsulating security payload, combining security associations, key management.

#### **Unit -V**

Web security: requirements, secure sockets layer & transport layer security, secure electronic transaction, networks management security: basic concepts of SNMP, SNMPv1 commUNITY facility. SNMPv3.

System Security: Intruders, viruses and worms - intruders, viruses & related threats, Firewalls: design principles, trusted systems.

### **TEXT BOOKS :**

1. Cryptography and networks security principles & practice 2/e by William Stalings (Pearson Education Printice Hall).
2. Networks security Essentials Applications & standards by William Stalings (pearson Education, LPF).

### **REFERENCE BOOKS :**

- 1 Cryptography in C and C++ by Michael Welschenbach (A press IDG Books India).
2. Introduction to Data Compression 2/e by Khalid Sayood (Morgan kaufinann/ Harcourt India).

## **7IT44/I**

### **OPERATIONS RESEARCH**

#### **Unit - I**

Definitions, characteristics and limitations of O.R., phases of O.R., modelling in O.R., tools and techniques of O.R., linear programming, formulation, solution of L.P.P., graphical method, simplex method, duality in L.P.P.

#### **Unit - II**

Allocation models - Assignment models multiple optima, prohibited assignment transportation model, prohibited and preferred routes, degeneracy

#### **Unit -III**

Network analysis: Basic concept of network diagram, network construction, CPM, PERT, floats in network analysis, cost analysis of project.

#### **Unit -IV**

Queuing theory: Queuing process, components of queuing system, M/M/I(OO/FIFO) model, simulation, Monte Carlo simulation, concept and application in various areas such as queuing system, network

#### **Unit - V**

Maintenance and Replacement Problems: Models for routine maintenance and preventive maintenance decision, replacement models that deteriorate with time and those fail completely.

#### **TEXT BOOKS:**

1. Problems in Operation Research by P.K. Gupta & Man Mohan (Khanna Pub.)
2. Mathematical Models in Operation Research by J.K. Sharma (Macmillan Pub.)

#### **REFERENCE BOOKS:**

1. Introduction to Operation Research by Hiller & Liberman (Holden Day Inc., Sanfransico)
2. Operations Research by Kantiswaroop &Gupta (S.Chand Pub.)
3. Principles of Operation Research by Wagner (PHI Pub.)
4. Operations Research by Dr. B.S. Goel & S.K. Mittal (Ptagati Prakashan)

## **7IT44/2**

### **ARTIFICIAL INTELLIGENCE**

#### **Unit -I**

Introduction: AI problems, AI technique, defining problem as a state space representation, problem characteristics, production system characteristics. Heuristic search techniques: generate and test, hill climbing, best-first search, problem reduction, constraint satisfaction, means end analysis.

#### **Unit -II**

Knowledge Representation: Issues, predicate & proposition resolution, representing knowledge using rules: frames & scripts, semantic networks, conceptual dependency, truth maintenance system.

#### **Unit -III**

Reasoning techniques: Elementary search techniques - depth first search, breadth first search, forward & backward reasoning, winding unwinding, recursive & backtracking algorithm. Uncertainty Reasoning - probability theory, Bayerian networks, certainty factors methods, basics of fuzzy logic, nonmonotonic reasoning systems.

#### **Unit -IV**

Game playing: Minimax search, alpha-beta cutoffs, planning - block world problems, STRIPS, hierarchical planning; nonlinear planning Natural Language Processing - Grammar & Language, Chomsky hierarchy, transformational grammar, case grammar, systemic grammar, semantic grammar, basic parsing technique, transition networks RTN, ATN, semantic analysis & representation structures, natural language generation.

#### **Unit -V**

Learning : Block architecture of learning system, types of learning - rote learning, learning by taking advice, learning from example, learning by analogy, Expert System - rule base architecture, non production system architectures, expert system shell, knowledge acquisition, knowledge system building tools.

**TEXTBOOK:**

1. Artificial Intelligence by E.Rich & K.Knight (TMH Pub.)

**REFERENCE BOOKS:**

1. Introduction to Artificial Intelligence & Expert System by D.W. Patterson (PHI Pub.) 2. Principles of Artificial Intelligence by Nilsson N.J. (Narosa Pub.)

**7IT44/3****VLSI DESIGN****Unit -I**

Switching algebra theorems, simplification of boolean functions using karnaugh maps, of combinational logic circuits, fault detection and location in two level circuits, clock concept in flipflops, shift registers. .

**Unit -II**

Introduction to CMOS circuit, MOS Transistors theory, CMOS processing technology, circuit characterization and performance estimation, CMOS circuit and logic design.

**Unit -III**

Design of synchronous sequential machines using Mealy and Moore principles, minimization of state machines and their standard forms FPGA, PLA, PLD, PLG.

**Unit -IV**

Introductory concepts of VHDL and Verilog language, HDL based programs for decoder, encoder, multiplexer, counters, flipflops, and finite state machines.

**Unit -V**

Architecture of 8 bit and 16-bit processors namely 8085, 8086 Concepts of increasing the speed of processor, architecture of other advanced processors, memory management, memory controllers, Introductory concepts of USB and PCI buses. -

**TEXT BOOKS :**

1. Principles of CMOS VLSI Design by Weste and Eshraghian (Addison-Wesley Pub.)

**REFERENCE BOOKS:**

1. Digital logic and Computer Design by Morris Mano (PHI Pub.)
2. A VHDL Primer by Dr. Bhasker (Addison-Wesley Longman Pub.)
3. Verilog by Palnitkar. .
4. VHDL by Nawabi (McGraw Hill Pub.)
5. VHDL by Perry.
6. Microprocessors Architecture Programming and Application with 8080/8085 by R.S. Gaonkar (Wiley Eastern Pub.) . . . . .
7. Microprocessors and Digital Systems by D. V. Hall (TMH Pub.).

**7IT45/1****FUZZY SYSTEM AND NEURAL NETWORKS****Unit -I**

Basics of Artificial Neural Networks, characteristics of neural networks, historical development of neural network principles, model of neuron, basic learning laws. Learning in ANN: Supervised learning, unsupervised learning, reinforced learning, competitive learning, the delta rule, gradient descent rule, Hebbian learning, Parameters of ANN. ANN Topologies - Modeling ANNs, ANN learning & program, learning algorithms. Discrimination ability - Learning separable ANNs, multilinear ANNs, and nonlinear separable ANNs.

**Unit -II**

McCulloch-Pitts model, Perceptron – Original perceptron, perceptron learning procedure, logic operations with simple layer perceptron, delta learning algorithms. ADALINE, MADALINE models, Winner- Takes-All learning algorithm, Backpropagation learning algorithm - mathematical analysis, application, and criticism.

**Unit -III**

Hopfield model - Mathematical analysis, Hopfield learning algorithm, discrete time Hopfield net, and competitive learning model. Simulated annealing, Boltzman machine.

#### **Unit -IV**

Fuzzy logic - Propositional logic, membership function, fuzzy logic, fuzzy rule generation, defuzzification of fuzzy logic, time dependent fuzzy logic. Temporal Fuzzy Logic (TFL) - Time invariant membership function, time variant membership function, intervals, semi large intervals, internal operators, temporal fuzzy logic syntax, defuzzification of temporal fuzzy logic.

#### **Unit -V**

Fuzzy Neural networks (FANN) Fuzzy neural example, Neuro fuzzy control - traditional control, neural control, fuzzy control, fuzzy neural control, applications.

#### **TEXT BOOKS:**

1. Understanding Neural Networks and Fuzzy Logic, Basic concepts and applications. by Stamatios V Kartalopoulos (PHI Pub.)
2. Fuzzy Sets uncertainty and information by George Klir (PHI Pub.)
3. Neural Networks and Fuzzy system by B.Kosko (PHI Pub.) .

#### **REFERENCE BOOKS:**

1. Neural Networks, algorithms, application and programming techniques by J.P;Freeman & David M.Skapura (Pearson Education Pub.) .
2. Fuzzy neural control, principles, algorithms and applications by Junhong Nie and Derek Linkens (PHI Pub.)

#### **IT45/2**

#### **MULTIMEDIA SYSTEMS**

#### **Unit -I**

Multimedia - definitions, CD-ROM and the multimedia highway, use of multimedia, introduction to making multimedia, the stages of project, requirements to make good multimedia, multimedia skills .and training, the multimedia tea, training oportUNITies in multimedia.

#### **Unit -II**

Multimedia hardware, macintosh and windows production platforms, hardware peripherals, connections, memory and storage devices, input devices output hardware, communication devices, media software, basic tools, making instant multimedia authoring tools.

#### **Unit -III**

Multimedia building blocks - text, sound, images, animation, video.

#### **Unit - IV**

Assembling and delivering a project, planning and costing, designing and producing, content and talent, delivering, CD-ROM technology, DVD Tech. .

#### **Unit - V**

Multimedia and Internet - H.history, web servers, web browsers, VRML, working on the web: text, animation, images and sound for the web, multimedia applications. media communication, media consumption, media entertainment and multimedia games.

#### **TEXT BOOKS:**

1. Multimedia Making Work, by Tay Vaughan (TMH), 3rd Ed.

#### **REFERENCE BOOKS:**

- 1 Multimedia systems design by K. Andleigh,' K. Thakkrar (PHI Pub.).
2. Multimedia: Computing, Communications & Applicationsby Ralf Stein Metz and Klara Nahrsteslt,
3. Advanced Multimedia Programming by-Steve Rimmer (McGrawHill Pub)
4. Multimedia Literacy by Fred T. Hofstetter (McGraww..Hill Pub.)

#### **7IT45/3**

#### **DIGITAL IMAGE PROCESSING**

#### **Unit -I**

Monochrome image **representation** and processing system(block diagram), Basic relationship between pixels, neighbors of pixel, connectivity, labeling of connected components, Relation equivalent and transitive closure, distance measure, arithmetic and logical operation, application of image processing.

## **Unit-II**

Image Enhancement: Point operation, histogram modeling, spatial operation, transform operation, multi-spectral image enhancement, color image processing and enhancement, DFT, DCT.

## **Unit-III**

Image Compression: Compression fundamentals, error free compression, variable length coding, bit plane coding, run line coding, entropy coding, loss less predictive coding, Huffman's coding, lossy compression, lossy predictive coding, transform coding.

## **Unit-IV**

Image Restoration : Degradation model diagonalization of circulant and block circulant matrices, algebraic approach to restoration, inverse filtering, weiner filtering restoration, interactive restoration, restoration in spatial domain, coordinate transformation and geometric correction.

## **Unit-V**

Image segmentation and representation: Detection of discontinuities, point detection, line detection, edge detection, image thresholding, role of illumination, global thresholding, region oriented segmentation, basic formulation, region growing by pixel aggregation, region splitting and merging, image representation, chain codes.

## **TEXT BOOKS :**

1. Digital Image Processing by R.C. Gonzalez, R.E.Woods (Addison Wesley Pub.)
2. Fundamentals of Digital Image Processing by A.K. Jain (PHI Pub.)

## **REFERENCE:**

1. Fundamentals of Electronics Image Processing by A.R. Weeks.

## **7IT45/4 CAD/CAM**

### **Unit - I**

Introduction CAD/CAM define, product cycle & CAD/CAM automation & CAD/CAM. Fundamentals of CAD design process, Application of the computer for design, creating and manufacturing data base benefits of CAD.

### **Unit - II**

Hardware in CAD design workstation, the graphics terminal, operator, input devices plotter & other output devices, CPU secondary storage. Computer graphics software and database, the software confirmation of a graphics system, function of a graphics package constructing the geometry, transformation database structure.

### **Unit-III**

Conventional numerical control, fundamental of CAM, NC concepts basic components of NC systems. The NC procedure NC coordinate systems, NC motion control systems application of NC economics of NC.

### **Unit-IV**

NC part programming the punched tape in NC tape coding and format manual part programming computer assisted part programming, Art language NC programming with interactive voice NV programming.

### **Unit -V**

Computer control NC problem with conventional NV, CNC, DNC, combined DNC systems, adaptive control machine systems, production planning and control.

## **TEXT BOOK:**

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

## **REFERENCE BOOK:**

1. CAD/CAM Theory & practice by I. Zeid (TMHPub).
2. Computer Aided Design: Software and Analytical Tools by Rajiv S.Krishnamurthy C.S. (Narosa Pub.)
3. CAD/CAM by P. Radhakrishnamurthy and Subramnyam (Wiley EasternPtib.)

## **7IT45/5**

## **MANAGEMENT INFORMATION SYSTEM**

### **Unit -I**



Meaning, nature and scope of MIS, decision support system, systems approach, the system view of business, MIS organization with in industrial and business UNIT, managers view of information system, development of management organizational theory, management and organizational behavior, information, data.

#### **Unit-II**

Planning with MIS, need for planning, characteristics of plan, strategy & development of plan, role of MIS in strategy development & strategy planning decisions, from strategic plans to short range plans.

#### **Unit-III**

Meaning, nature & feature of organisation, organisation and information system structure, management & decision making and MIS, MIS as a technique for mailing programmed decision & non-programmed decision assisting information system.

#### **Unit-IV**

Nature of conceptual design of an MIS, preparing member of the organisation for change, studying managerial and functional process systems, determining information needs, determining information sources, outlining general information flow and data base system, hardware and software configuration, documenting the conceptual design.

#### **Unit -V**

Organisation for implementation, planning the implementation, organisation training and development, acquisition, conversion, testing, operation, evaluation and maintenance.

#### **TEXT BOOKS :**

1. Management Information Systems Co Design by Robert G. Murdic (PHI Pub.)

#### **REFERENCE BOOKS:**

1. Management Information Systems by S. Sadagopan (PHI Pub.)
2. Management Information Systems by James A. Obrien (Galgotia Pub.)
3. Management Information Systems the Managers View by Robert Schultueis and Mary Sumnanov
4. Management Information System by A.K. Gupta (S.Chand Pub.)

#### **8IT47**

#### **DISTRIBUTED DATABASES & OBJECT ORIENTED DATABASES**

##### **Unit-I**

Distributed databases features - distributed database management systems - review of databases and computer networks, levels of distribution transparency, reference architecture, type of data fragmentation, distribution transparency for read only applications and update applications, distributed database access primitives and integrity constraints.

##### **Unit-II**

Distributed database design, a frame work for distributed database design, the design of database fragmentation, the allocation of fragments, translation global queries to fragment queries, equivalence transformation for queries, transforming global queries into fragment queries, distributed grouping and aggregate function and evaluation, parametric queries.

##### **Unit-III**

Query optimization, problems in query optimization. objectives in query process optimization, simpler representation of queries, model for query optimization, join query, general queries, concept of two phase commit, resolving distributed transaction, concept of replication, snapshot on replication and multimaster replication, conflict resolution in multimaster replication, concurrency control and database recovery in distributed databases.

##### **Unit-IV**

The evolution of object oriented concepts, object-oriented concepts, characteristics of an object oriented data model, object schmas, class-subclass relationships, interobject relationships, late and early binding, support for versioning. Similarities & differences between OODM and other data models, features of an object-oriented database management system, OODBMS architectural approaches-extended relational model approach, semantic database approach, object oriented database programming language extension approach, DBMS generator approach, object definition language and object query language.

##### **Unit-V**

OODBMS architectures, performance issues in OODBMS, application selection for OODBMS, database design for an object relational database management system (ORDBMS), structured types & ADTs. Object identity, extending ER model, using nested collections, storage and access methods, query processing, query optimisation, design and architecture of POSTGRES, distributed computing in CORBA and EJB.

**TEXT BOOKS :**

1. Distributed data bases principles and systems, by Ceri & Pelagatti (McGraw Hill Pub.)
2. Fundamentals of Database System by Elmisky and Navathe (3<sup>rd</sup> ed. Addison Welsey)
3. Object Oriented Database System, - Approaches & Architectures by .(C S. R. Prabhu PHI Pub.)

**REFERENCE BOOKS:**

1. Database System - Design Implementation & Management (Course Tech.)
2. Database Management Systems by Raghu Ramakrishnan &
3. Oracle 8i Distributed Database Replication Manual by Peter

PRACTICALS based on above syllabus.

**8IT48****WEB TECHNOLOGIES****Unit - I**

Basic tools of internet access, email ftp, news, WWW, anarchie, introduction to internet programming, sockets: connections, attributesm domains, types and protocols (sockets), creating and closing sockets, socket communication, client server application using C on Linux platform.

**Unit - II :**

Standard use for www documents on internet, HTTP,MIME,SGML, DTD. MTNL, URL, URI, HTML tags, special. characters. Images, table forms. (the hyperlinks. HTML URLs, serving HTML pages.

**Unit - III :**

CGI : CGI programming using C.

**Unit - IV:**

XML basics, understanding markup languages, structures and syntax, valid Vr. well formed XML, DTD (document type Definition) classes.

**Unit - V:**

Scripting XML, XML processor- parent child relationship, XML as a data, data type in XML, XML namespaces, linking with XML: simple link, the HTML way. XSL: XML with style: style sheet basics, XSL basics, XSL style sheets.

**TEXT BOOKS:**

1. XML in action web technology by William J. Pardi (PHI Pub.)

**REFERENCE BOOKS :**

1. Step by Step XML by Michael Young (PHI Pub.)
2. Designing Interactive Web sites by James L. Mohler & John M. Duff (Thomson Learning)

PRACTICALS based on above syllabus

1. Socket programming and CGI using C on linux platform.
2. HTML, XML web page designing.

**8IT49****ELECTRONICS COMMERCE****Unit - I**

Introduction to electronics-commerce : The scope of E-COM, definition of E-COM. E-COM and trade cycle, electronic market electronic data interchange, internet commerce, E-commerce in: perspective, the value chain, supply chains. Electronic Commerce Software: What kind of software solutions do you need? Marketing smarts, hosting services, basic packages, midrange packages, enterprise solutions *for* large firms.

**Unit - II**

Business to Business Electronic-commerce: Inter-organizational transactions, electronic markets. Electronic data interchange (EDI), EDI-technology. EDI and business, inter organizational e-com.

**Unit - III**

Business to consumer electronic commerce: Consumer trade transactions, the elements of e-commerce - elements, e-visibility, the e-shop, online payment, delivering the goods, after sales service. internet e-com security, a website evaluation mode.

E-business : Internet book shops, grocery supplier, software supplies and support, electronic newspapers, internet banking, virtual actions, On-line share-dealing, e-diversity.

#### **Unit - IV**

Security threats to E-commerce: Security overview, intellectual property threats, electronic commerce threats. CERT (Computer Emergency Response Team) Implementing security - for E-COM: protecting E-COM assets, protecting Intellectual property, protecting client computers, protecting E-COM channels, ensuring transaction integrity, protecting the commerce software.

#### **Unit - V**

Electronic payment system: The basics of electronic payment systems, electronic cash, electronic wallets, smart cards, credit and charge cards. The environment of electronic commerce: international legal, ethical and tax issues: International nature of electronic commerce, the legal environment of electronic commerce, taxation and E-COM, business plans for implementing E-COM: Planning the E-commerce project managing electronic commerce implementation.

#### **TEXT BOOKS:**

- 1 E-Comfficree by David Whiteley (McGraw Hill Pub.)
2. Elcctronic-Commerce by Gary P Schneider & James Perry.  
(COURSE TECHNOLOGY Thomson Learning)

#### **REFERENCE BOOKS :**

1. Business on the net by K.N. Agarwala. A.LaI, Deekjha Agarwala (Macmillan Pub.)

### **8IT50/1**

#### **ENTERPRICE RESOURCE PLANNING**

##### **Unit - I**

INTRODUCTION :Business needs and ERP, ERP as an overview, entries as an overview, Benefits of ERP, ERP and related technologies, ERP architecture, business process reengineering, data warehousing, data mining, on line analytical processing supply choice management.

##### **Unit - II**

ERP IMPLEMENTATION : Client server architecture and ERP, ERP implementation life cycle, implementation methodologies, ERP implementation - The hidden cost, - organizing implementations, vendors, consultants and users, contracts with vendors, consultants and employees, project management and monitoring. After ERP implementation.

##### **Unit - III**

THE BUSINESS MODULE: Business models in an ERP package, finance, manufacturing human resource, plant maintenance, materials management, quality management sales and distribution.

##### **Unit - IV**

Selection of ERP, SWOT analysis of various ERP products supply chain enabled ERP.

##### **Unit - V**

ERP and Electronic Data Interchange (EDI) integration, ERP in manufacturing and non manufacturing industries.

#### **TEXT BOOKS:**

1. ERP Demystified by Aleris Leon (TMH Pub.)
2. Enterprise Resource Planning by Parag Diwan and Sunil Sharma (Pentageon Pren.)

### **8IT50/2**

#### **FIBRE OPTICAL COMMUNICATION**

##### **Unit - I**

Fibre optic communication system: Principle of optical communication - attributes & structures of various fibers, propagation in fibers, ray model, numerical aperture and multipath dispersion in SI & GI fibre, modes and power flow in fibres.

##### **Unit - II**

Manufacture of fibre & cables, fibre joints, splices and connectors, distribution networks & components, switches, fibre optic isolator, repeaters

### **Unit - III**

Signal degradation in fibres, optical sources, P-I-N & avalanche photo detector, operation & performance, optical receiver-operation & performance.

### **Unit - IV**

Transmission link-point to point links, WDM, data buses, star, directional & T-coupler, NRZ, RZ & block codes, optical networks.

### **Unit - V**

Measurements in OF-attenuation, dispersion, RI profile, optical source characteristic, monomode fibre characteristic measurements, Eye pattern technique, system design, analog system & digital system.

### **TEXT BOOKS :**

1. Optical Fibre Communication by G. Keiser, McGraw Hill.
2. Fibre Optic Communication by Joseph C. Palais (PHI, 3rd Ed)

### **REFERENCE BOOKS :**

1. Optical Fibre Communication Principles and Practice by John Senior (PHP Int.).
2. Optical Communication system by J Gower (PHI).

### **IT50/3**

### **MODELLING & SIMULATION**

#### **Unit - I**

System Models: Concept of a system, system environment, stochastic activities continuous & discrete system, system modeling, type of models static physical models, dynamic physical models, static & dynamic mathematical models, principles used in modeling.

System Studies: Subsystems, a corporate model, types of system study, system analysis design & postulation.

#### **Unit - II**

System Simulation: The technique of simulation, the montecarlo method, comparison of simulation and analytical methods, experimental nature of simulation, type of system simulation numerical computation techniques for continuous & discrete models, distributed lag models, cobweb models. Continuous system simulation-continuous system models, differential equation, analog computers, hybrid computers, digital-analog simulators, CSSLS, CSMP-III, hybrid simulation, feedback system, simulation of an autopilot, interactive system, real time simulation.

#### **Unit - III**

System Dynamics - Historical background, exponential growth models & decay models, modified exponential growth models, logistic curves, generalization of growth models, system dynamics diagrams, multi-segment models, time delay, feedback in socio-economic systems, biological example, world models, the dynamo language.

Probability Concepts in Simulation - Stochastic variables, discrete probability functions, Continuous probability functions, measures of probability functions, continuous uniformly distributed random numbers, computer generation of random nos., a uniform random number generator, generating discrete distributions, non-uniform continuously distributed random numbers, the rejection method.

#### **Unit - IV**

Arrival Patterns & Service Times: Congestion in systems, arrival patterns, poisson arrival pattern, exponential distribution, coefficient of variation, Erlang distribution, hyper-exponential distribution, service times, normal distribution, queuing disciplines, measures of queues, mathematical solutions of queuing problems, utilization as a design factor, grade of service.

#### **Unit - V**

Discrete System Simulation: Discrete events, representation of time, generation of arrival patterns, simulation of telephone system, delayed calls, simulation programming tasks.

Introduction to GPSS : GPSS programs, general description. action times, succession of events, choice of paths, simulation of manufacturing shop, facilities & storages, gathering statistics, conditional transfers, program control statements priorities and parameters, standard numerical attributes, functions, simulation of a super market, GPSS model, of simple telephone system.

### **TEXT BOOKS :**

1. System Simulation second Edition by Geoffrey Gordon (PHI Pub.)
2. System Simulation with Digital Computer by Narsingh Deo (PHI Pub.)

### **REFERENCE BOOKS:**

1. "System Simulation" the Art & Science by Shannon R.E.(PHI Pub.)
2. The Application of GPSS to Discrete System Simulation by Gorden. Englewood Cliffs (PHI)

### **8IT50/4**

## **REAL-TIME SYSTEMS**

### **Unit-I**

Typical real time applications: Digital control, high-Level controls, signal processing other applications. Hard versus soft real time systems: Jobs & processors, release times, deadlines, timing, constraints, Hard& Soft timing constraints, Hard real time systems: soft real time systems. A Reference model of Real-time systems, processors and resources, temporal parameters of real time workload, periodic Task model, precedence constraints & data dependencies other types of dependencies, functional parameters, resource parameters of Jobs& parameters of resources, scheduling Hierarchy.

### **Unit-II**

Approach to real time scheduling: Clock-driven approach, weighted round-robin approach, priority-driven approach, dynamic versus static systems, effective release times and deadlines, optimality of EDF & LST algorithms, non optimality of the EDF & LST, challenges in validating timing constraints in priority-driven systems, off-line versus on-line scheduling, clock-driven scheduling, notation & assumptions, static timer-driven scheduler, general structure of cyclic schedules, cyclic executives, improving the average response time of a periodic jobs, scheduling sporadic jobs, practical consideration and generalizations, algorithm for constructing static schedules, pros-cons of clock-driven scheduling.

### **Unit-III**

Priority-driven scheduling of periodic tasks: Static assumptions fixed-priority versus dynamic priority algorithms, maximum schedulable utilization, optimality of the RM and DM algorithms, a schedulability test for fixed priority tasks with short response times & with arbitrary response times, sufficient schedulability conditions for the RM & DM algorithms, practical factors. Scheduling a periodic & sporadic jobs in priority-driven systems: assumptions & approaches, deferrable servers, sporadic servers, constant utilization, total bandwidth and weighted fair

-queuing servers, slack stealing in dead-line driven systems, slack stealing in fixed-priority systems, scheduling of sporadic jobs, real time performance for jobs with soft timing constraints,a two-level scheme for integrated scheduling.

### **Unit-IV**

Resources and resource access control: assumption on resources and their usage, effects of "resource contention & resource access control, non preemptive critical sections, basic priority -inheritance protocol, basic priority-ceiling protocol, stack-based priority-ceiling protocol, use of priority-ceiling protocol in dynamic-priority systems, preemption-ceiling protocol, controlling accesses to multiple-UNIT resources, controlling concurrent accesses to data objects. Multiprocessor scheduling, resource access control and synchronization: model of multiprocessor & distributed systems, task assignment, multiprocessor priority-ceiling protocol elements Qf. scheduling algorithms for end-to end periodic tasks, scheduability of fixed priority end-to-end periodic tasks, end-to-end tasks in heterogeneous systems, predictability and validation of dynamic multiprocessor systems flexible applications, tasks with temporal distance constraints.

### **Unit V**

Real-time Communications: model of real-time communication, priority- based service disciplines for switched networks. Weighted round-robin service disciplines. Medium-access control protocols of broadcast, network internet and resource reservation protocols, real time protocol, communication in multicomputer system.

Operating system: Overview, time services & scheduling mechanisms, other basic OS functions, processors reserves and resource kernel. Open system architecture, capability of commercial Real time OS predictability of general purpose operating systems.

## **TEXT-BOOKS**

Real-Time Systems By Jane W. S. Liu (Pearson Education Asia Pub)

## **8IT51/**

## **MOBILE COMMUNICATIONS**

### **Unit - I**

Introduction to wireless communication, introduction to cellular system, wireless transmission: frequencies for radio transmission, signal prorogation.

### **Unit - II**

Introduction to medium access control: TDMA, CDMA GSM : System architecture, protocols, localization and calling, handover.

### **Unit - III**

Modulation Techniques: QPSK transmission and detection techniiques, quardrature amplitude modulation (QAM), transmitter & receiver. Spread spectrum: direct sequence and frequency hopping.  $t'$

### **Unit - IV**

Wireless LAN : IEEE 802.11

Wireless ATM : Services, reference model, functions.  
Satellite Systems: GEO, LEO, MEO, routing, localization and handover.

#### **UNIT - V**

Mobile Network Layer: Mobile IP, dynamic host, configuration protocol, adhoc networks. Mobile transport layer: traditional TCP, indirect TCP & mobile TCP, architecture of Wireless Application Protocol (WAP)

#### **TEXT BOOKS :**

1. Mobile Communication by Jochen Schiller (Addison Wesley Pub.)
2. Wireless Communication Principles..& Practice by T.S. Rappaport (PHI Pub.)

#### **REFERENCE BQOKS :**

1. Mobile Communications Design Fundamentals by Willian1 C.Y. Lee (Jolm Wiley & Sons Pub.)

#### **8IT51/2**

#### **PATTERN RECOGNITION**

##### **Unit - I**

Statistical Decision Theory, Probability-probabilities of events, random variables, joint distribution & densities, moments of random variables, estimation of parameters from samples, minimum risk estimators.

##### **Unit - II**

Statistical Decision Making - ' Baye's theorem, multiple features; conditionally independent features, decision boundaries, unequal cast of error, estimation of error rates, the leaving-one-out technique, characteristics curve, estimating the composition of population.

##### **Unit - III**

Non parametric decision Making - Histograms, kernel and window estimators, nearest neighbor classification techniques, adaptive decision boundaries, adaptive discriminant functions, minimum squared error estimation functions, choosing a decision making technique.

##### **Unit - IV**

Clustering - Introduction, hierarchical clustering, partitional clustering.

##### **Unit - V**

Processing of waveforms and images- Gray level scaling transformations, equalization, geometric image scaling and interpolation, smoothing transformation, edge detection, line detection and template matching, logarithmic gray level scaling, statistical significance of image features.

#### **TEXT BOOK**

Pattern recognition and image processing  
- by Earl Gose , Richard Johnso~ba~ & Sleve-Jost(I>HI Pub.)

#### **REFERNCE BOOK**

Fundamentals of Digital Image Processing by A.KJain (Pill Pub.)

#### **8IT511/3**

#### **ADVANCED MICROPROCESSOR**

##### **Unit-I**

Memory organization & interfacing of 8086, interfacing of peripherals PPI 8255, PTI 8254,PIC 8259with 8086.

##### **Unit -II**

Interfacing of DMAC 8257, CRT controller 6845, USART 8251 with 8086. 8087 Numerical Data processor, its architecture & programming.

##### **Unit-III**

80386 Processor-its architecture, pin functions, addressing modes, instruction set, simple assembly programming, assembler directives.

##### **Unit-IV**

Real &. protected modes of 80386, memory management, multitasking, segmentation, paging, cache & virtual memory.

## **Unit - V**

Pentium Microprocessor -introduction, register organization, memory management, Pentium instructions.

### **TEXT BOOKS:**

1. Programming and interfacing of 8086/8088, by D. V.Hall, Liu Gibson.
2. The Intel Microprocessor, 8086/8088, 80186/80188, 80286,80386, 80486, Pentium pro processor Architecture, programming and interfacing by Barry B. Brey (4th edition) (PHI Pub).

### **REFERENCE:**

1. Advanced Microprocessor by A.K. Roy & Bhurchandi (TMH Pub).
2. The 8086/8088 family, Design programming and interfacing by John Uffenbeck (PHI Pub).

## **8IT51/14**

### **PARALLEL PROCESSING**

#### **Unit-I**

Introduction to parallel processing memories and IO subsystem Evolution of computer system, parallelism in uniprocessor system, parallel computer structure, architectural classification schemes, parallel processing application. Hierarchical memory structure, virtual memory system, memory allocation and management, IO subsystem.

#### **Unit-II**

Pipelining and vector processing: Pipelining, overlapped pipelining, instruction and arithmetic pipelining, pipelined processor, vector processing, vector processor, architecture of cray-I,

#### **Unit-III**

Array Processor: SIMD array processor, (organization and inter connection networks), Parallel algorithm for array processor, SIMD matrix multiplication, parallel sorting on array processor, associative array processing, associative memory organization associative processors.

#### **Unit-IV**

SIMD Computer and Multiprocessor Architecture: III iac-IV System architecture and its application, performance enhancement methods, parallel memory allocation, array processing languages, multiprocessors; loosely and tightly coupled multiprocessors, time shared and crossbar interconnection networks; parallel memory organization, interleaved memory configuration.

#### **Unit-V**

Multiprocessing control and Data Flow Computers: Interprocess communication mechanisms system deadlock and protection parallel algorithm for multiprocessors, classification of parallel algorithm data driven computing, data flow computer architectures.

### **TEXTBOOKS:**

1. Computer Architecture and Parallel Processing by Hwang & Briggs (Mc-Graw Hill Pub.)

### **REFERENCE BOOKS:**

1. Advanced Computer Architecture by Kai Hwang (McGraw Hill Pub.)