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BHARATHIAR UNIVERSITY : COIMBATORE

**M.Sc. (SOFTWARE SYSTEM)
With Compulsory Diploma in Multimedia and Animation and
Diploma in Web Applications
For Affiliated Colleges
(Effective from 2007-2008)**

1. Eligibility for Admission to the Course

A pass in Higher Secondary Course (Academic Stream) / equivalent examination with Mathematics or Business Mathematics and any two allied subjects from Physics, Chemistry, Commerce, Accountancy, Statistics, computer Science and Electronics and with minimum of 50% of marks for all candidates.

2. Duration of the Course

This Course of Study shall be based on Semester System. This Course shall consist of ten Semesters covering a total of five Academic Years. For this purpose, each Academic Year shall be divided into two Semesters; the first, third, fifth, seventh and ninth Semesters; July to November and the second, the fourth, sixth, Eighth and tenth Semesters; December to April. The first year examination is conducted in non-semester pattern. The Practical Examinations shall be conducted at the end of each Semester.

3. Course of Study

The Course of the Degree of Master of Science in Software System shall be under the Semester System according to the Syllabus to be prescribed from time to time. This Course consists of Language Subjects, Allied Subjects, Core Subjects and Elective Subjects. Two Diploma courses are offered with this programme **Diploma in Multimedia and Animation** is offered in 2nd & 3rd year. The **Diploma in Web Applications** is offered in 4th & 5th year.

4. Scheme of Examinations

FIRST YEAR:

| SUBJECT AND PAPER | | Instructional Hrs Per Week | University Examinations | |
|-------------------|-----------------------------------|-------------------------------|----------------------------|----------------|
| | | | Duration In Hrs | Max * Marks |
| Paper I | English | 2 | 3 | 100 |
| Paper II | Algebra & Calculus | 4 | 3 | 100 |
| Paper III | Numerical Methods | 3 | 3 | 100 |
| Paper IV | Applied Physics | 3 | 3 | 100 |
| Paper V | Fundamentals of Digital Computer | 3 | 3 | 100 |
| Paper VI | Fundamentals of S/W Development | 3 | 3 | 100 |
| Paper VII | Accounting & Financial Management | 3 | 3 | 100 |
| Practical I | PC Software Laboratory | 3 | 3 | 100 |
| Practical II | Digital Electronics Laboratory | 3 | 3 | 100 |
| Practical III | 'C' Programming Laboratory | 3 | 3 | 100 |
| Total | | 30 | | |

SECOND YEAR

| SEM | SUBJECT AND PAPER | | Instructional Hrs Per Week | University Examinations | |
|-----|-------------------|--|-------------------------------|----------------------------|----------------|
| | | | | Duration In Hrs | Max * Marks |
| III | Paper I | Applied Mathematics | 4 | 3 | 100 |
| | Paper II | Microprocessors & Assembly Language Programming | 4 | 3 | 100 |
| | Paper III | Computer Organization | 4 | 3 | 100 |
| | Paper IV | Data Structures | 3 | 3 | 100 |
| | Paper V | COBOL & Business Data Processing | 3 | 3 | 100 |
| | Practical I | Data Structures Lab(C) | 3 | 3 | 100 |
| | Practical II | Data Processing Lab(COBOL) | 3 | 3 | 100 |
| | Practical III | Assembly Language Programming Lab | 3 | 3 | 100 |
| | Diploma I | Paper I | 3 | 3 | 100 |
| | | Total | | 30 | |
| IV | Paper I | Discrete Structures | 4 | 3 | 100 |
| | Paper II | Operation Research | 4 | 3 | 100 |
| | Paper III | Data Structures II | 3 | 3 | 100 |
| | Paper IV | Operating System | 3 | 3 | 100 |
| | Paper V | Object Oriented Programming in C++ | 3 | 3 | 100 |
| | Practical I | XBASE Lab | 3 | 3 | 100 |
| | Practical II | Object Oriented Programming Lab | 4 | 3 | 100 |
| | Practical III | Operation Research Lab | 3 | 3 | 100 |
| | Diploma I | Paper II | 3 | 3 | 100 |
| | | Total | | 30 | |

THIRD YEAR

| | | | | | |
|-----------|---------------|---------------------------------------|----|-----|-----|
| V | Paper I | Probability & Statistics | 3 | 3 | 100 |
| | Paper II | Computer Graphics | 3 | 3 | 100 |
| | Paper III | System Software | 3 | 3 | 100 |
| | Paper IV | Structured System Analysis & Design | 3 | 3 | 100 |
| | Paper V | Computer Networks | 3 | 3 | 100 |
| | Practical I | Graphics Lab | 4 | 3 | 100 |
| | Practical II | System Software Lab (Using C or C++) | 4 | 3 | 100 |
| | Practical III | System Development Lab | 4 | 3 | 100 |
| | Diploma I | Paper III | 3 | 3 | 100 |
| | | Total | | 30 | |
| VI | Paper I | Client Server Computing | 3 | 3 | 100 |
| | Paper II | Principles of Compiler Design | 3 | 3 | 100 |
| | Paper III | Human Psychology Communication Skills | 3 | 3 | 100 |
| | Paper IV | Object Oriented Analysis & Design | 3 | 3 | 100 |
| | Paper V | Database Management System | 3 | 3 | 100 |
| | Practical I | Windows Programming Lab | 4 | 3 | 100 |
| | Practical II | RDBMS & Front end Tools Lab | 4 | 3 | 100 |
| | Practical III | Compiler Design Lab | 4 | 3 | 100 |
| Diploma I | Practical | 3 | 3 | 100 | |
| | Total | | 30 | | |

FOURTH YEAR

| SEM | SUBJECT AND PAPER | | Number of Months | Maximum Marks | |
|-----|--------------------------|---|------------------|-----------------|---|
| | | | | Sessional = 100 | University = 100 (50+50) Total =200 |
| VII | Project Work & Viva-Voce | Note : 25+25 = 50 For Internal Marks 25+25 =50 for External Marks | 6 Months | | |

| | | | | | |
|------|---------------|---------------------------------|-------|----|-----|
| VIII | Paper I | Modern Communication Technology | 3 | 3 | 100 |
| | Paper II | Internet & Java Programming | 3 | 3 | 100 |
| | Paper III | Software Project Management | 3 | 3 | 100 |
| | Paper IV | Elective – I | 3 | 3 | 100 |
| | Paper V | Elective – II | 3 | 3 | 100 |
| | Practical I | Software Development Lab | 3 | 3 | 100 |
| | Practical II | Internet & Java Programming Lab | 3 | 3 | 100 |
| | Practical III | Elective Lab | 3 | 3 | 100 |
| | Diploma II | Paper I | 3 | 3 | 100 |
| | Diploma II | Lab I | 3 | 3 | 100 |
| | | | Total | 30 | |

FIFTH YEAR

| SEM | SUBJECT AND PAPER | | INSTRUCTIONAL HRS PER WEEK | UNIVERSITY EXAMINATIONS | |
|-----|-------------------|--------------------------------------|-------------------------------|----------------------------|----------------|
| | | | | Duration in Hrs | Max * Marks |
| IX | Paper I | Principles of Management & Marketing | 3 | 3 | 100 |
| | Paper II | Software Quality Assurance | 3 | 3 | 100 |
| | Paper III | Software Testing | 3 | 3 | 100 |
| | Paper IV | Elective – III | 3 | 3 | 100 |
| | Paper V | Elective – IV | 3 | 3 | 100 |
| | Practical I | Software Quality Assurance Lab | 3 | 3 | 100 |
| | Practical II | Software Testing Lab | 3 | 3 | 100 |
| | Practical III | Elective Lab | 3 | 3 | 100 |
| | Diploma II | Paper II | 3 | 3 | 100 |
| | Diploma II | Practical II | 3 | 3 | 100 |
| | | | Total | 30 | |

| SEM | SUBJECT AND PAPER | | Number of Months | Maximum Marks | |
|-----|--------------------------|---|------------------|-----------------|---|
| | | | | Sessional = 100 | University = 100 (50+50) Total =200 |
| X | Project Work & Viva-Voce | Note : 25+25 = 50 For Internal Marks 25+25 =50 for External Marks | 6 | | |

GROUP A (ELECTIVE I AND II)

- E.1 PRINCIPLES OF PROGRAMMING LANGUAGES
- E.2 NEURAL NETWORKS
- E.3 SECURITY IN COMPUTING
- E.4 ARTIFICIAL. INTELLIGENCE AND EXPERT SYSTEMS
- E.5 MODELING LANGUAGES AND APPLICATIONS
- E.6 PC TESTING & TROUBLE SHOOTING

GROUP B [ELECTIVE III AND IV]

- E.7 MULTIMEDIA AND APPLICATIONS
- E.8 CLIENT SERVER ADMINISTRATION
- E.9 ARCHITECTURE OF UNIX AND WINDOWS
- E.10 MODELLING AND SIMULATION
- E.11 TCP/IP NETWORKS
- E.12 COMPONENT TECHNOLOGY
- E.13 EMBEDDED SYSTEMS AND REAL TIME OPERATING SYSTEMS

Compulsory Diploma - I**Diploma in Multimedia and Animation -Scheme of Examination**

| Subject and Paper | | Instructional Hours per week/Credits | University Examinations | |
|-------------------|-------------------------------|---|-------------------------|-------------|
| | | | Duration in Hrs | Max Marks * |
| Paper I | MULTIMEDIA | 3/4 | 3 | 100 |
| Paper II | MULTIMEDIA LAB - PHOTOSHOP | 3/4 | 3 | 100 |
| Paper III | ANIMATION TECHNIQUES | 3/4 | 3 | 100 |
| Paper IV | ANIMATION LAB - FLASH | 3/4 | 3 | 100 |
| Total | | 12/16 | | 400 |

Compulsory Diploma – II**Diploma in Web Applications - SCHEME OF EXAMINATION**

| Subject and Paper | | Instructional Hours per week/Credits | University Examinations | |
|-------------------|----------------------------|---|-------------------------|-------------|
| | | | Duration in Hrs | Max Marks * |
| Paper I | Web Designing | 3/4 | 3 | 100 |
| Paper II | Web Services | 3/4 | 3 | 100 |
| Paper III | ASP.NET | 3/4 | 3 | 100 |
| Paper IV | ASP.NET programming Lab | 3/4 | 3 | 100 |
| Total | | 12/16 | | 400 |

* Includes 25% continuous internal assessment marks

5. Requirement to appear for the Examinations

- a) A candidate will be permitted to take the University Examination for any Semester, if
- he/she secures not less than 75% of attendance out of the 90 instructional days during the Semester.
 - A candidate who has secured attendance less than 75% but 65% and above shall be permitted to take the Examination on the recommendation of the Head of the Institution to condone the lack of attendance as well as on the payment of the prescribed fees to the University.
 - A candidate who has secured attendance less than 65% but 55% and above in any Semester, has to compensate the shortage of attendance in the subsequent Semester besides, earning the required percentage of attendance in that Semester and take the Examination of both the Semester papers together at the end of the latter Semester.
 - A candidate who has secured less than 55% of attendance in any Semester will not be permitted to take the regular Examinations and to continue the study in the subsequent Semester. He/she has to re-do the Course by rejoining the Semester in which the attendance is less than 55%.
 - A candidate who has secured less than 65% of attendance in the final Semester has to compensate his / her attendance shortage in a manner to be decided by the Head of the Department concerned after rejoining the Course.

6. Restriction to take the Examinations

- a) Any candidate having arrear paper(s) shall have the option to take the Examinations in any arrear paper(s) along with the subsequent regular Semester papers.
- b) Candidates who fail in any of the papers shall pass the paper(s) concerned within 8 years from the date of admission to the said Course. If they fail to do so, they shall take the Examination in the revised Text / Syllabus, if any, prescribed for the immediate next batch of candidates. If there is no change in the Text / Syllabus they shall take the Examination in that paper with the Syllabus in vogue, until there is a change in the Text or Syllabus.

In the event of removal of that paper consequent to the change of Regulations and / or Curriculum after a 8 year period, the candidates shall have to take up on equivalent paper in the revised syllabus as suggested by the chairman and fulfill the requirements as per Regulations/Curriculum for the award of the Degree.

7. The Medium of Instruction and Examinations

The medium of instruction and Examinations shall be in English.

8. Submission of Record Notebooks for Practical Examinations & Project Viva-Voce.

Candidates taking the Practical Examinations should submit bonafide Record Note Books prescribed for the Examinations. Otherwise the candidates will not be permitted to take the Practical Examinations.

Candidates taking the Project Viva Examination should submit Project Report prescribed for the Examinations. Otherwise the candidates will not be permitted to take the Project Viva-voce Examination.

9. The Minimum (Pass) Marks

A candidate shall be declared to have passed in a paper if a student obtains not less than 50% of marks in that paper. A candidate shall be declared to have passed the whole Examination if the student passes in all the papers.

10. Improvement of Marks in the subjects already passed

Candidates desirous of improving the marks secured in their first attempt shall reappear once within the subsequent Semester. The improved marks shall be considered for classification but not for ranking. If there is no improvement there shall not be any change in the original marks already awarded.

11. Classification of successful candidates

A candidate who passes all the Examinations in the first attempt within a period of five years securing 75% and above marks in the aggregated shall be declared to have passed with First Class with Distinction.

Successful candidates passing the P.G. Degree Examinations, securing 60% marks and above shall be declared to have passed the exam in First class. All other successful candidates shall be declared to have passed the Examination in Second Class.

12. Ranking

A candidate who qualifies for the PG Degree Course passing all the Examinations in the first attempt, within the minimum period prescribed for the Course of Study from the date of admission to the Course and secures 1st or 2nd Class shall be eligible for ranking and such ranking will be confined to 10% of the total number of candidates qualified in that particular subject to a maximum of 10 ranks.

The improved marks will not be taken into consideration for ranking.

13. Conferment of the Degree

No candidate shall be eligible for conferment of the Degree unless he / she has undergone the prescribed Course of Study for a period of not less than ten Semesters in an Institution approved of by and affiliated to the University or has been exempted there from in the manner prescribed and has passed the Examinations as have been prescribed.

14. Evening College

The above Regulations shall be applicable for candidates undergoing the respective Courses in the Evening Colleges also.

15. Revision of Regulations and Curriculum

The above Regulation and Scheme of Examinations will be in vogue without any change for a minimum period of three years from the date of approval of the Regulations. The University may revise /amend/ change the Regulations and Scheme of Examinations, if found necessary.

16. Transitory Provision

Candidates who have undergone the Course of Study prior to the Academic Year 2007-2008 will be permitted to take the Examinations under those Regulations for a period of four years i.e. up to and inclusive of the Examination of April 2012 thereafter they will be permitted to take the Examination only under the Regulations in force at that time.

17. Question Paper Pattern :

Section A : 10 x 1 = 10 (2 Objective Questions from each Unit)

Section B : 5 x 5 = 25 (Either or Type, One Question from each Unit)

Section C : 5 x 8 = 40 (Either or Type, One Question from each Unit)

BHARATHIAR UNIVERSITY : COIMBATORE - 46
M.Sc. (Software Systems)
2KSS1I ENGLISH

SUBJECT DESCRIPTION : Communication plays a vital role in the global scenario. A good command over the language helps in the present day job markets, the need to gain communication competency had led to the introduction of such courses as part of curriculum to train & enable students to meet the employment requirements of the present day.

GOALS : To enable the students to acquire greater skills in speech mechanism & eradicate grammatical errors in speech & writing.

OBJECTIVES : On successful completion of the course the students should have
To equip learners with language skills that could provide good career opportunities.
To secure better employment
To help them to be able to carry out casual conversation in everyday situation.

UNIT I

Reading practice and exposure to samples of good Written English. The motherlands to youth (Oratorical style used in a speech) - Kid charlee Chaplin (first person in big-graphy) - Mr. Know all (short story) - Futuroology aldous huxley (essay on a serious topic) - The Lessons are to be used for reading practice and discussion - The Exercise at the end of each lesson on "pairs of words" and idioms are to be carefully studied to strengthen vocabulary and pronunciation - The lessons arc to be used as a base for practicing essay writing.

UNIT II

Structures and vocabulary used in technical writing in English - The comparative structure - Impersinal passive - In structures - Purpose - Time statement and contracted statement- Preposition which - Because of pattern - Noun and phrases.

UNIT III

Reading comprehension: The lessons rot prescribed for detailed study in the textbook may be used to teach reading comprehension.

UNIT IV

Letter writing: The following types of letter writing are to be taught: Inviting a dignitary for a function - Accepting the invitation - Declining the invitation - Calling for quotations - Placing orders - Letter of complaints regarding goods, conserving water, electricity etc. And being punctual - Letter for clarification - Writing Application for the post.

UNIT V

Writing a laboratory report on a simple experiment in Physics Transcending:
Tabular columns - The tree diagrams - Pie diagrams - View diagrams Block diagrams and flowcharts into continuous writing and vice versa.

REFERENCE BOOKS :

1. Keshava Kurap and B.Ardhanareeswaran "New patterns of contemporary prose" edited Macmillan, Madras.
2. "Humanities and Social Sciences Division", Anna University, Madras. "English for Engineers and Technologies - Skill approach", Madras, Orient Longman Ltd, 1990.
3. Freeman saran, "Written Communication in English ", Calcutta Orient Longman Ltd, 1989.
4. Pillai G. Radakrishnan, K. Razeevan and P. Baskaran Nair, "written English for you ", Madras, Emerald Publishers.
5. Herbert A.J. "The structure of technical English ", Singapore, Longmans, 1987.

2KSSI2 ALGEBRA AND CALCULUS

SUBJECT DESCRIPTION : This course provides the notions of series expansions, summation of a series, the methods of finding the roots of polynomial equations ; expansions of trigonometric functions and presents the applications of differential calculus, multiple integrals and vector calculus.

GOALS : To enable the students to learn the basics of classical algebra, trigonometry, vector calculus and the applications of differential and integral calculus.

OBJECTIVES : The students are expected to have understood the methods of summation and of solving a polynomial equation, learnt about trigonometric expansions and hyperbolic functions; studied the applications of calculus and vector calculus.

UNIT I

Algebra : Binomial, Exponential, Logarithmic series - Summation of series using Binomial, Exponential, Logarithmic series - Finding coefficients of x^N in power series expansion - Approximation using Binomial, Exponential, Logarithmic series. Theory of equations; Relations between roots and coefficients of polynomial - formation of equations - Decreasing and increasing of roots - Reciprocal equations. Homer's method of finding the roots of polynomial equations.

UNIT II

Trigonometry: Expansion of $\sin nx$, $\cos nx$ in terms of $\sin x$, $\cos x$, expansion of $\tan x$. Expansion of $\sin^m(x)$, $\cos^n(x)$ in terms of series of sines or cosines of multiples of x . Power series expansions for $\sin x$, $\cos x$, $\tan x$ - hyperbolic and inverse hyperbolic functions - Logarithms of complex numbers.

UNIT III

Applications of differential calculus: Curvature in Cartesian and polar coordinates - circle of curvature. Envelopes and evolutes - statement of Taylor's series for a function of two variables - Maxima and minima of two variables (proof not required). Constrained maxima and minima - Lagrange's multiplier Method.

UNIT IV

Multiple integrals: Evaluation of multiple integrals - Change of order of integration - Application of multiple integral to find area and volume of solid. Beta and Gamma integrals:

Definition - Relation connecting beta and gamma integral - Properties - Evaluation of definite integration in terms of beta and gamma functions.

UNIT V

Vector calculus: Differentiation of vectors - Gradient, divergence of curl - Directional derivative - Line, Surface and volume integral - Statement of Green's Theorem - Gauss divergence theorem and Stokes's theorem * Applications.

REFERENCE BOOKS :

1. Venkata subramanian N.K, Lakshmi narayanan K.A, Sundram V and Balasubramanian R, "Engineering mathematics", JJ publishing company, Madurai, 1996.
2. Venkataraman N.K, "Engineering mathematics vol 1, ii", the national publishing Co. 1981.
3. Narayanan S, Manicka vachagam pillai T.K and Ramanaian G, "Advanced mathematics for engineering student's vol- I", S. Vishwanathan (Printers and publishers pvt ltd 1986.
4. Kandasamy P, Thilagavathy K, and Gunavathy K, "Engineering mathematics vol1, 2", S.Chand and co, New Delhi vol1-1989, vol2-1990.

2KSSI3 NUMERICAL METHODS

SUBJECT DESCRIPTION : This course presents the following properties of matrices, determinants and the systems of linear equations; curve fitting by least square; interpolation and numerical integration; numerical methods of finding the roots of transcendental and polynomial equations, simultaneous linear equations and the methods of solving ordinary differential equations.

GOALS : To enable the students to learn numerical differentiation and integration and the methods to solve different kinds of equations.

OBJECTIVES : On successful completion of the course the students should have

Understand the consistent & inconsistent systems, learnt the method of curve fitting, methods of numerical differentiation and integration; learnt several numerical methods to solve polynomial & transcendental equations and ordinary differential equations.

UNIT I

Definition and elementary properties of determinants - Cramer's rule. Matrices - Properties - Rank - Inverse - Consistency and inconsistencies of systems of linear algebraic equations - Eigen values and Eigen vectors - Diagonalisation.

UNIT II

Curve fitting by methods of least squares - Only curves of the form or Reducible to the form $y=ax+b$, $y=ax^2+bx+c$. Finite difference operators - Difference table. Solution of first and second order linear finite difference equation with constant coefficients.

UNIT III

Newton's forward and backward formulae - Lagrange's interpolation Formula. Numerical differentiation - Numerical integration using trapezoidal Rule and Simpson's 1/3 rule.

UNIT IV

Methods of false position, iterative method and Newton raphson method for finding real roots for transcendental and polynomial equations - Graffe's roots squaring method and bairstow's method for solving polynomial equations. Power method of mises and Jacobbi method for finding Eigen values and Eigen vector of matrices. Methods for solving simultaneous linear algebraic equations - gauss elimination method - Gauss Jordan elimination method - Gauss Jacobi and gauss seidel iterative methods.

UNIT V

Numerical methods for solving ordinary differential equations. Taylor's series method, Euler's and modified Euler's (Heun's) method - Rungekutta methods of second and fourth order - Mime's predictor and corrector - adam's predictor and corrector methods.

REFERENCE BOOKS :

1. P. Kandasamy and others, "Engineering mathematics vol 2", S.Chund and co, New Delhi, 1987.
2. N.K. Venkataraman, "Numerical methods in science and engineering", the national publishing co, Chennai, 1986.
3. C.F Gerald, "Applied numerical analysis", Addison, Wesley 1970.
4. S.S Sastry, "introductory methods of numerical analysis", prentice - hail of India, 1975.

2KSSI4 APPLIED PHYSICS

SUBJECT DESCRIPTION : This paper covers construction and working of lasers and optical fibers. Also deals magnetic and electrical properties of materials which have been used in field of communication electronics.

GOALS : By learning contents in this paper one can have wide knowledge in the field of communication electronics in general and fiber optical communication particularly.

OBJECTIVES : Context of this paper will satisfy not only the present need but also the need of future in communication electronics.

UNIT I

Lasers and fibre optics: Construction and working of He-neon laser - CO₂ Laser Ruby laser - Semi conductor laser - Application. Types of optical fibre - single and bundled fibres - Fibre material - Attenuation - Dispersion - Fibre optic light sources - Detectors - Fibre optic communication - Principles of optical recording.

UNIT II

Super conductor: Qualitative study of the phenomenon - Critical temperature and critical field. Meissner effect - Josephson Effect - Type I and type 2 super conductors. BCS theory of super conductivity (Qualitative) - high temperature super Conductors.
- Application: Cryotron. Magnetic levitation - Super conducting magnets.

UNIT III

Electrical properties: Free electron theory of Drude and Lorentz - Weidmann-Franz law - Distinction between conductors, Semi conductors and insulators on the basis of band theory - Factors affecting the resistivity of a conductor:
Temperature, Alloying, Pressure, Strain, Magnetic field and environment.

UNIT IV

Semi conducting materials: Intrinsic, Extrinsic semiconductors - Material preparation: Czochralski method - Zone refining. Hall Effect in semi conductor - applications. Physics of PN junction diode - Junction transistor. Dielectrics :
Permittivity - Dielectric constant - Dielectric polarization - Types of polarization - Break down mechanisms.

UNIT V

Magnetic properties : Ferro magnetism: Domain theory - Hysteresis - Hard and soft magnetic materials - Curie - Weiss law - Magnetostriiction. Ferrites : Preparation, Properties, Applications - Magnetic bubble memory.

REFERENCE BOOKS:

1. Brijal and Subramanian, "Optics", Chand and co 1995.
2. V. Raghvan, "Material science and engineering", a first course, prentice hall of India 1991.
3. M.R. Srinivasan, 'Physics for engineers', New age international pvt ltd publications, 1996.
4. Seth and Gupta, "Course in electrical engineering materials", Dhanpat Rai and Sons, 1990.
5. M. Arumugam, "Material science", new age international pvt ltd publications, 1996.

2KSS15 FUNDAMENTALS OF DIGITAL COMPUTER

SUBJECT DESCRIPTION : This course presents the fundamentals of digital electronics, explaining the various number system, functions of basic gates, flip flops and memory system.

GOALS : To enable the student to learn the basic of digital electronics.

OBJECTIVES : On successful completion of the course the students should have.

Knowledge of number system

Learnt the functions of gates flip flops and circuits.

Understood the functions of I/O devices and memory devices.

UNIT I

Number System: Decimal, Binary, **Octal**, **Hexadecimal**— **Conversion from one to another** - Binary Addition, Subtraction, Multiplication and Division - Negative Numbers- Use of Complements to Represent Negative Numbers- Binary Number Complements - Complements in other number systems. Codes: BCD weighted - Excess Three- Gray- Error Detection Codes.

UNIT II

Basic Logic Gates - Basic Laws of **Boolean** algebra - Simplification of Expressions - De Morgan's Theorems - Derivation of a Boolean Expression- Sum of Products- Product of Sums - the Map Method for Simplifying Expressions - Sub cubes and Covering- Don't Care Condition .

UNIT III

Arithmetic Logic Unit: Construction of ALU - Integer Representation Binary Half Adder - Full Adder - Parallel Binary Adder - Full Adder Designs- Binary Coded Decimal Adder - Basic Operations — Shift Operation - Logical Operations Multiplexers - Demultiplexers.

UNIT IV

Flip-flops - Transfer Circuits - Clocks – Flip-flop- Designs Gated Flip-flop-Master Slave Flip-flop- Shift Register- Binary Counters - BCD Counters- Integrated Circuits - Counter Design- State Diagrams and State Tables - Design of a Sequential Magnitude Comparator- Mealy Machines- Programmable Arrays of Logic Cells.

UNIT V

Memory Random Access Memories - Linear Select Memory Organization- Decoders - Random Access Semiconductor Memories - Static and Dynamic Random Access Memories - Read Only Memories- Magnetic Disk Memories.

Input Output Devices- Punched Tape- Tape Readers- Punched Cards Character

Recognition- Keyboards- Printers- Interconnecting System Components - interfacing Buses -

Interfacing a Keyboard - Interfacing a Printer - Digital to Analog Converters - Analog to Digital Converters.

REFERENCE BOOK:

“Digital Computer Fundamentals” **Thomas C. Bartee**, Tarn McGraw Hill, 1996.

2KSS16 FUNDAMENTALS OF SOFTWARE DEVELOPMENT

SUBJECT DESCRIPTION : This course presents the importance of preliminary steps that should be carried out before developing the software for any application.

GOALS : To enable the student to learn the way in which the software can be developed.

OBJECTIVES : On successful completion of the course the students should have
Understood the problem analysis.
Learnt the basic requirements for software development.

UNIT I

The importance of software - Evolving of software information - Generation of computers - Computer organization applications - Programming. Software Characteristics - Software components - Software applications -. Software Crisis - Problems and causes.

UNIT II

The program - Problem analysis algorithm - Representation algorithm Components - Sequential flow, Conditional flow, Repetitive flow - Algorithm logic. Programming languages - Alphabet, a primer, job control, program logic -Conditional flow, and repetitive flow, Unconditional Go to Top Down structured programming - Top Down. stepwise refinement, structured programming, subprograms, program testing - Syntax errors, execution errors, deeper testing.

UNIT III

Software Engineering: Definition, paradigms: classic life cycle, prototyping, the spiral model, fourth generation techniques, combining paradigms, a generic view of software engineering. Computer systems engineering: Hardware and hardware engineering, software and software engineering, human factors and human engineering, database and database engineering. System analysis - Identification of need, feasibility - study, economic analysis, technical analysis, allocation and trade off.

UNIT IV

Modeling the system structure, architecture diagram, and specification of the system architecture, system modeling and simulation, system specification - Requirement analysis - Analysis task - Problem areas - Communication techniques.

UNIT V

Analysis Principles-the information Domain. Modeling partitioning, essential and implementation views, Software prototyping - Methods of tools -Specification - Principles, Representation, Review.

REFERENCE BOOKS:

1. Francis Scheid, "Theory and Problems of Computers and Programming", McGraw Hill Book Company, 1987.
2. Roger S.Pressman, "Software Engineering", A Practioner's approaDh- McGraw Hill Inc., 1992.
1. V.Rajaraman, "Computer Programming in FORTRAN 77", Prentice Hall of India (p)Ltd., 1991.

2KSS17 ACCOUNTING AND FINANCIAL MANAGEMENT

SUBJECT DESCRIPTION : This course presents the basic principles of Accounting methods and techniques of cost accounting.

GOALS : To provide to the students an understanding of accounting and financial management and the use in business.

OBJECTIVES : To provide knowledge of the techniques and methods of accounting and financial management.

UNIT I

Accounting principles and concepts- Double entry book keeping- Income and expenditure- Accounting record and system - Assets and liabilities- Depreciation, Depletion and Amortization - Accounting for depreciation.

UNIT II

Journal - Ledger - Trial Balance - Trading, Manufacturing and Profit and Loss account - Balance sheet - Analysis and interpretation of financial statements with ratios.

UNIT III

Cost Accounting - Methods and Techniques of Cost Accounting - Classification of Cost - Material Cost - Labour Cost - Overhead- fixed and variable cost - Cost - Volume - Profit analysis - Marginal costing and decision making.

UNIT IV

Ratio analysis - Introduction - Classification of ratios - Current ratio liquidity ratio - Debt equity ratio - Gross profit ratio- Net profit ratio- Return on investment (ROI) ratio - EPS - Assets utilization ratios - Advantages & limitations of ratio analysis.

UNIT V

Budgeting and budgetary control - Types of budgets - Preparation of various functional budgets- Preparations of cash budgets - Flexible budgets - Advantages of Budgeting and Budgetary control.

Note: The question paper should consist of 50% theory and 50% problems.

REFERENCE BOOKS:

1. T.S.Grewal, Double Entry Book keeping', All India; Sultan chand 1991.
2. S.N.Maheswan, 'Principles of Management Accounting', Sultan chand, New Delhi, 1994.
3. S.K.Gupta & R.K.Sharma, "Practical problems in management accounting".
4. Khan and Jam, "Financial Management", Tata McGraw Hill, 1993.

2KSS18 PC SOFTWARE LABORATORY

Introduction of Computers: Programming languages - program development - flowcharts.
DOS: Introduction to DOS - Standard Dos commands - DOS internals/Windows.
Word-processing Packages: Wordstar, MS-Word. Lotus WordPro, arid AmiPro.
Spread Sheet: Lotus 1-2-3, MS-Excel.
Presentation Software: MS- PowerPoint.

2KSS19 DIGITAL ELECTRONICS LABORATORY

1. Familiarization of IC's and 10 manuals and designing with Combinational IC's.
2. Truth table verification of logic gates.
3. Realization of AND, OR, NOT gates using NAND/NOR gates.
4. Study of multiplexes and realization of Boolean expression.
5. Realization of half adder and full adder.
6. Study of multiplexer/demultiplexer.
7. Truth table verification of flip-flops.
8. Study of 7-segment decoder/driver.
9. Crystal oscillator using gates.
10. Study of one shot multivibrator.
11. Study of shift registers applications.
12. Design and implementation of synchronous and asynchronous counters.
13. Study A/D converters D!A converters.
14. Read/write operation on RAM programming on EPROM.
15. Functional verification of ALU chip.

2KSS20 C PROGRAMMINGLAB

1. Program using standard input, output - console input/output statements
2. Program using control statements.
3. Program using conditional statements.
4. Program using various data structures, arrays.
5. Program using Pointers and dynamic memory allocations. (Linked list, trees)
6. Program using files and records.
7. Program for graphical programming.
8. Program for performing (i) Sorting (ii) Searching.

III SEMESTER 2KSS31 APPLIED MATHEMATICS

SUBJECT DESCRIPTION : This paper presents the methods of solving ordinary differential equations and their applications; provides the ideas of matrix theory, three-dimensional geometry & complex variables.

GOALS : To enable the students to learn differential equations, matrix methods, 3-dimensional geometry and the notions of complex variables and complex functions.

OBJECTIVES : The students should have acquired the knowledge in solving ODEs, theory of matrices; learnt straight lines, sphere and cylinder; learnt the basic notions of analysis functions, conformal and bilinear mappings.

UNIT I

Ordinary differential equations: Solution for first order differential equations of the form $dy/dx (ax+by+c)/(a!x+b!y+c!)$ - Exact equation - Integrating factors. Solution of first order higher degree equations — Clairut's form, linear differential equations with higher order with constant coefficients - Euler's equations with variable coefficients - simultaneous equations - Method of variations of parameter - Linear equations of the second order: Complete solution given one of the homogeneous equations - Complete solution by removal of first derivative.

UNIT II

Applications of differential equations: Problem concerning law of decomposition, Law of cooling and concentration of salt in solution - Solution of specified differential equations connected with electrical circuits, bending of beams and mechanics. (Differential equations and associated conditions need be given).

Bessel function - Legendre functions Recurrence relation - Generating functions - Orthogonality.

UNIT III

Matrix: Rank of matrix (Revision) - Basis of vector space - Consistency and inconsistency of system of linear systems - Eigen values and Eigen vectors - properties - Quadratic form - Reduction to canonical form by orthogonal reduction - Simultaneous reduction of two quadratic forms.

UNIT IV

Three-dimensional geometry: Direction cosines and ratios - Equations in of planes- Straight lines - Shortest distance between 2 skew lines - Sphere and cylinder.

UNIT V

Complex variables: Analytical function - Cauchy-reimann equations in Cartesian co-ordinates - Statement of sufficient conditions - Properties of analytical functions. Finding analytical functions whose real/imaginary part is given. Conformal mapping - Bilinear map - Study of mapping $w=\exp x$, $\sinh (z)$, $\cosineh (z)$, $1/z$, $z+klz$.

REFERENCE BOOKS:

1. Venkatasubramanian N K, Lahshminarayanan K A, Sundram V and Balasubramanian Engineering Mathematics”, JJpublications, madurai 1996.
2. Venkataraman M.M., “Engineering Mathematics (vol II)”, the National publishing Co. 1992.
3. Narayanan s, Manickavachagam pillai t.k, and ramanaish b, “advanced mathematics for engineering students (vol I - III)”, S. Visvanathan (printers and publishers) pvt., ltd, 1986.
- 4 Kandasamy p, Thilagavathy k Gunavathy K, “Engineering Mathematics vol (I and II)”, S. Chand & Co, New Delhi, vol II 989, vol III 990.

KSS32 MICROPROCESSORS & ASSEMBLY LANGUAGE PROGRAMMING

SUBJECT DESCRIPTION : This course presents the architecture of microprocessor, the importance of interfacing devices and explaining how to program the microprocessor.

GOALS : To enable the student to learn the basic functions of microprocessor, programming the microprocessor concepts & need for interfacing devices.

OBJECTIVES : On successful completion of the course the students should have
Learnt the low level programming.
Understood the functions of microprocessor and interfacing devices.

UNIT I

Introduction to 8085 - Pin configuration - 8085 Architecture memory - Input output - 8085 Bus timing signals.

Introduction - Comparison of microcomputer - Microcomputer and large computers - Need for microprocessor-based system - Block schematic representation - Bus structures.

UNIT II

Instruction format - Addressing - Modes - Types of instruction - Intel 8085 instruction set - Instruction timings - Development of assembly language programs - Code conversion - Arithmetic operation - Loops and arrays.

UNIT III

Need for Interrupts - Hardware and Software interrupts — Multiple interrupts Methods of servicing interrupts - Interrupt controller - DMA operations - DMA controller.

UNIT IV

Interface requirements - Memory mapped I/O and isolated I/O - Address decoding - Typical devices - PPI - USART - Timer/counter - Interrupt controller.

UNIT V

ADC/DAC interfacing - Data acquisition - Traffic light interface - Keyboard interfacing - Printer interfacing.

Study of architecture of 8086, 8088, 80286.

REFERENCE BOOKS :

1. Raimesh. S. Goankar, "Microprocessor architecture, Programming and applications". Wiley Eastern (India).1988.
2. Douglas V. Hall, "Microprocessors and digital systems", McGraw Hill, 1983.
3. Mohammad Refiquzaman, "Microprocessor and microcomputer based system Design", Universal bookstall. 1990.

2KSS33 COMPUTER ORGANIZATION

SUBJECT DESCRIPTION : This course presents the internal architecture of a computer, the number system and the organization of multiprocessor system.

GOALS : To enable the student to learn the number system used in a computer, organization of CPU, memory & I/O system. Also the students can understand how the multiprocessor system is organized.

OBJECTIVES : On successful

Learnt the various number system

Understood the organization of CPU and multiprocessor system.

UNIT I

Data and instruction formats - Data types - Fixed point and floating-point number representation - Representation of signed numbers - Alphanumeric representation. Register transfer and micro operations: Register transfer language - Inter register transfer - Arithmetic micro operations - Logic micro operations - Shift micro operations - Control functions.

UNIT II

Arithmetic and logical unit: Addition/Subtraction, Multiplication and Division with signed numbers - Floating-point arithmetic operations - Decimal arithmetic operations - Logical operations - Implementation of ALU.

UNIT III

Central processor unit - Processor bus organization - Stack organization - Instruction formats - three address, two address, Single address and zero address instruction formats - Addressing modes - Data transfer and manipulation - **RISC** and **CISC** machine characteristics - Hardwired and micro programmed control - Address sequencing.

UNIT IV

Memory and input output units: Memory hierarchy - main memory: RAM and ROM address spaces - Associative memory - Virtual memory - Cache memory. Peripheral devices - I/O interface - I/O bus versus memory bus - Isolated versus memory mapped I/O - Example of I/O interface - Input output processor.

UNIT V

Multiprocessor system organization: Characteristics of multiprocessors - Interconnection structures - Cross bar switch Time-shared common bus - Multiport memory.

REFERENCE BOOKS:

1. Mano M.M, "Computer System Architecture", Prentice-Hall of India, 11nd Edition, 1993,
2. Ha: yes J.P, "Computer Architecture and Organization", McGraw Hill, 1983.
- 3 Hamachar, V.C, Vranesic. Z.G, Zaky. S.G, "Computer organization", McGraw Hill, 1978.

2KSS34 DATA STRUCTURES - I

SUBJECT DESCRIPTION : This course presents the concepts of data structures that are required for business application.

GOALS : To enable the student to learn the basic data structures like arrays, stacks, queues & trees.

OBJECTIVES : On successful completion of the course the students should have Learnt the structures and the operations that can be performed on arrays, stacks, queues & trees.

UNIT I

Introduction - Information **and its storage representations** - Primitive data **structure** - **Logic information.**

UNIT II

String manipulation - Definition and concepts - String manipulation and pattern matching - Primitive functions - String manipulation in PASCAL Grammars
- Storage representation of strings - String manipulation applications.

UNIT III

Linear data structures - Concept and terminology - Storage structure for Arrays - Structures and Array of Structures Stacks Definition operation - Applications of stacks - Recursion - Polish expressions - Polish notation - Queues.

UNIT IV

Linear data structures - Pointers and Linked allocation - Linked Linear lists - Circularly linked – Doubly linked linear list -Application of linear linked list (linked

UNIT V

Non Linear Data Structures - Trees - Threaded storage representations
- Definition and concepts Binary Trees and conversion of general trees to Binary tree, Application of Trees (Arithmetic Expression Manipulation) - Sparse maine 's.

REFERENCE BOOKS :

Trembley & Soreson, “An Introduction to Data Structures with Applications”, second edition

2KSS35 COBOL & BUSINESS DATA PROCESSING

SUBJECT DESCRIPTION : This course presents the features of COBOL language and its application.

GOALS : To enable the students to learn the COBOL language and to development a program using COBOL for any business applications.

OBJECTIVES :

On successful completion of the course the students should have

Understood the key features of COBOL, learnt the programming development for business application.

UNIT I

Format of COBOL. programs - Structure - Character set - Cobol words - Data names and identifiers, Literals, Figurative constants - Identification division - Level structures - Data entries -File section - Working storage section - Editing.

UNIT II

Structure of procedure division - Arithmetic verbs - add,subtract,multiply, Divide - Data movement verbs - Move, Move corresponding - Gob ,Goto..Depending on, Accept, Display - Conditional verbs - if, if then else, Types of conditions - Redefines clause - Renames clause - perform statement-table handling - occurs clause - Multidimensional tables.

UNIT III

Perform verb and table handling - Indexed tables and indexed names - Set verb - Search verb - Sorting a table - Sequential files - File characteristics - File control entries for sequential files - File description - Fixed length, Variable length records - Statement for sequential files - Examples of sequential fie processing - Sort verb - Merge verb.

UNIT IV

Direct access files - Relative files - Indexed sequential files - Programs - COBOL subroutine - Structure of a subroutine - Calling of a subroutine - examples illustrating a subroutine.

UNIT V

Programs for financial accounting - Payslip - inventory management - Invoice-. order processing - Banking - Mark list processing - College admission processing on merit basis.

REFERENCE BOOKS :

1. M K Roy, D. Ghos Dastidhar, "COBOL Programming", Dastidhar Tata McGraw Hill, 1989.
2. Philipakkis "structured COBOL programming".
3. Stern & Siren, "COBOL Programming".

2KSS36 DATA STRUCTURES LAB(C)

Implementation of matrix operations using arrays.

Linked list: implementation of a Single, Double, Circular linked list.

String applications using arrays and linked list.

Implementation of sparse matrix.

Implementation of stacks using arrays and linked list.

Implementation of queue. circular queue, priority' queue using array and linked lists.

implementation of binary trees, threaded trees.

implementation of avl trees, b-tree, red—black tree, splay tree.

Searching techniques: linear search, binary search using arrays, linked List, binary search trees (HST).

Sorting techniques: insertion, selection, bubble, Quick, shell, radix, heap sorts

implementation 01 hash table.

2KSS37 DATA PROCESSING LAB (COBOL)

1. a. Write a COBOL program to sort a set of 50 Numbers using TABLES

b. Write a COBOL program to find the sum of individual digits of a given N digit number.

2. Write a COBOL program to create an input file containing the following student's details like student name, Roll no., Marks in 5 subjects and output the details stored in .he file.

3. Write a COBOL program to convert the given temperature into Fahrenheit and Vice versa using the given formula.

$$C = 5/9 * (F - 32)$$

4. Write a COBOL program to prepare a pay slip for the employees using Files which satisfies the following given condition.

A. Allowances: B. Deductions:

DA 30% of Basic PF = 2.75 % of Basic

HRA = 12 % of Basic IT 3.25 % of Gross Pay (GP)

OP Basic + Allowances, THP (Take Home Pay) OP - Deductions

Get the Consumer Name, S.C.No., address, Usage type and the unit consumed (UC) for previous

2 months.

A. Domestic type:

i) if $UC < 50$, Rupee per Unit (RPU) = 0.80

ii) if $50 < UC \leq 250$, RPU = 1.25

iii) if $250 < UC \leq 500$, RPU = 1.50

iv) if $UC > 500$, RPU = 1.75

B. Commercial type:

i) if $UC < 200$, Rupee per Unit (RPU) 3.25

ii) if $200 < UC \leq 1000$, RPU=4.75

iii) if $1000 < UC \leq 3500$, RPU =5.25

iv) if $UC > 3500$, RPU = 7.00

Prepare an EB Bill in this format satisfying the above given criteria's.

Bill No.: Date:

EB Bill

Usage Type:

SC No.: Name:

Unit Consumed: Address:

Net Chargeable Amount (Rs.) =

Commercial Assistant.

2KSS38 ASSEMBLY LANGUAGE PROGRAMMING LAB

- Study of assembler (turbo) and assembler directives.
2. Study of int 21h functions for input and output.
 3. Multiprocessing addition and subtraction.
 4. Packing and unpacking of BCD digits.
 5. Conversion of BCD into ASCII character and vice versa.
 6. Delay loop implementation.
 7. Arrangement of numbers in ascending and descending order.
 8. Checking with a given string is a palindrome or not.
 9. Usage of macros - examples.
 10. BCD to binary conversion and vice versa.
 11. To check whether a given string is sub string of another.
 12. Implementation of *left* (), *right* (), *substr* () functions.
 13. To display the contents of given memory location.
 14. Encryption and decryption of a message.
 15. To find the minimum and maximum number of *a* given array.

IV SEMESTER
2KSS41 DISCRETE STRUCTURES

SUBJECT DESCRIPTION : This course presents the notions of set theory, functions and relations, the basic concepts of graph theory, formal languages and automata.

GOALS : To enable the students to learn the set theoretical notions, relations and formal languages.

OBJECTIVES : On successful completion of the course the students should have Understood the basic set operations, logic, kinds of relations; learnt graphs, digraphs & trees, learnt the four classes of grammars and push down automata.

UNIT I

Set theory : Set notations - Basic set operations - Venn diagram - Laws of set theory - Principles of inclusion and exclusion - Partition - Minsets.

Logic : Proposition - Logical operators - Truth tables - Normal forms - Laws of logic - Proofs in propositional calculus - Mathematical induction.

UNIT II

Functions & relations:

Injective, Surjective. Bijective functions - Composition, Identity, Inverse - Properties of relations - Closure operations on relations - Solution of recurrence relations - Non-homogeneous finite order linear recurrence relations.

Group theory:

Group axioms - Semi groups - Monodies - Application o generation of codes using parity checks - Error recovery in-Group codes.

UNIT III

Graph theory : Graphs and digraphs - Definitions - Representation of graphs in a digital computer - Application of graphs: Shortest path problem. Trees: Basic definitions - Binary trees - Traversal of binary trees - Expression trees - Infix, Postfix, and Prefix expressions.

UNIT IV

Formal languages : Four classes of grammars (Phrase Structure, Context Sensitive, Context free, regular) - Context free languages: Generation trees - Ambiguity. Finite Automata:

Finite state automata (FSA) - Nondeterministic FSA - conversion of NDFSA to DFSA - Acceptance of a regular set by an FSA - Construction of a right linear grammar from finite automata. **UNIT V**

Push Down Automata (PDA) :

Definitions - Acceptance of a work by a finite state and empty store construction of a PDA to accept languages by empty store given a PDA to accept the language by finite state - Definition of a deterministic PDA.

Turing machines: Definitions – Construction of a simple Turing machines Universal Turing machine - Halting problem.

REFERENCE BOOKS :

1. Deorr Alan and Levasseur Kenneth, “Applied Discrete Structures for computer science”, Galgotia publications pvt. ltd., New Delhi,
2. John E. Hopcroft and Jeffrey D.Ullman, “Formal languages and their relations to Automata”, Addition Wesley publishing company. 1968.

2KSS42 OPERATIONS RESEARCH
(Derivations are not included)

SUBJECT DESCRIPTION : This course presents the features of applied mathematics in decision making process.

GOALS : To enable the student to learn the application of mathematics in industry & real life.

OBJECTIVES : On successful completion of the course the students should have
Understood the application of mathematics in industry, decision making & real life.

UNIT I

Linear programming - Graphical method for two dimensional problems - Central problem of LP - Various definitions - Statements of basic theorems and properties - Phase I and phase II of the simplex method.

Simplex multipliers - Dual and primal - Dual simplex method - sensitivity analysis - Transportation problem and its solution - Assignment problem and its solution,

UNIT II

Queuing theory: Characteristics of queuing systems - Steady state M/M/1, *M/M/1/K*, and M/M/(Queuing models).

Replacement theory: Replacement of items that deteriorate - Replacement of items that fail - Group replacement.

UNIT III

Inventory theory: Costs involved in inventory problems - Single item deterministic model – Economic lot size models without shortages and with shortages having production rate infinite and finite.

UNIT I

Decision-making: Decision under uncertainty, under certainty and under risk - Decision trees - Expected value of perfect information and imperfect information.

UNIT V

PERT and (PM : Arrow networks - time estimates - Earliest expected time, latest allowable occurrence time and slack - Critical path - probability of meeting scheduled date of completion of projects - Calculations on CPM networks - Various floats for activities - Critical path - Updating project - Operation time cost trace off curve - Project time cost trade off curve - Selection of scheduled based on cost analysis.

TEXTBOOKS :

1. F.Hiller and G.J.Lieberman, "Introduction to operations research", Holden Day Inc., 1980.
2. Hamdy A. Taha, "Operations research - An introduction", McMillan publishing co., 1982.
3. Kanti Swarup, *P.K.* Gupta and Manmohan, "Operations Research", Sultan Chand & Sons, 1991.

REFERENCE BOOKS :

1. L.R.Shaffer, J.B.Filter and W.L Meyer, "The Critical path method", McGraw Hill, 1965.
2. M.K.Venkataraman, Linear programming, The National publishing Co., 1989.
3. N.S.Kamho, "Mathematical-programming techniques", affiliated east - west press pvt ltd., 1991.

2KSS43 DATA STRUCTURES – II

SUBJECT DESCRIPTION : This course presents the data structure graphs & files and searching & sorting.

GOALS : To enable the student to learn the basic functions of microprocessor, programming the microprocessor concepts & need for interfacing devices.

OBJECTIVES : On successful completion of the course the students should have

Learnt the data structures graphs & files understood the concept of searching & sorting.

UNIT I

Introduction to Graphs - Representations - Searching - Breadth First - Depth First Search - Spanning Trees - Application of Graphs - PERT & related techniques.

UNIT II

Sorting - Topological sorting - Dynamic Storage Management - Binary Sort - Heap Sort - Quick Sort - Radix Sort - Address - Calculation Sort.

UNIT III

Searching - Sequential Search - Binary - Search Trees - Weight Balanced Trees - Tire Structures - Hash Tables.

UNIT IV

File Structures - Definitions and concepts - External Storage Devices - Record organization - Sequential files - File Sorting - External Sorting - Run list - Oscillating Sorting on Disks - Indexed Sequential Files.

UNIT V

Direct files - Structures - Processing - Application-online Banking System.

REFERENCE BOOK :

I. Trembley & Soreson, “An Introduction to Data Structures with Applications”, Second Edition.

2KSS44 OPERATING SYSTEM

SUBJECT DESCRIPTION : This course presents the functions of OS.

GOALS : To enable the student to learn the development of OS, processor management, memory management and managing the file.

OBJECTIVES : On successful completion of the course the students should have
Learnt the evolution of OS.
Understood the functions of OS.

UNIT I

Operating Systems objectives and functions Operating system and user / computer interface
Operating system as a resource manager, Evolution of Operating systems - Serial processing.
simple batch systems, multiprogrammed batch systems, Time-sharing systems.

UNIT II

Process - Description and control - Process status, Process description, Process control -
Processes and threads. Concurrency - Principles of concurrency, Mutual exclusion - Software
support, Dekker's algorithm - Mutual exclusion -
Hardware support. Mutual exclusion - Operating system support — Semaphore
implementation, messages. Deadlock — deadlock prevention, Deadlock detection, deadlock
avoidance. An integrated deadlock strategy

UNIT III

Memory management - Memory management requirements. Fixed partitioning, placement
algorithm Relocation. Simple paging - Simple segmentation. Virtual memory - paging -
address translation in a paging system. Segmentation - organization, address translation in a
segmentation system. Combined paging and segmentation. Virtual memory - Operating
system software - Fetch policy, placement policy and replacement policy. Page buffering
Resident set management.

UNIT IV

Scheduling - Types of scheduling, scheduling algorithms, Scheduling criteria, FIFO, Round
Robin. Shortest remaining time, highest response ratio and Feedback
scheduling. Performance comparison. Fair-share scheduling. I/O management and disk
scheduling - Organization of the i/o function - The evaluation of the i/o function, Logical
structure of the i/o function, I/O buffering, Disk i/o - Disk scheduling algorithms. Disk cache.

UNIT V

File management - Files, File management systems, File system architecture, and Functions
of File management. File directories - File sharing - secondary storage management, File
allocation.

REFERENCE BOOKS :

1. William Stallings. "Operating Systems", second edition, Maxuell McMillan, International editions. 1997.
2. Silberschatz A, Peterson J.L, Galvin P, "Operating system concepts", third edition, Addison Wesley publishing co., 1992.
3. Deital H.M.. "An introduction to Operating systems", Addison Wesley publishing co., 1990.

2KSS45 OBJECT ORIENTED PROGRAMMING AND C++

SUBJECT DESCRIPTION : This course presents the concept of object oriented programming & the features of C++.

GOALS : To enable the student to learn the object oriented programming and the features that are available in C++.

OBJECTIVES : On successful completion of the course the students should have
Understood the concepts of object oriented programming in C++.
Capability developing a programming in C++.

UNIT I

Principles of object oriented programming - Software crisis - Software Evolution - Procedure oriented programming - Object oriented programming paradigm - Basic concepts and benefits of OOP - Object oriented language - Application of OOP - structure of C++ - Applications of C++ - Tokens, Expressions and control structures - Operators in C++ - Manipulators.

UNIT II

Functions in C++ - Function prototyping - Call by reference - Return by reference - Inline functions - Default, Const arguments - Functions overloading - Friend and virtual functions - Classes and Objects - Member functions - Nesting of member functions - Private member functions - Memory allocations for objects - Static data members - Static member functions - Arrays of objects - Objects as function arguments - Friendly functions - Returning objects - Const member functions - Pointers to members.

UNIT III

Constructors - Parameterized constructor - Multiple constructors in a class - Constructor with default arguments - Dynamic initialization of objects - Copy and dynamic constructors - Destructors - Operator overloading Overloading unary and binary operators - Overloading operators using friend functions

UNIT IV

Inheritance - Defining derived classes - Single inheritance - Making a private member inheritable - Multiple inheritance - Hierarchy inheritance - Hybrid inheritance - Virtual base classes - Abstract classes - Constructed and derived classes
- Member classes - Nesting of classes.

UNIT V

Streams - String I/O - Character i/o - object i/o - i/o with multiple objects - File pointers - Disk i/o with member functions - Error handling - Redirection - Command line arguments - Overloading extraction and insertion operators.

TEXT BOOK:

1. E. Balagurusamy, "Object Oriented Programming in C++", Tata McGraw Hill publishing company limited, 1995.
2. Robert Lafore, "Object oriented Programming in turbo C++", Galgotia publications pvt. Limited, 1993.
3. Bjarne Stroustrup, "The C++ Programming", Addison Wesley, 1991.

2KSS46 XBASE LAB

1. Creation, insertion, deletion operations on tables.
2. Payroll preparation.
3. Inventory preparation (Pharmacy etc).
4. Hospital Management system.
5. Reservation system.
6. Electricity Bill Preparation.
7. Report generation.
8. Labels Generation.

2KSS47 OBJECT ORIENTED PROGRAMMING LAB

Creating objects using member functions - constructors - destructors -

Classes and structures and friends - constant object.

Overloading: function overloading and operator loading using member, Friend and non-member function.

Polymorphism: runtime polymorphism - virtual functions - abstract Classes.

Inheritance: simple. multiple and multilevel inheritance - abstract Classes.

File operations. templates, exception handling.

2KSS48 OPERATIONS RESEARCH LAB

Solving inequalities using Simplex, Two-phase, Dual simplex Methods.

Solving the Transportation problem using North-West Corner rule, Row-minimum, Column-minimum, Matrix-minimum and Vogel's Approximation methods.

Solving Assignment problem using Hungarian method.

To find the critical path for *the* given PERT and CPM network.

V SEMESTER
2KSS51 PROBABILITY AND STATISTIC

SUBJECT DESCRIPTION : This course provides the concepts of random variables, probability distribution, tests for mean, variances and attributes; deals with estimation and time series analysis & emphasizes on statistical quality control.

GOALS : To enable the students to learn the basic concepts of probability and statistics and to learn about statistical quality control.

OBJECTIVES : On successful completion of this course, the students should have learnt the concepts of probability, random variables, distributions; learnt the tests for mean, variance & analysis of variance; understood the methods of estimation, time series analysis & statistical quality control charts.

UNIT I

Sample spaces - Events - Probability axioms - Conditional probability - Independent events – Baye’s formula.

Random variables: Distribution functions - Marginal distributions - Conditional distribution - Stochastic independence. Expectation - Conditional expectation and conditional variance.

Moment generating functions - Cumulate generating functions.

UNIT II

Probability distributions Binomial, Poisson, geometric, Uniform, Exponential, Normal, Gamma, Beta (generating function, mean, variance and simple problems).

Correlation - Regression - Multiple and partial correlation and regression (only problems).

Probability density Function and Properties of T, F, Chi-Square distributions.

UNIT III

Test for means, Variances and attributes using the above distributions. Large sample tests - Tests for means, Variances and proportions.

Analysis of variance One-Way and two-way classifications - Completely randomized blocks - Randomized block design and Latin square design (only problems).

UNIT IV

Estimation : Point estimation - Characteristics of estimation - Interval estimation - interval estimates of mean, Standard deviation, Proportion, difference in means and ratios of standard deviations. Time series analysis: Trend and seasonal variations - Box - Components of time series - Measurement of trend - Linear and second-Degree parabola.

UNIT V

Statistical quality control - Statistical basis for control charts - Control limits - Control charts for variables - X,R charts, charts for defective - p, np charts - Charts for defects - c charts.

REFERENCE BOOKS :

- 1.KS. **Trived** “Probability and statistics with reliability, queuing and computer applications”, Prentice Hall, 1982.
2. S.C.Gupta and V.K.Kapoor, “fundamentals of Mathematical Statistics”, Sultan Chand and Sons, 1977.
3. Doughcas C. Montgomery Lynwood A. Johnson, “Forecasting and Time series analysis”, McGraw Hill book Company, 1976.
4. Dalch Bester field. “quality control”, Prentice -Hall 1986.

2KSS52 COMPUTER GRAPHICS

SUBJECT DESCRIPTION : This course presents the concepts of 2D & 3D graphics. Also it explains the features of animations.

GOALS : To enable the student to learn the 2D algorithms, 3D algorithms and animation effects.

OBJECTIVES : On successful completion of the course the students should have

- Learnt the graphics facility.
- Understood the algorithms in 2D & 3D.
- Knowledge in animation.

UNIT I

Graphics input - output devices Direct input devices - Cursor devices - Direct screen interaction logical input function . cathode Ray tubes – Line drawing displays - Raster scan displays- Hard copy devices.

UNIT II

Two Dimensional graphics - 2D-Transformations - 2D-Algorithms - Line drawing algorithms - Line covering - Line clipping and polygon clipping. Raster graphics - Scan conversion of polygons - Region filling - Algorithms.

UNIT III

Curves and surfaces : Parametric representation of curves - Curves - B-spline curves - Parametric representation of surfaces - Planes - Curved surfaces - Ruled surfaces - Surfaces.

UNIT IV

Three - dimensional Graphics: 3D - Trans formations - Normal. Oblique central projections – 3D Algorithms – Hidden lines and 1-lidden Surfaces removal. Animation Graphics: Simple animation -Usage of GETIMAGE() and PUTIMAGE() functions -Usage of buffering techniques — Manipulation of color lookup Table - Tweening.

UNIT V

Computer Graphics realism : Tiling the plane - Recursively defined curves - Koch curves - C curves & Dragons - Space tiling curves - Fractals and grafatals - Turtle graphics - Ray tracing. Graphics standards: The GKS international standards - GXD - Standard for Microcomputers.

REFERENCE BOOKS:

1. John R. Rankin, “Computer Graphics Software Construction”, Prentice Hall of Australia Pvt., Ltd., 1989.
2. William M. Newmann, Robert F. sproull, “Principle of Interactive Computer Graphics”, McGraw Hill International Book Company, 1989.
3. F.S.Hill, JR., “Computer Graphics”, Maxwell Macmillan International editions, 1990.
4. James Alan Farrel, “From Pixels to Animation: An Introduction to Graphics Programming”, AP professional, 1994.
5. Rod Salmman, Mel Slater, “Computer Graphics: Systems and concepts”, Addison Wesley Publishing Company, 1987.
6. Roy, A. Plastock, Gordon Kalley , “ Theory and Problems of computer Graphics”, Schaums outline series, McGraw hill International editions, 1986.

2KSS53 SYSTEM SOFTWARE

SUBJECT DESCRIPTION : This course presents the concepts of assemblers, loaders and editors.

GOALS : To enable the student to learn the basic of assembler, loader & editor.

OBJECTIVES : On successful completion of the course the students should have
Learnt the facilities of assembles, loader & editor.

UNIT I

What is system software - Components of system - Software and their functions : assemblers, Loaders and linkers. Microprocessors, Compilers, operating system, text editors, debuggers, brief discussion of structure of some computers

UNIT II

Assemblers, machine - Dependents futures: program relocation; machine - independent features: literals. symbol - Defining statements expressions, program blocks, control sectors, program linking; assembler design options ; two-pass assembler with overlay structure, one-pass assembler. multipass assembler, introduction to compilers - Phases of compilers.

UNIT III

Loaders and linkers:

Machine-dependent loader features; Relocation, Linking, Tables and logic for a linking loader: Machine - independent features: Library search, Loader options, and Overlay programs, Loader design options: Linkage editor, dynamic linking, and Boot strap loaders.

UNIT IV

Microprocessors:

Machine-independent microprocessor features: Concatenation of micro parameters, Generation of unit levels, Conditional macro expansion, Keyword macro parameters, Macro processor design processors, Macro processing within languages translators.

UNIT V

Text editors: Overview of editing process, User interface, Editor Structure. Interactive debuggers: Debugging and capabilities, Relationship with other parts of the system, User interface criteria.

REFERENCE BOOKS:

- 1 .Lelard L. Beck, "System software an introduction to System programming", Addison Wesley publishing company, 1985.
2. Dharnodhere, "System Software", TMH. 1991.
3. John J.Donovan. "System Programming". McGraw hill 1971.

2KSS54 STRUCTURED SYSTEM ANALYSIS AND DESIGN

SUBJECT DESCRIPTION : This course presents the design process of system for any real time application. Also it explains the analysis phase of a problem.

GOALS : To enable the student to learn how to analysis and design a system.

OBJECTIVES : On successful completion of the course the students should have
Understood the design concepts
Understood the implementation, maintenance and evaluation of system.

UNIT I

Introduction: Common types of systems - General systems principles - People involved in Systems development project - The project lifecycle - Major issues in systems analysis and development. Modeling tools: Characteristics of modeling tools - Dataflow diagrams - The data dictionary - Process specifications - Entity relationship diagrams – State-transition diagrams - Balancing the models - Additional modeling tools - Modeling tools for project management.

UNIT II

The analysis process: Essential model - The environment model - Behavioral model - The user implementation model. Case study: The Yourdon Press Case study - The Elevator system.

UNIT III

Structured design:

Basic design principles: Objectives of structured design - The structure of computer programs - Structure and procedure - Principles of human problems solving - Coupling - Cohesion. Design techniques: The Morphology of simple systems - Design heuristics - Transform analysis - Transaction analysis - Alternative design strategies.

UNIT IV

The Design Process: Design of output: Human factors in screen design- Issues involving human interaction - Output layout design - Design of input & control: Date capturing - Input validation - Input design for online systems - File and database development - File organization - System development Databases - Design in on - Line and Distributed Environment.

UNIT V

Structured implementation, Maintenance & Evaluation: Testing & debugging techniques - Audit trails - System documentation manuals - Training - Conversion - Post - Implementation review. Case study: Super market systems with the following subsystems: Order processing, inventory management and sales management.

REFERENCE BOOKS :

1. Edward Yourdon, “Modem Structured Analysis”, prentice-hall inc., 1989.
2. Edward Tourdon, Larry L.constantine, “structured design: fundamentals of a discipline of computer program and systems design”, prentice-hall inc., 1979.
3. Sitansu S. Mitra, “Structured techniques of system analysis, design and implementation”, A. Wiley - interscience publication 1988.
4. James A.Senn, “Analysis and design of information systems”, McGrew hill 1985.
5. C.Gane & Sarason, “Structured system analysis”, prentice hall 1978.

2KSS55 COMPUTER NETWORKS

SUBJECT DESCRIPTION : This course presents the different layers of network and explain how we can maintain the security.

GOALS : To enable the student to learn the network architecture, issues of different layers & different topologies.

OBJECTIVES : On successful completion of the course the students should have

- Learnt the architecture of network.
- Understood the communication details.
- Understood the security issues.

UNIT I

Introduction: Network goals Applications of network - Design issues for the layers - OSI reference model - Types of network. Data communication concepts Analog and digital communications -MODEM - CODEC - interface - Data ending technique - RS 2320 - Error detection and correction - CRC codes - Multiplexing
- TDM ,FDM- Parallel and serial Communication , HDLC,ESC protocols - Switching techniques - Comparison communication channel - Wired, Optical fibers, Microwave, Infrared, Laser, Radio and satellite transmissions.

UNIT II

LAN Various topologies - LAN components -Connection - Polling - Token passing ETHERNET ,Token bus ,Token ring - IEEE standards 802.2.802.4 and 802.5 ARCNET .TCP IP TCPI? Protocols structure - Internet protocol - User data gram protocol - Internet control protocol - TCP/IP applications - File transfer - virtual terminal support - Introduction to telnet.

UNIT III

Internetworking: LAN - LAN connection - Bridges - Routers - Gateways.
Wide area networks: Public networks - Private networks - Packet switching networks - x.25 standards - VAN .applications.

UNIT IV

Integrated services digital networks: Introduction - Evaluation of ISDN - ISDN standards and protocols. Electronic mail: Components of electronic system - x.400 standard, Internet message format. Electronic data interchange: Introduction - Advantage - EDI standards

UNIT V

Cryptography: Various ciphering techniques - Public key cryptography - The MIT algorithm, Authentication and digital signatures.

REFERENCE BOOKS:

1. Andrew S.Tanenbaum, "computer networks", prentice hall of India, 1996.
2. Basandra .S.k, "Local area networks", Galgotia publications pvt. Ltd., 1995.
3. William Stallings, "Local networks", Macmillan publishing company newyork, 1990.
- 4.Sidnie Felf,"TCP/IP",McGraw-hill inc.,1993.

2KSS56 GRAPHICS LAB

1. Implementation of Simple Transformations.
2. Implementation of Line drawing algorithms.
3. Windowing and Line Clipping.
4. Polygon clipping.
5. Implementation of an Analog Clock.
6. Polygon filling algorithm.
7. Simulate the Bouncing of a ball within four walls.
8. Merging of a circle and square.
9. Simple animation.
10. Fractal drawing.

2KSS57 SYSTEM SOFTWARE LAB (USING C OR C++)

1. Creation of symbol table
2. Searching the table of symbols
3. Implementation of an assembler
4. Linking assembly language with C.
5. Developing a simple text and Graphical editor.
6. Package development.

2KSS58 SYSTEMS DEVELOPMENT LAB

CASE TOOLS: TURBO ANALYST

Develop tools for drawing DFD, ERD. Structured Charts. HIPO charts.

VI SEMESTER 2 KSS61 CLIENT SERVER COMPUTING

SUBJECT DESCRIPTION : This course presents the concepts of client server architecture, explain the database connectivity and features of visual C++.

GOALS : To enable the student to learn the client server architecture, ODBC & the facilities in VC++.

OBJECTIVES : On successful completion of the course the students should have
Understood the client server architecture.
How to connect database.
How to develop a programming using VC++.

UNIT I

Basic concepts of Client/Server - Upsizing - Down sizing - Right sizing - characteristics File servers - Data base servers - Transaction servers - groupware servers - Object Client/servers - Web servers - Middleware. Client/server building blocks - Operating System services - Base services - External services - server scalability - Remote procedure calls - Multiservers.

UNIT II

SQL database servers - server architecture - Multithread architecture - Hybrid architecture - Stored Procedures - Triggers - Rules - Client/server Transaction processing - Transaction models - Chained and nested transactions - Transaction processing monitors - Transaction Management standards.

UNIT III

Database connectivity solutions : ODBC - The need for Database connectivity - Design *overview* of ODBC - Architecture - components - Applications
Driver Managers - Drivers -Data sources- ODBC 2.5 and ODBC 3.0.

UNIT IV

Visual C++: The Windows Programming model - GDI - Resource based programming - DLL and OLE Applications - Visual C-H- components - frame Work/MFC class Library - basic event handling - SDI - APP Wizard - Class Wizard - Model and Models dialogues - Other controls - Examples.

UNIT V

Multiple Document Interface - Date Management with Microsoft ODBC - OLE
- OLE Client - OLE server - Client/server Data Exchange format - Dynamic Data exchange.

REFERENCE BOOKS :

1. Robert Orfali, Dan Harkey and Jerri Edwards, "Essential Client/server Survival Guide". John Wiley and sons Inc., 1996.
2. David J. Kruglinski, "Inside Visual C++", Microsoft press 1992.

2KSS62 PRINCIPLES OF COMPILER DESIGN

SUBJECT DESCRIPTION : This course presents the structure of compiler & it explain the functions of each phase of a compiler.

GOALS : To enable the student to learn the structure of compiler.

OBJECTIVES : On successful completion of the course the students should have
Understood the different phases of compiler.
One can design C compiler on his own.

UNIT I

Introduction : Structure of a compiler - Compiler writing tools - Basic constructs of high level programming languages : Data structures, parameter transmission. Lexical Analysis - Role of a lexical analyzer - Finite automata - Regular expressions to finite automata Minimizing the number of states of a deterministic finite automaton - Implementation of a lexical analyzer.

UNIT II

Parsing techniques - Context free grammars - Derivations and parse - Capabilities of context free grammars. Top down bottom up parsing - Handles - Shift reduce parsing - Operator - Parsing -recursive descent parsing - Predictive parsing.

UNIT III

Automatic parsing techniques - LR parsers - Canonical collection of LR (0) items - Construction of SLR parsing tables - LR(1) sets of items construction - Construction of canonical LR parsing tables.

UNIT IV

Syntax Directed Translation - Semantic actions - Implementation of syntax directed translators - Intermediate code : Postfix notation: quadruples: Indirect triples - methods of translation of assignment statements, Boolean expressions and control statements.

UNIT V

Symbol tables and code generations - Representing information in symbol table - Data structures for symbol tables - Introduction to code optimization: Basic blocks: Dag representation - Error deduction and recovery - Introduction to code generation.

REFERENCE BOOKS:

1. Aho. A.V and Ulman J.D, "Principles of compiler design", Addison Wesley publishing company, 1978.
2. Dhamdhare D.M, "Compiler construction principles and practice", Mac Millan India Ltd, 1983.
3. Holub Allen I, "Compiler design in C", Prentice Hall of India, 1990.

2KSS63 HUMAN PSYCHOLOGY AND COMMUNICATION SKILLS

SUBJECT DESCRIPTION : This paper presents the importance of human psychology personality remedial English and to improve communication skills.

GOALS : To enable the students to learn the basic human psychology way of communication and to improve the learning habits.

OBJECTIVES : To learn the uses of human psychology personality and communication skills.

UNIT I

1. Definition of Psychology and scope; branches aims and uses of psychology.
2. Methods of study: Introspection, Experimental and case history.
3. The brain and levels of consciousness; Freud's theory of dream- psychoanalysis.
4. Sensation and perception-motivation and instinct.
5. Emotion, feeling and sentiment-External and internal physical changes- character and mental hygiene.

UNIT II

1. Memory association and forgetting- imagination.
2. Thinking and reasoning instruments of thinking: concepts, images, symbols and formulae.
3. LEARNING AND HABIT: Trial and error, Insight, conditioned response and imitation.
4. Intelligence and intelligence tests: Verbal a nonverbal tests.
5. Heredity and environment: Personality and development. Types of personality: extroverts, introverts and ambiverts normal and abnormal-social behavior and attitude change.

UNIT III

Remedial English : Subject - Verb agreement - Concord - Tense forms - Auxiliary verbs - Different ways of rewriting sentences.

UNIT IV

Formal and Informal writing - ORAL COMMUNICATION

UNIT V

The use of visual aids Criteria of visual aids (visibility, clarity, simplicity, control)
- The tools of visual presentation (chalkboard, chart, overhead Projection and so on).
Practice in Oral communication.

- (a) Short speeches
- (b) Group discussion - as participant and as moderator.
- (c) Mock press conference
- (d) Seminar
- (e) Mock interview
- (f) Speech based on situation
- (g) Extemporaneous speech

Practice will also be given in conducting a meeting - Welcoming a Gathering, Presiding over a function and proposing a vote of thanks.

REFERENCE BOOKS:

1. Pillai G. Radhakrishna, K. Rajeevan and P. Bhaskaran Nair, 'Written English for You, Madras', Emerald Academic press, 1991.
2. Leech Geoffrey and Jan Svartvik, "A communicative Grammar of English", Singapore: Longman Singapore Publishers (Pvt.) Ltd., 1991 (ELBS).
3. Houpp Kenneth W. Thomas E. Pearsall, "Reporting Technical Information", Belmont: Wadsworth publishing company inc., 1962.

2KSS64 OBJECT ORIENTED ANALYSIS AND DESIGN

SUBJECT DESCRIPTION : This course presents how to analyse and design an object oriented system.

GOALS : To enable the student to learn the design and analyse phase of object oriented system.

OBJECTIVES : On successful completion of the course the students should have
Understood the concept of object oriented systems.
Learnt how to design & analyse.

UNIT I

THE OBJECT MODEL:

Evolution - Elements - Applications - Classes and objects - Nature - Relationship among classes and object - Building classes and objects.

UNIT II

The Method:

Importance of classification - identifying classes and objects - Key abstraction and mechanisms - Elements of notation - Class diagram - State transition diagram - Interaction diagrams - Module diagram - Process diagrams - Applying notations.

UNIT III

THE PROCESS & PRAGMATIC:

The process - The first principles - Micro and macro development process - Pragmatic - Management and planning - Staging - Release management - Reuse - Quality assurance - Documentation - Tools - Special topics benefits and risks of object oriented development.

UNIT IV

APPLICATIONS:

Frameworks - Foundations class library - Analysis - Design - Evolution Maintenance - Requirements.

UNIT V

COMPARISON

Comparison of Booch and Rumbaugh methodologies.

REFERENCE BOOKS:

1. Grady Hooch, "object Oriented Analysis and Design", The Benjamin/Gum publishing company, second edition, 1994.
2. James Rumbaugh, Micheal Blaha, William Premerlani, Fredrick Eddy and William Zorensen, "Object Oriented Modeling and Design" Prentice Hall,inc., 1991.

2KSS65 DATA BASE MANAGEMENT SYSTEM

SUBJECT DESCRIPTION : This course presents the different types of data models and it explain the issues of each type.

GOALS : To enable the student to learn the network, hierarchical and relational model of DB. Also he can learn how to maintain the security.

OBJECTIVES : On successful completion of the course the students should have
Leant the different models of DB.
Understood the pros & cons of different models.

UNIT I

Purpose of database systems, Data abstraction, Data models, Instances and schemes - Data independence, Data definition language, Data manipulation language - Database manager. Database administrator - Database users. Over all system structure. E-R Model - E-R diagram, Reducing E-R diagram to tables - Relational algebra - Tuple and domain relational calculus - Modifying the database. -

UNIT II

Relational model - Structure of relational databases - The relational algebra - Tuple and domain relational calculus — Modifying the databases.

Relational commercial languages - SQL - Query-by-example , Query - integrity constraints - Domain constraints - Referential integrity - Functional dependencies - Assertions - Triggers.

UNIT III

Relational database design - Pitfalls in relational database design - Normalization using functional dependencies - Normalization using multivolume dependencies, join dependelwies. Domain-key normal form, mapping relational data to files data dictionary storage. Buffer management.

UNIT IV

Network data model - DBTG set construct and restrictions, Expressing M:N relationship DBTG, cycles in DBTG, Data description in the network model, Scheme and subschema, DRIG Data manipulation facility, Data base manipulation. Mapping network to files. Hierarchical data model - Tree concepts, Hierarchical Data model, Data definition, Data manipulation, updates, Implementation of the hierarchical data base, Additional features of the hierarchical DML, Mapping hierarchies to files.

UNIT V

Data base security, Integrity and control - Security and integrity threads - Defence mechanism security specification in SQL, Statistical database.

Case study of database design.

REFERENCE BOOKS:

1. Abraham Siberschatz, Henrey F.Korth and S.Sundarshan, “Database system concepts”, McGraw Hill Inc., 1997.
2. Bipin C.Desai, “An introduction to database systems”, West Publishing Company, 1990.

2KSS66 WINDOWS PROGRAMMING LAB

(a) Using SDK

- (i) Single Windows program (Message Box).
- (ii) Using Get message () function loop.
- (iii) Using Windows procedure is handle messages.
- (iv) Multiple Message queues.

(b) Using MFC

- (i) Simple program to display window.
- (ii) Using menus and menu clan.
- (iii) Drawing and graphics.
- (iv) Child and parent windows.
- (v) Dialog Boxes and controls (Model & Modeless)
- (vi) Document view programming.
- (vii) A simple single document Interface (SD) program.
- (viii) A simple Multi document Interface (MDI) program.
- (ix) Printing and print preview.

2KSS67 RDBMS AND FRONT END TOOLS LAB

Data types - Constants - Scalar operators & functions - Assignment and Comparisons - Data - Definition - Data manipulations - Retrieval, Update operations - SQL Extensions - Catalogue - Views Security and Authorization - Integrity - Transaction Processing Data Work Bench - SQL Interfaces - DB Library and Open Client - Embedded SQL - Dynamic SQL - APT.

A Package is to be developed using SYBASE/ORACLE as the Back-end and with the suitable front-end tool by the students and to be submitted for valuation at the end of the semester.

2KSS68 COMPILER DESIGN LAB

Creation of symbol table, Scanner, Simple parser.
Implementing a simple Code Generation algorithm.

VII SEMESTER PROJECT WORK

VIII SEMESTER 2KSS8I MODERN COMMUNICATION TECHNOLOGY

SUBJECT DESCRIPTION : This course presents the components of communication systems and explaining how the audio, video & text data can be transmitted.

GOALS : To enable the students to learn the basic functions, principles and concepts of modern communication technology.

OBJECTIVES : On successful completion of the course the students should have
Understood the evolution of network
Learnt the modern trends in communication technology

UNIT I

Network Evolution - The ISDN-basic rate ISDN customer's - Interfaces - The Customer's Installation layer I , 2, 3.

UNIT II

Primary rate ISDN access -frame mode sources - ISDN Customer promises equipment-applications.

UNIT III (Book - 3)

B-ISDN Protocol reference model - ATM function and layers - ATM signaling principles - Performance - Merging - Voice -Audio ,Data and video - ATM traffic control - ATM reference configuration - Models ATM protocol stack - ATM layer - ATM switching principles, ATM services - ATM OAM functions, Signaling ATM technology components - Upper layer - ATM adapt2 lion layer function - ATM service.

UNIT IV (BOOK 2)

Modem communication - Fundamental function of information handling - Various faces of modern communication system - Compilation M.C.S

UNIT V

Components of modem communication system - Business communication - Mobile communication services - VAN - Construction of global infrastructure

REFERENCE BOOKS:

1. John M.Griffiths, "ISDN explained", 2nd edition, March 95, John wiley & Sons.
2. Koji Kobayashi, "Computers and communications", the mid press (a version of c and c) 1986.
3. J. Walter J. Goraiski, "Introduction to ATM Networking", McGraw Hill, inc

2KSS82 INTERNET AND JAVA PROGRAMMING

SUBJECT DESCRIPTION : This course presents the features of internet and java programming.

GOALS : To enable the student to learn how to establish a internet and the features of Java.

OBJECTIVES : On successful completion of the course the students should have
Leant the facilities of internet.
Capacity of developing a programming in Java.

UNIT I

Introduction - Objectives - Network - *DNS* - Clientserver model - E mail - Fingeer & Talk - USENET - Newsgroups - GOPHER - GOPHER menu -Browsing the gopher space — TELNET, FTP, ARCI-III, WA IS.

UNIT II

WWW - Hypertext - HTTP - URL - HTML - SCML - HTML programming.

UNIT III

Java programming - introduction to java - Instant recognition - Object oriented language - JAVA environment - Comparing Java & C -Program structure - Keywords and operators - Identifiers - Literals -Expressions - Control Flow - Arrays & strings - Functions - Command like Arguments - Features removed from C.

UNIT IV

Java Vs C++ - Object oriented programming - Classes - Definition - Data members - Access specifics - Methods - Overloading constructors - Class Assignment - This - Static members & methods - RMI - inheritance - Abstract classes & virtual functions - Exceptions - Features omitted from C++

UNIT V

The Java standard library - Overview - Packages - Interfaces - Multi threading - AWT -Hot java, Applet & java script.

REFERENCE BOOKS:

1. **Keiko Pitter, Sara Amatco**, John Callaban, Nigel kerr, Fric Tilton, “Every Student’s guide to internet”, McGraw Hill, 1995.
2. Michael C. Daconta, “Ja’ia for C & C++ programmers”, John Wiley Sons, inc. 1996.

2KSS83 SOFTWARE PROJECT MANAGEMENT

SUBJECT DESCRIPTION : This course presents overview of project planning, different methods of software development and explain the evaluation & estimation of project.

GOALS : To enable the student to learn how to develop a software for an application.

OBJECTIVES : On successful completion of the course the students should have
Leant the software project design process.
Learnt the evaluation & estimation of software project.

UNIT I

Introduction - Software projects - Various other types of projects - Problems with software projects - An overview of project planning - Project evaluation - Project analysis an technical planning - Software estimation.

UNIT II

Activity planning - Project schedules - Sequencing and scheduling projects - Network planning model - Shortening project duration - Identifying critical activities,.

UNIT III

Risk management - Resource allocation - Monitoring and control - Managing people and organizing teams - Planning for small projects.

UNIT IV

Software configuration management - Basic functions - Responsibilities - standards - Configuration management - Prototyping - Models of prototyping.

UNIT V

Case study - PRINCE Project management.

REFERENCE BOOKS:

1. Mike Cotterell, Bob Hughes, "Software Project Management", Inclination Thomas Computer Press,
2. Darrel Ince. H.Sharp and M.Woodman. "Introduction to Software Project Management and Quality Assurance", Tate McGraw-Hill, 1995.

2KSS86 SOFTWARE DEVELOPMENT LAB

1. Advanced distributed applications using MFC on Windows NT.
2. Advanced Java Applets, Beans and applications.
3. Development of on-line systems using RDBMS (Oracle).

2KSS87 INTERNET AND JAVA PROGRAMMING LAB

1. Using Internet utilities. TELNET, FTP, E-MAIL.
2. HTML Programmers using tags.
 - (a) Simple web page.
 - (b) Hyper linked web page. `<A>`
 - (c) Web page with image `<IMG SRC`
 - (d) Web page with applet `<APPLET>`
 - (e) Web page with table `<TB>`
3. Java programs.
 1. Program to create a simple applet and application.
 2. Using Java classes and objects.
 3. Using java inheritance and interface.
 4. Using arrays in java.
 5. Using exceptions.
 6. Using threads(Synchronization, communication, critical Section)
 7. Program using AWT package: Windows, controls and message layout managers.
 8. Using package.net
 9. Using I/O package .10 (files and streams).

IX SEMESTER
2KSS91 PRINCIPLES OF MANAGEMENT AND MARKETING

SUBJECT DESCRIPTION : This course presents the principles and concepts of management and marketing.

GOALS : To enable the students to learn the basic functions of management concepts of management and marketing.

OBJECTIVES : To acquire the knowledge regarding the concepts and functions of management and to develop and understanding of the applications of management & principles in various organizations.

UNIT I

Management and administration -Evaluation of management through, scientific management and modern administrative management -Management process.

Planning:

Steps in planning process- Types of plans and planning premises objectives- Characteristics and hierarchy of objectives - Management by objectives (MBO).

UNIT II

Organizing:

Formal Organization theory. Acceptance theory of organization - Bases of departmentation - Span of control.

Staffing:

Recruitment and selection — Training and development.

UNIT III

Directing:

Principles of direction - Elements of direction- Motivation - Leadership and communication. Controlling. Controlling Process - traditional and modern controlling techniques (Budgeting control. CPM/PERT).

UNIT IV

Marketing:

Marketing concepts - Modern Marketing - Marketing and selling - Market segmentation and forecasting market demand.

New product development - Product life cycle - Brands, Pack again and other product features.

UNIT V

Management strategies and policies - Channels of marketing Procedure and methods.

REFERENCE BOOKS:

1. Koonth and Weihrich ,“Management”, McGraw -Hill,1988

2KSS92 SOFTWARE QUALITY ASSURANCE

SUBJECT DESCRIPTION : This course presents how to prepare a equality software for an applications & describing the factors to be considered for developing a software.

GOALS : To enable the students to improve the software development skill.

OBJECTIVES :

Understood the factors to be considered for quality software.

Learnt the way of preparing quality software with zero error.

UNIT I

Introduction - Quality and the quality system - Standards aid procedures - Technical activities.

Software Tasks - Management responsibility - Quality system - Contract Review - Design control -Document control - Purchasing - Product identification and trace ability.

UNIT II

Process control - and checking - Identification of Testing Tolls - Control of non-informing product - Corrective action.

UNIT III

Handling. Storage, Packaging and delivery -Quality records - Internal Quality Audits - Training -Servicing - Statistical Techniques.

UNIT IV

QA and New technologies - QA and Human - Computer Interface - Process Modeling - Standards and procedures.

UNIT V

ISO 9001 - Elements of ISO 9001 - Improving Quality system - Case study.

TEXT BOOKS:

1. Darrel Ince, "An introduction to S/W Quality Assurance its Implementation", McGraw Hill Book Company Ltd. 1994.
2. Darrel Ince, "ISO 9001 and S/W Quality Assurance". McGraw- Hill Book company Ltd, 1994.

2KSS93 SOFTWARE TESTING

Subject Description :

This course provides principles of Software Testing and about tools.

Goals:

To enable the students to learn about the principle and tools of Software testing.

Objectives :

On successful completion of the course the students must have

- understood the concepts of Software testing
- got the skill of software testing
- exposed to software testing tools.

Content

UNIT I

Purpose of Software testing – Some Dichotomies – a model for testing – Playing pool and consulting oracles – Is complete testing possible – The Consequence of bugs – Taxonomy of Bugs.

UNIT II

Software testing Fundamentals – Test case Design – Introduction of Black Box Testing and White Box testing – Flow Graphs and Path testing – Path testing Basics - Predicates, Path Predicates and Achievable Paths - Path Sensitizing – Path Instrumentation – Implementation and Application of Path Testing.

UNIT III

Transaction Flow testing – Transaction Flows – techniques – Implementation Comments – Data Flow Testing – Basics – Strategies – Applications, Tools and effectiveness – Syntax Testing – Why, What, How – Grammar for formats – Implementation – Tips.

UNIT IV

Logic Based Testing – Motivational Overview – Decision tables – Path Expressions – KV Charts – Specifications – States, State Graphs and transition Testing – State Graphs – Good & bad states – state testing Metrics and Complexity.

UNIT V

Testing GUIs – Testing Client – Server Architecture – Testing for Real-time System – A Strategic Approach to Software testing – issues – unit testing – Integration Testing – Validation testing – System testing – The art of Debugging.

REFERENCES :

1. Boris Beizer, Software testing techniques, Dreamtech Press, Second Edition – 2003.
2. Myers and Glenford.J., The Art of Software Testing, John-Wiley & Sons,1979
3. Roger.S.Pressman, Software Engineering – A Practitioner’s Approach ,Mc-Graw Hill, 5th edition, 2001
4. Marnie.L. Hutcheson, Software Testing Fundamentals, Wiley-India,2007

2KSS96 SOFTWARE QUALITY ASSURANCE (LAB)

List of experiments should be given below:

1. CODING
2. TESTING
 - a. MODULE
 - b. OTHER TESTING PROCESS.
3. DOCUMENTATION.
 - a. VARIOUS DOCUMENTATIONS
4. CASE STUDY.
 - a. WINDOWS NT.

2KSS97 SOFTWARE TESTING LAB

Running and testing in any one of the following Testing tools :

- WinRunner
- Silk Test
- SQA Robot
- LoadRunner
- JMeter
- TestDirector
- GNU Tools (Source Code Testing Utilities in Unix / Linux)
- Quick Test Professional

REFERENCE :

Dr.K.V.K.K.Prasad, Software Testing Tools, Dreamtech Press, 2007

**X SEMESTER
PROJECT WORK**

GROUP A (ELECTIVE I AND II)
E.1 PRINCIPLES OF PROGRAMMING LANGUAGES

SUBJECT DESCRIPTION : This course presents the principles of programming language, explaining the concepts of structured object oriented & concurrent programming.

GOALS : To enable the students to learn the elements of programming language and the principles to be followed during the development of programming.

OBJECTIVES :

Understood the basic principles of programming languages learnt the problem solving techniques.

UNIT I

The role of structure in programming Von Neumann machine syntactic Structure - Organization of language -Description. Elements of a programming language - Introduction to ML.

UNIT II

Programming with assignments. The effect of an assignment structured programming. Data types in Modula-2, control flow in Modula - 2. C.Type names and type equivalence.

UNIT III

Procedure activations- Parameter passing methods - Macro expansion - Activation trees- Lexicon scope in C - Dangling pointers - Tail - Recursion elimination

UNIT IV

Data encapsulation - Constructs for program structuring - Information hiding and program development. Data invariants. Classes in C++ Header files - Constructors for automatic initialization. Derived classes. The Smalltalk and C---.

UNIT V

Concurrent programming implicit synchronization - The pipe construct concurrency as interleaving.

REFERENCE BOOKS:

1. Ravi Sethi, "Programming Languages concepts and constructs", Addison Wesley 1990.
2. Doris Apply, "Programming Languages", paradigm and practice, McGraw Hill, 1991.

E.2 NEURAL NETWORKS

SUBJECT DESCRIPTION : This course presents the concepts of neural network.

GOALS : To enable the student to learn the features of neurons & the elements of neural networks.

OBJECTIVES : On successful completion of the course the students should have
Learnt the basis of neural network.

UNIT-I: INTRODUCTION

Humans and Computers, the structure of the brain, Learning in machines, the differences. Pattern Recognition: Introduction, Pattern recognition in perspective, Pattern recognition - A definition, Feature vectors and feature space, Discriminate functions, Classification techniques. Linear classifiers. Statistical techniques. Pattern recognition - A summary

UNIT-II; THE BASIC NEURON

Introduction: Modeling the single neuron, Learning in simple neurons, The perception: A vertical perspective, The perception learning rule, Proof, Limitations of perceptions.

THE MULTILAYER PERCEPTION

Introduction, Altering the perception model, The new model, The new learning rule, The multilayer perception algorithm, The XOR problem reverted, Visualising network behavior, Multilayer perceptions as classifiers, Generalization, Fault tolerance, Learning difficulties radial basis functions, Applications.

UNIT-III: KOHENEN SELF-ORGANISING NETWORKS

Introduction, the Kohonen algorithm. Weight training, Neighborhoods, Reducing the neighborhood, Learning vector quantization, the phonetic type writer.

UNIT-IV: HOPFIELD NETWORKS

The Hopfield model, the energy landscape, The Boltzman machine, Constraint satisfaction.

ADAPTIVE RESONANCE MEMORY

Adaptive resonance theory, Architecture and operation, ART algorithm, Training the ART Network, Clarification, Conclusion, Summary of ART.

UNIT-V: ASSOCIATIVE MEMORY

Standard Computer memory, Implementing associative memory, Implementation in RAMs, FAMS & n-tupling, Willshaw's associative networks.

REFERENCE BOOKS:

1. P. D. Washerman, "Neural computing", Theory & Practice 1989, van Nostrand Reinhold
2. R. Beale & T. Jackson. "Neural Computing: An Introduction", Adam Huger. 1990.
3. Pao Y.H. "Adaptive pattern recognition and neural networks", Addison Wesley, 1989.

E.3 SECURITY IN COMPUTING

SUBJECT DESCRIPTION : This course presents the necessity of security in computing and it explains the different levels of security.

GOALS : To learn the fundamentals of security in computing, how to design a secure OS & the different levels of security.

OBJECTIVES : On successful completion of the course the students should have
Learnt the way of establishing security in computing.

UNIT I

Introduction: Security problem in computing - Kinds of security breaches- People involved
Methods of defence - Plane of attack. Encryption and Decryption:
Terminologies and Background - Methods - Monoalphabetic sub ciphers - Polialphabetic sub ciphers-Transpositions - Fractions mores code - Stream and block ciphers - Characteristics of good ciphers - Role of cryptanalyst,

UNIT II

Secure encryption systems:NP complete problems - Properties of Arithmetic - Public key systems - Merkle- Hell man knapsacks - Rivest - shamir - Add man encryption - Single key systems - Data Encryption standard - Uses of encryption - Enhance cryptographic security.

UNIT III

Security involving programs: Information alless problems - Service problems - Program development controls against. Program attacks - Os control on use of program - Administrative controls. Protection services: Security methods of OS - Memory and addressing - File protecting mechanisms - User authentication.

UNIT IV

Design of secure OS: Models of securities -Separation/Isolation, Kernel, Layered **design**, Ring structured - Penetration of OS - Classification of secure OS – examples..

UNIT V

Levels of security: Data base security - Personal computer security - Computer network security - Communications security.

REFERENCE BOOKS:

I. Charles P. Pfleeger. “Security in Computing”, Prentice Hall Pvt.Ltd 1989.

E.4 ARTIFICIAL. INTELLIGENCE AND EXPERT SYSTEMS

SUBJECT DESCRIPTION : This course presents the basis of AI and its applications.

GOALS : To enable the students to learn the concept of AI and how this can be used to solve the problem.

OBJECTIVES :

On successful completion of the course the students should have

Understood the concept of AI

Learnt the problem solving techniques that are available in AI.

UNIT I

Introduction to Artificial Intelligence (AI): Computerized reasoning - Artificial Intelligence - Characteristics of an AI problem - Problems representation in AI - State space representation — Problem reduction.

UNIT II

Search process: AI and search process - Brute force search techniques. hill climbing - Best inst - - Beam search - Constraint satisfaction.

UNIT III

AI and game playing - Major components of game playing program - plausible move generator - Static evaluation - Function generator - Minimax strategy - Alpha-beta techniques - Problems on computer game playing program.

UNIT IV

Knowledge Representation: Logic ,propositional logic - Tautology - Contradiction and contingencies - Normal form - Predicate logic - Form - Rules of inference - Resolution - Unification algorithm.

UNIT V

Introduction to EXPERT SYSTEM: Definition - Characteristics, Architecture and descriptions of various modules. Knowledge engineering - Expert system life cycle - Difficulties in knowledge acquisition - Knowledge acquisition - strategies - Expert systems - Major application areas.
Qualitative study of expert system like DENDRAL, MYCIN and RI

REFERENCE BOOKS:

1. Dr. K. Sarukesi and Dr. V. Janakiraman, "Foundation of Artificial Intelligence & Expert System", Macmillan Ltd., 1993.
2. Elaine Rich and Kevin Knight, "Artificial Intelligence, TMH, 1991.
3. Donald A Waterman, "Building Expert System", 1986.

E.5 MODELING LANGUAGES AND APPLICATIONS

SUBJECT DESCRIPTION : This course presents how one can design a web page using HTML, SCRIPT and XML..

GOALS : To enable the students to design a web page.

OBJECTIVES :

On successful completion of the course the students should have
Understood facilities available for web design
Knowledge of web page design.

UNIT I

WEB PUBLISHING: A melding of Technologies - Setting up an Extensible Web Publishing Frame *Work*.

THE WEB PUBLISHING FOUNDATION: The function of HTML in Contemporary Web Publishing - Basic Structural Elements and their usage- Traditional Text and Formatting - Style Sheets Formatting for the future - Using Tables for Organization and layout.

UNIT II

CLIENT-SIDE SCRIPTING: Scripting basics - Client - side Image Maps - Introduction JAVA Script - Creating Simple JAVA Scripts - Using JAVA Script for forms- Using JAVA Script with Style Sheets.

UNIT III

Merging Multimedia, Controls and plug ins in HTML- Dynamic HTML pages- Manipulating objects and responding to user interaction.

UNIT IV

Text formatters & SCTML - Formatting markup- Generalized markup Beyond HTML - Database publishing - Electronic Commerce - Meta data - the goal - Elements - Entities - markup - Document types - Hyper linking addressing - Style sheets - XML Tools - XMC Targons.

UNIT V

Personalized Website - XML and EDI - Supply - Chain integration -Natural language translation

REFERENCE BOOKS:

1. Shelley Powel, "Dynamic Web Publishing" Tech Media, 1998
The XML HandBook, Charles F Goldforb, Paul prescod, Addison Wesley 1998.

E.6 PC TESTING & TROUBLE SHOOTING

SUBJECT DESCRIPTION : This course presents the basis components of computer and explaining the trouble shooting techniques for the basic problems.

GOALS : To enable the students to assemble a computer and to create the skill for solving the basic problems that arise in the computer.

OBJECTIVES :

On successful completion of the course the students should have the knowledge about Computer and its troubleshooting techniques.

UNIT-I

Personal Computer-Introduction-PC System-Personal Computer System; Functional Blocks-Study of PC Configurations- System Unit; Display Unit; Keyboard-Inside PC-Motherboard; BIOS; CMOS-RAM-Motherboard types; Processors -Chipsets; USB On-Board Memory-PC's Memory Organization-Memory packaging; I/O Ports; USB Port.

UNIT-II

Floppy Disk Drive and Controller-Hard Disk Drive and Controller-Formatting a hard disk-MMX - Multimedia Extensions-Installing of typical software-Study of debug utility and debugging.

UNIT-III

Input Devices-Keybaord; Mouse; Scanner-Digitizer; Digital Camera-Monitors and Display Adapters-Display; Video Basics; VGA Monitors-Digital Display technology; CRT Controller; Graphics cards.

UNIT-IV

Output Devices-Dot matrix printer; Printer controller-Laser Printer; Inkjet printer-Computer Installation-Power supply-PC Installation -Assembling of PC for a given configuration-Identification of cards and systems-Study and usage of diagnostic software.

UNIT-V

Troubleshooting and Servicing-POST; Trouble shooting the Motherboard-Trouble shooting the Keyboard-Trouble shooting the disk Devices-Trouble shooting the Printer Identification of faulty cards through modular diagnosis approach-Maintenance Cleaning of viruses through software-Diagnostic Software's; Data Security-Data recovery through Norton disk doctor-Computer and Communication-Networking Modem; Internet.

Reference Books:

- A. D.Balasubramanian, "*Computer Installation and servicing*", 2nd Edition, 2010.
- B. Govindarajalu, "*IBM PC and Clones*", Tata McGraw Hill, 2nd Edition, 2002.

**GROUP B [ELECTIVE III AND IV]
E.7 MULTIMEDIA AND APPLICATIONS**

SUBJECT DESCRIPTION : This course presents the basis principles of multimedia and explain the features of multimedia.

GOALS : To learn the features of multimedia.

OBJECTIVES :

On successful completion of the course the students should have Understood the concepts of multimedia.

Learnt the multimedia communication.

UNIT I

Uses of Multimedia information: Multimedia and personalizes computing, multimedia systems the challenges. Architectures and issued for distributed multimedia systems: Synchronization, Orchestration, and QOS architecture - The role of standard, a framework for multimedia systems. Digital sound - Digital audio signal processing. Transmission of digital sound - Digital audio signal processing, Digital music making - Brief survey of speech recognition and regeneration - Digital audio and the computer. Video technology: Raster scanning principles - Sensors for TV Cameras - Color fundamentals - Video performance measurements - Analog video artifacts - Video equipments - Worldwide television standards.

UNIT II

Digital video and image compression: Evaluating a compression system - Redundancy and visibility - Video compression techniques - The IPEG image compression standard - The MPEG notion video compression standard - DVI technology, Multimedia information systems - Middle ware system services, Architecture - Goals of Multimedia system service architecture - Media stream protocol - Multimedia device presentation service and user interface.

UNIT III

Multimedia file systems and information models The case of multimedia information systems - File system support for continuous media - Data-models for multimedia And hypermedia information Multimedia presentation and authoring Current state of industry - Design paradigms and user interface - Barriers to widespread use.

UNIT IV

Multimedia Communications systems Multimedia services over public network : Requirements, Architecture and Protocols - Functions - Network services - Network protocols - Multimedia range : Quick Time Movie File (QMK) format - MHEG (Multimedia and hypermedia Information Encoding Expert Group) - Format function and representation summary - Real-time interchange - Multimedia conferencing : Teleconferencing systems - Requirements for multimedia communications - Shared application architectures and embedded distributed objects - Multimedia conferencing architectures.

UNIT V

Multimedia group ware : Schemes and design approaches - Architecture of team workstation - Experimental use of team workstation - Nomenclature - Video versus computing - HDTV, ATU, EDTUVM. IDTV - Standardization issues - Knowledge based Multimedia systems - Problems facing multimedia systems - The anatomy of an intelligent systems.

REFERENCE BOOK :

I. John. F. Koegelbuford, "Multimedia Systems", 1994.

E.8 CLIENT SERVER ADMINISTRATION

SUBJECT DESCRIPTION : This course presents the client server administration explain the network connectivity and the features of windows NT.

GOALS : To learn the concept of client server architecture, how the windows NT can be installed.

OBJECTIVES :

On successful completion of the course the students should have Understood the features of client server administration.

Learn the features of Windows Nt.

UNIT I

Introduction to WINDOWS NT - Architecture - Memory architecture - Server and workstation - Installing WINDOWS NT - Installing Vs Upgrading - Booting multiple operating system - Planning WINDOWS NT installation - Graphical portions - Removing WINDOWS NT - Multiple user systems - User and user accounts - Groups -Network policies.

UNIT II

Configuring WINDOWS NT work stations - Control panel - System settings Telephony – Configuring hardware - Installing applications- Users specific settings - Registry - File storage - FAT - NTFS - Other file systems - Disk administration.

UNIT III

File and directory security - Planning - Sharing files and directories - NTFS : security - NT backup - Security model - Access control - customizing logon process - Automatic account lock out - Network component models - Network protocols - Interposes communications - Redirectors - Changing network settings.

UNIT IV

Network connectivity - NETWARE networks - NETWARE compatibility components - Aware programs - Trouble shooting - Work groups and domains - Network browsers - Remote access services - Point to point tunneling protocol - Remote access services - RAS security - RAS and Internet work.

UNIT V

WINDOWS NT application subsystem architecture - WIN32, DOS, VDM, WIN16, OS/2 - POSIX - booting WINDOWS NT -Local spaces -Boot configuration - Principles of trouble shooting - Computer hardware - WINDOWS NT boot process - A running WINDOWS NT environment - Resources.

REFERENCE BOOK :

I. Charles Perkins Mathew Strebe and James Chellis, “MSCE: NT workstation study Guide, BPB publications 1997 edition.

E.9 ARCHITECTURE OF UNIX AND WINDOWS

SUBJECT DESCRIPTION : This course presents the structure of unix operating system and the facilities available in unix and windows.

GOALS : To enable the students to learn the basic functions of unix and windows operating systems.

OBJECTIVES :

- On successful completion of the course the students should have
- Understood the functions of unix and windows OS.
- Learn the architecture of unix and windows OS.

UNIT I

UNIX System Structures - Kernel - Kernel Data Structures - mode - File structures - File system - Boot block - Super Block - mode Block - Data Block - Allocation of disk blocks. Processes - Stated and Transitions - System Boot and init processes - System memory, layout, Region, Pages and page Tables - U area - Kernel layout - content of a process - process address space manipulation - process creation and termination - Inter process Communication.

UNIT II

Memory Management - Swapping - Allocation of swap space - file swap - Demand paging - Data structures for demand paging - Swap process in and out - Page stealed process - Page aging and page fault.

UNIT III

Starting-up and Shutting down Windows - WIN.COM - Loading up the Slow boot - User initialization - Load windows - Shutting down user exiting kernel.

UNIT IV

Memory Management - Two kinds of heaps - Memory attributes - Selector functions - Global heap - Components - Segment attributes global heap functions - Local heap - Windows Address space. **UNIT V**

Process - Modules and tasks - Load module - Loading a second instance of and EXE or DLL - The Application start - Up code - Application shut down - Windows scheduler - Windows Messaging system.

REFERENCE BOOKS :

1. Maurice J. Bach, "Design of the UNIX Operating System", Prentice Hall of India, 1994.
2. Man Pie trek, "Windows Internals", Addison Wesley, 1993.

E.10 MODELLING AND SIMULATION

SUBJECT DESCRIPTION : This course presents the principles of modern technique and explaining how this can be used to solve the problem when the problem is beyond the scope of mathematics.

GOALS : To enable the students to create the skill of simulating the problem

OBJECTIVES :

- On successful completion of the course the students should have
- Understood the simulating techniques
- Learnt how simulation can be used for real time problems.

UNIT I

Principle of computer modeling and simulation, Monte Carlo simulation. Nature of computer modeling and simulation. Limitations of simulation, areas of application. System and environment - Components of a system - Discrete and continuous systems. Models of a system - A variety of modeling approaches.

UNIT II

Random number generation, Technique for generating random numbers - Midsquare method - The midproduct method - Constant multiplier technique - Additive congruencies method - Linear congruencies method - Tauswarthe method - Tests for random numbers - The Kolmogorov Smirnov test - The Chi-square test. Random Variable generation - Inverse transform technique - Exponential distribution - Uniform distribution - Weibull distribution, Empirical
Continuous distribution – Generating approximate normal variates - Erlang distribution.

UNIT III

Empirical Discrete distribution - Discrete Uniform distribution - Poisson distribution - Geometric distribution - Acceptance - Rejection technique for poisson distribution - Gamma distribution.

UNIT IV

Design and evaluation of simulation experiments - Input - Variance reduction technique - Antithetic variables - Verification simulation models. Discrete event simulation - Concepts simulation, Manual simulation using event scheduling, Single server queue. Simulation of inventory problem.

UNIT V

Output analysis - and validation of in discrete-event channel queue, two
Simulation languages - GPSS - SIMSCRIPT - SIMULA - SIMPLE 1, Programming for Discrete event systems in GPSS, SIMPLE 1 and C.
Case study: Simulation of LAN - Manufacturing system - Hospital system.

REFERENCE BOOKS :

1. Jerry Banks and John S: Carson, II, “Discrete Event System Simulation”, Prentice Hall mc, 1984.
2. Narsingh Deo, “System Simulation with Digital Computer”, Prentice Hall of India, 1979.
3. Francis Neelamkovil, “Computer Simulation and Modeling”, John Wiley & sons, 1987.
4. Roth M. Davis and Robert M.O Keefe, “Simulation modeling with Pascal”, Prentice Hall Inc., 1989.
5. Averil M. Law and W. David Kelton, “Simulation Modeling and Analysis”, McGraw Hill International Editions, 1991.

E.11 TCP/IP NETWORKS

SUBJECT DESCRIPTION : This course presents the features of TCP /IP and explain the features different protocols.

GOALS : Learn the features of TCP / IP & SNMP etc protocols.

OBJECTIVES :

On successful completion of the course the students should have
Understood the routing mechanisms.
Learn the facilities available in TCP / IP.

UNIT I

Objectives-TCP/IP-TCP/IP Protocol suite-DOD networking model - OD protocols -
Addressing - Subletting a network - Mapping host names to IP addresses - Shooting trouble.

UNIT II

IP Routing - Applications - IP address resolution - Local resolution - Remote resolution - The
ARP cache - Host name resolution - Host naming hierarchy - Resolving host names -
NETBIOS naming - The name resolution process.

UNIT III

DHCP - DHCP lease renewal - Lease release - Making DHCP function - WINS
- WINS name registration -Implementation - Server configuration -Client configuration -
Database replication - Automated clean up - Maintaining the WINS database.

UNIT IV

Internet work browsing - Browser forms and functions - Criteria - Election - Announcements
- Cruising an inter network - Connectivity in heterogeneous environments - TCP/IP utilities -
The FTP server installation and configuration - Inter network printing - Presenting SNMP -
SNMP service - Planning and preparing for implementations - SNMP installation and
configuration.

UNIT V

Fine tuning and optimization - Performance tuning - Guidelines for optimizing performance -
NETBIOS traffic control - Shooting trouble -Tools for diagnosis - TCP/IP with WINDOWS
NT - DNS server - IP routing and filtering \V\TW services.

REFERENCE BOOKS:

1. Todd Lammie, "MCSE: TCP/IP Study Guide", Monica
2. LAMMLE and JAMES DRETHS. I3PB publications 1996 edition.

E.12 COMPONENT TECHNOLOGY

SUBJECT DESCRIPTION : This course presents the middle ware technologies that are available and explaining how this can be used for real time applications.

GOALS : To enable the students to learn the basic functions and concepts of COM, DCOM and CORBA.

OBJECTIVES :

On successful completion of the course the students should have
Understood the facilities available in component technology
Learnt how this can be used for real time application.

UNIT I

Information system - Analyzing the Scenario challenges - CORBA overview -
Concepts - Overview of CORBA IDL - IDL Tutorial Conversion of OO design to IDL -
IDL Guidelines - Overview of CORBA and Standard Object model - Architecture - Clients &

Object Implementation interface and implementation.

UNIT II

Language mapping - Portability and inter operability - OLE integration - CCRBA services -
Information Management Services - Task Management- System Management - Infrastructure
of Services.

UNIT III

Facilities and domains - horizontal - Vertical facilities - Leveraging the OMG Process -
Relationship with other technologies.

UNIT IV

The CORBA migration process - software Architecture - Applications Design using software
Architect ii

UNIT V

Migration case studies - Problem and Objective standard based Profile - Project context -
Business objects and Process - Interface migration.

REFERENCE BOOK:

I. Inside CORBA — Distributed Object Standards and Applications Thomas J. owtray,
William A. Roh. Addison Wesley 1999.

E.13 EMBEDDED SYSTEMS AND REAL TIME OPERATING SYSTEMS

SUBJECT DESCRIPTION : This course presents the fundamentals of hardware, concepts of RTOS and the tools available for RTOS.

GOALS : Learnt the functions of RTOS, features of tools.

OBJECTIVES :

On successful completion of the course the students should have
Understood the requirements of hardware & software for RTOS.
Learn the features of RTOS.

UNIT I: HARDWARE FUNDAMENTALS

Hardware Fundamentals : Terminology- Gates- Timing Diagrams-Memory. 4

Advanced Hardware Fundamentals : Microprocessors-Microprocessor architecture- Direct Memory Access- Conventions used on Schematics.

UNIT II: INTERRUPTS & SOFTWARE ARCHITECTURE

Interrupts : Interrupt Basics- Interrupt Service Routines.

Survey of software Architectures: Round Robin with Interrupts- Function-Queue- Scheduling Architecture- Real Time Operating Systems Architecture.

Introduction to Real Time Operating Systems - Selecting an RTOS- Tasks and Task States- Tasks and Data- Semaphores and Shared Data.

UNIT III : CONCEPTS OF RTOS

MORE Operating Systems Services: Interrupt PROCESS Communication- Message Queues, Mailboxes and Pipes - Timer Functions- Events-Memory Management-Interrupt Routines in an RTOS Environment.

Basic Design Using a Real Time Operating Systems: Principles- Encapsulating Semaphores and Queues-Hard Real Time Scheduling Considerations-Saving Memory Space and Power Introduction to RTL & QNX.

UNIT IV: SOFTWARE TOOLS

Embedded Software Development Tools: Hosts and Target Machines- Linker/Locators for Embedded Software —Getting Embedded Software into the Target Systems.

Debugging Techniques : Testing on your host Machine-instruction Set Simulators- The Assert Macro- Using Laboratory Tools.

UNIT V: CASE STUDY

Case Studies.

REFERENCE BOOK :

1. David.E.Simson, " An Embedded Software Primer", Addison-Wesley- 2001.

2. Darrel Ince,H.Sharp and.M.Woodman,"Introduction Softwarec Project Management and Quality Assurance", Tata McGraw-Hill, 1995.

Compulsory Diploma - I Diploma in Multimedia and Animation

Diploma I - Paper I - MULTIMEDIA

Subject Description: This Subject deals Multimedia Applications.

Goal: To learn about Multiple media and their technologies.

Objective: To inculcate knowledge on Media, Text, Image, Audio, Video, Animation etc.

UNIT-I: Introduction: Multimedia Presentation and Production – Characteristics of Multimedia Presentation – Multiple Media- Utilities of Multi-sensory Perception – Hardware and Software Requirements. **Digital Representation:** Analog Representation – Waves – Digital Representation – Need for Digital Representation – Analog to Digital Conversion – Digital to Analog Conversion. **Text:** Types of Text – Unicode Standard – Font – Insertion of Text – Text compression – File formats.

UNIT-II: Image: Image Types – Seeing Color – Color Models – Basic Steps for Image Processing – Scanner – Digital Camera – Interface Standards – Specification of Digital Images – CMS – Device Independent Color Models – Image Processing software – File Formats – Image Output on Monitor and Printer.

UNIT-III: Audio: Introduction – Acoustics – Nature of Sound Waves – Fundamental Characteristics of Sound – Microphone – Amplifier – Loudspeaker – Audio Mixer – Digital Audio – Synthesizers – MIDI – Basics of Staff Notation – Sound Card – Audio Transmission – Audio File formats and CODECs – Audio Recording Systems – Audio and Multimedia – Voice Recognition and Response - Audio Processing Software.

UNIT-IV: Video: Analog Video Camera – Transmission of Video Signals – Video Signal Formats – Television Broadcasting Standards – Digital Video – Digital Video Standards - PC Video – Video Recording Formats and Systems - Video File Formats and CODECs – Video Editing – Video Editing Software.

UNIT-V: Animation: Types of Animation – Computer Assisted Animation – Creating Movement – Principles of Animation – Some Techniques of Animation – Animation on the Web – Special Effects – Rendering Algorithms. **Compression:** MPEG-1 Audio – MPEG-1 Video - MPEG-2Audio – MPEG-2 Video.

TEXTBOOKS:

1. **PRINCIPLES OF MULTIMEDIA – Ranjan Parekh**, 2007, TMH.

(UNIT I: 1.1-1.6, 2.1-2.7, 4.1-4.7 UNIT-II: 5.1-5.16 UNIT-III: 7.1-7.4, 7.8-7.14, 7.18-7.20, 7.22, 7.24, 7.26-28 UNIT-IV: 8.1-8.12 UNIT-V: 9.5-9.10, 9.13, 9.15, 10.10-10.13)

REFERENCE BOOKS:

1. **MULTIMEDIA: Making it Work – Tay Vaughan**, 7th edition, TMH.
Comdex MULTIMEDIA AND WEB DESIGN – Vikas Gupta, DreamTech press.2007.

Diploma I - Paper II MULTIMEDIA LAB - PHOTOSHOP

PRACRICAL LIST

1. Create Sun Flower using Photoshop.
2. Create Water Drops using Photoshop.
3. Animate Plane Flying the Clouds using Photoshop.
4. Create Plastic Surgery for Nose using Photoshop.
5. Create Mouse using Photoshop.
6. Create See thru text using Photoshop.
7. Create Military Clothe using Photoshop.
8. Create Stone Texture using Photoshop.
9. Create Rollover Buttons using Photoshop.
10. Create Realistic Stone Structure using Photoshop.
11. Create Web Page using Photoshop.
12. Convert Black and White to Color Photo using Photoshop.

REFERENCE BOOKS:

1. **PHOTOSHOP CS2 BIBLE** – Deke McClelland & Laurie Ulrich Fuller, Wiley India.
2. **Comdex MULTIMEDIA AND WEB DESIGN** – Vikas Gupta, DreamTech press, 2007.

Diploma I - Paper III ANIMATION TECHNIQUES

Subject Description: This Subject deals with the Animation Techniques.

Goal: To learn about Animation.

Objective: On Successful Completion of this subject the students should have:

- 2D & 3D Animation, Script Animation, Motion Caption, Audio & Video Format etc.

UNIT-I: What is mean by Animation – Why we need Animation – Types of Animation 2D & 3D – Theory of 2D Animation – Theory of 3D Animation – Difference between Graphics & Animation – Application of 2D & 3D Animation – History of Animation – Software's.

UNIT-II: Traditional 2D Animation Concept – Types of 2D Animation – Techniques of 2D Animation – Color – Text – Formation – Size – Script Animation – Time Line Effects – Application of 2D Animation – Characterization 2D – Principle of 2D Animation – Concept Development.

UNIT-III: 3D Animation & its Concepts – Types of 3D Animation – Cycle & Non-Cycle Animation – Theory of Character 3D Animation – 3D Transition Animation – Skeleton & Kinetic 3D Animation – Texturing & Lighting of 3D Animation – 3D Camera Tracking – Applications & Software of 3D Animation.

UNIT-IV: Motion Caption – Formats – Methods – Usages – Motion Capture Software – Merge with Software – Expression – Formats – Methods – Usages – Expression Capture Softwares – Script Animation Usage – Different Language of Script Animation Among the Software.

UNIT-V: Concept Development – Scripting – Story Developing – Output Formats – Audio Formats & Video Formats – Colors – Color Cycle – Color Formats – 3D Production Budgets – 3D Animated Movies – Fields in 3D Animation.

TEXT BOOK:

1. **MAYA 6.0 BIBLE - Joestadaro, Donkim.**
2. **3DS MAX BIBLE - Kelly Ldot, Murtock.**

REFERENCE BOOK:

1. **MAYA 8.0 THE COMPLETE REFERENCE - Tom Meade, Shinsaku Arima, TMH.**

Diploma I - Paper IV -ANIMATION LAB - FLASH

PRACTICAL LIST

1. Create Shapes and Drawings in Flash.
2. Change a Shape to Another Shape. (Shape Animation)
3. Create a Man to walk with the help of Key Frame Animation.
4. Draw a Bird with Flash tools and make it fly with key Frame Animation.
5. Change the Colors of an object with the help of Animation.
6. Animate a Ball with the help of Guide line Animation.(Path Animation)
7. Create a Shining Stores with the help of Movie Clip.
8. Create Buttons & Link with other Frames.
9. Create an Album with the help of Buttons.
10. Create a 3D Rotation of a Box with the Help of Shape Animation.
11. Create Morphing between two images in Flash.
12. Create a Simple game with the help of Action Script.

REFERENCE BOOKS:

1. **Flash 8 in Simple Steps – Shalini Gupta & Adity Gupta**, 2007, dreamtech.
2. **Flash 8 – Ethan Waterall & Norbert Herber**, dreamtech.

**COMPULSORY DIPLOMA – II
DIPLOMA IN WEB APPLICATIONS (DWA)**

PAPER I : Web DESIGNING

(for the candidates admitted during 2007-08 batch only)

Subject Title : Web Designing

Course Number:

Number of Instruction Hours: 3

No. of credits : 4

Subject Description

This Course presents the basics of Web designing.

Goals:

To enable the students to learn the Programming Languages for Web designing

Objectives :

On successful completion of the course the students should have:

- Understood the fundamentals of Web design and how to program using ASP and XML.

Contents

UNIT I

Basics of Web Technology: Web page creation- Scripting Language - HTML Tags – VBScript- JavaScript- Looping -Array handling -Functions and Procedures - Object creation - Validating Form Elements;

UNIT II

ASP : Active Server Pages- Server Side Scripting- Servers : IIS, PWS _ ASP Objects – Request- Response- Session- Server- Application objects- global.asa file - Cookies - External & Internal cookies.

UNIT III

ASP Components - Ad Rotator- Context Rotator- Browser Capability- Page counter - Server objects- Database connectivity - DSN -Retrieving information from table - Manipulating records in tables. Implementation of ASP concepts in .NET environment.

UNIT IV

XML :XML essentials - XML Documents - Valid Documents- Entities and attributes - Cascade Style Sheets - XML Scheme - Handling XML Documents and Data Binding.

UNIT IV

XML DOM - XSL Transformations - XSL Formatting Objects - XML and ASP- XML and Servlets - XML and Perl- WML

REFERENCE BOOKS:

1. Steven Holzner – “Inside XML “, 2000 Edition, Techmedia Publishers.
2. “Unleashed ASP”- Techmedia Publisher.
3. “Interactive VBScript” – Techmedia Publishers.

Diploma II - Paper II : WEB SERVICES

Subject Title : Web Services

Course Number:

Number of Instruction Hours: 3 Number of Credits : 4

Subject Description

This Course presents the Web Services Provided.

Goal : To enable the students to learn what is web service and Protocols used for Web services

Objective

On successful completion of the course the students should have:

- Understood how to build the real world applications using Web Services.

Contents

Unit I

Introduction to Web Services – Industry standards, Technologies and Concepts underlying Web Services – their support to Web Services, Applications that consume Web Services.

Unit II

XML – its choice for Web Services – Network protocols to backend databases – Technologies – SOAP, WSDL – exchange of information between applications in distributed environment – Locating remote Web Services – its access and usage, UDDI Specification – an introduction.

Unit III

A brief outline of Web Services – Conversation – static and interactive aspects of system interface and its implementation, Work Flow – Orchestration and refinement, Transactions, Security issues – the Common attacks – security attacks facilitated within Web services

Quality of Services – Architecting of systems to meet users requirement with respect to latency, performance, reliability, QOS metrics, Mobile and wireless Services – energy consumption, network bandwidth utilization, Portals and Services Management.

Unit – IV

Building real world Enterprise applications using Web Services – sample source codes to develop Web Services – Steps necessary to build and deploy Web Services and Client applications to meet Customer’s requirement – Easier development, Customisation, maintenance, Transactional requirements, seamless porting to multiple devices and platforms.

Unit – V

Development of Web Services and applications onto Tomcat application Server and Axis SOAP server (both are freewares) – Web Services Platform as a set of Enabling technologies for XML based distributed Computing.

REFERENCE BOOKS :

1. Sandeep Chatterjee, James Webber, “Developing Enterprise Web Services: An Architects Guide”, Prentice Hall, Nov 2003
2. Keith Ballinger, “NET Web services: Architecture and Implementation with .Net”, Pearson Education, First Education Feb 2003.
3. Ramesh Nagappan, Developing Java Web Services: Architecting and developing secure Web Services Using Java”, John Wiley and Sons, first Edition Feb 2003
4. Eric A Marks and Mark J Werrell, “Executive Guide to Web services”, John Wiley and sons, March 2003
5. Anne Thomas Manes, “Web Services: A managers Guide” Addison Wesley, June 2003.

Diploma II - Paper III : ASP. NET

Subject Title : ASP.NET

Course Number:

Number of Instruction Hours: 3 Number of Credits : 4

Subject Description

This Course presents the Introduction to ASP.NET programming.

Goals

To enable the students to learn what is ASP.NET fundamentals, Components & Web forms

Objective

On successful completion of the course the students should have:

- Understood how to build the applications using ASP.NET.

Contents

Unit I

Getting Setup - what is ASP.NET- Setting up for ASP.NET- The development environment – ASP & ASP.NET. An overview – ASP.NET Programming Languages. Programming Basics: Basics of Programming - Program Flow – Effective Coding Techniques –Designing Applications.

Unit II

How Dynamic Website Applications work- Processing ASP.NET with Visual basic. NET:VB.NET Programming Language Structures –Built in ASP.NET objects & Interactivity- The response object –The ASP Server object.

Unit III

Web forms & ASP.NET:

Web forms- ASP.NET Configuration, Scope and State: ASP.NET and configuration- ASP.NET and state –The application object –ASP sessions – The session object.

Unit IV

ASP.NET objects and components:

The Scripting Object Model- Active Server Components and Controls –More Active Server Components.

Unit V

Web services & ASP. NET –WSDL & SOAP- Web services Background – ASP.NET &SQL server- using SQL server –using databases in ASP.NET applications- ActiveX data objects- the ADO.NET objective model –coding structured query language.

REFERENCE BOOKS:

- 1.Dave Mercer, “ASP. NET A Beginner’s Guide”, Tata McGraw –Hill Pub. Company Ltd, 2002
- 2.Matt J. Couch, “ASP. NET and VB. NET Web programming “, Pearson Education, 2002.
- 3..Kirk Allen Evans, Ashwin Kamanna, Joel Mueller, “XML and ASP.NET”, Pearson Education, 2002.

Diploma II -Paper IV : ASP.NET PROGRAMMING LAB

Subject Title : ASP.NET PROGRAMMING LAB

Course Number:

Number of Instructional Hours:3 Number of Credits : 4

Subject Description

This course provides the introduction to .NET programming.

Goal :

To enable the students to learn about the development of web based applications using ASP.NET.

Objectives :

On successful completion of the course the students must have

- understood the basics of .NET programming
- got the skill of developing Web Applications
- knowledge to develop database applications in .NET environment.

REFERENCE BOOKS:

- 1.Dave Mercer, “ASP. NET A Beginner’s Guide”, Tata McGraw –Hill Pub. Company Ltd, 2002
- 2..‘Beginning ASP.NET 2.0’ by Chris Hart.

**M.Sc. DEGREE EXAMINATION
FIRST YEAR
SOFTWARE SYSTEM
MODEL QUESTION PAPERS
ALGEBRA AND CALCULUS**

Time : Three hours

Maximum : 75 marks

SECTION A - (10 x 1 = 10 marks)

1. Write down the expansion of $(1+x)^{-2}$, if $|x| < 1$.
2. Evaluate $1 + \frac{1}{2} + \left(\frac{1}{2}\right)^2 + \left(\frac{1}{2}\right)^3 + \dots$
3. Expand $\sin 6\theta$ in terms of $\sin \theta$ and $\cos \theta$.
4. If $x = \cos \theta + i \sin \theta$, write down the value of $x^n + \frac{1}{x^n}$.
5. For the curve $y = f(x)$ write down the formula for radius of curvature.
6. Define evaluate of a curve.
7. Evaluate $\int_0^1 \int_0^2 xy \, dx dy$.
8. Evaluate $\int_0^{\infty} x^3 e^{-x} dx$.
9. If $\vec{r} = x\vec{i} + y\vec{j} + z\vec{k}$ then find $\nabla \cdot \vec{r}$.
10. If $\vec{f} = xy\vec{i} + yz\vec{j} + zx\vec{k}$ find $\text{curl } \vec{f}$.

SECTION - B (5 x 5 = 25 Marks)

11. (a) Prove that $\left(\frac{1+x}{1-x}\right)^n = 1 + n\left(\frac{2x}{1+x}\right) + \frac{n(n+1)}{1.2}\left(\frac{2x}{1+x}\right)^2 + \dots$

Or

(b) Prove that if $n < 1$, $\frac{1}{1+n} + \frac{1}{2(1+n)^2} + \frac{1}{3(1+n)^3} + \dots \infty = \frac{1}{n} - \frac{1}{2n^2} + \frac{1}{3n^3} + \dots \infty$

12. (a) Prove that $\frac{\sin 6\theta}{\sin \theta} = 32 \cos^5 \theta - 35 \cos^3 \theta + 6 \cos \theta$.

Or

(b) If $\sin(x+iy) = r(\cos \alpha + i \sin \alpha)$ show that $2r^2 = \cosh 2y - \cos 2x$.

13. (a) Find the radius of curvature at any point of the curve $x = at^2$, $y = 2at$.

Or

(b) Find the maximum and minimum value of the function $x^5 - 5x^4 + 5x^3 + 10$.

14. (a) Evaluate $\int_D \int x^2 y^2 \, dx dy$ where D is the circular disc $x^2 + y^2 \leq 1$.

Or

(b) Prove that $\sqrt{(n+1)} = n!$.

15. (a) Find the constant a, b, c so that the vector

$\vec{f} = (x+2y+az)\vec{i} + (bx-3y-z)\vec{j} + (4x+cy+2z)\vec{k}$ is irrotational.

(b) If $\vec{F} = 3xy\vec{i} - 5z\vec{j} + 10x\vec{k}$ evaluate $\int_C \vec{F} \cdot d\vec{r}$ along the curve C, $x = t^2 + 1, y = 2t^2, z = t^3$ from $t = 1$ to $t = 2$.

SECTION – C (5 X 8 = 40 Marks)

16. (a) Sum the series to infinity $\frac{5}{3.6} + \frac{5.7}{3.6.9} + \frac{5.7.9}{3.6.9.12} + \dots$
Or

(b) Prove that $\frac{1^4}{1!} + \frac{2^4}{2!} + \frac{3^4}{4!} + \dots = 15e$

17. (a) Prove that $\cos^3 \theta \sin^4 \theta = \frac{1}{64} [\cos 7\theta - 3 \cos 5\theta - 3 \cos 3\theta + 3 \cos \theta]$
Or

(b) If $\sin(\theta + i\phi) = \tan \alpha + i \sec \alpha$ prove that $\cos 2\theta \cosh 2\phi = 3$.

18. (a) Find the radius of curvature at any point θ on the curve $r^2 = a^2 \cos 2\theta$.
Or

(b) Find the evolute of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$.

19. (a) Evaluate $\iiint_D xyz \, dx \, dy \, dz$ where D is the region bounded by the positive octant of the sphere $x^2 + y^2 + z^2 = a^2$.

(b) Prove that $\beta(m, n) = \frac{\Gamma(m) \Gamma(n)}{\Gamma(m+n)}$.

20. (a) Prove that

(i) $\text{grad } r^n = nr^{n-2} \vec{r}$.

(ii) $\text{div} \left(\frac{\vec{r}}{r} \right) = \frac{2}{r}$.

Or

(b) Verify Gauss divergence theorem for the vector function $\vec{f} = (x^3 - yz)\vec{i} - 2x^2y\vec{j} + 2\vec{k}$ over the cube bounded by $x = 0, y = 0, z = 0, x = a, y = a, z = a$.

NUMERICAL METHODS

Time : Three hours

Maximum : 75 marks

SECTION A - (10 x 1 = 10 marks)

1. The rank of $A \leq r$ if all minors of order $(r+1)$ are zero. (True / False)
2. Trapezoidal rule can be applied to any number of intervals. (True / False)
3. If a square matrix A of order n has n linearly independent Eigen vectors, then a matrix B can be found such that $B^{-1}AB$ is a diagonal matrix. (True / False)
4. The linear algebraic system of equations should possess diagonal dominance to solve it by using Gauss Elimination method. (True / False)

5. Eigen values of A^3 , where $A = \begin{pmatrix} 4 & 1 \\ 3 & 2 \end{pmatrix}$ are _____.

6. If α is interval of differencing, $\Delta \log x =$ _____.

7. Formula of Euler's method for solving the initial value problem

$$\frac{dy}{dx} = f(x, y), y(x_0) = y_0$$

8. The system of equations $x_1 + x_2 + x_3 = 0$, $x_1 + 2x_2 - x_3 = 0$, $2x_1 + x_2 + x_3 = 0$ possess _____

- (a) Trivial Solution Only (b) Non Trivial Solution

- (c) Infinite number of solutions (d) No Solution

9. One real root of the equation $\cos x = 3x - 1$ lies in between _____.

- (a) 0 and 0.5 (b) 0.5 and 1 (c) 1 and 2 (d) 2 and 3

10. Solution of the difference equation $y_{x+2} - 8y_{x+1} + 15y_x = 0$ is _____

- (a) $C_1 3^{-x} + C_2 5^{-x}$ (b) $C_1 2^x + C_2 5^x$ (c) $C_1 2^x + C_2 3^{-x}$ (d) $C_1 3^x + C_2 5^x$

SECTION B (5 X 12 = 60 MARKS)

11. (a) (i) Show that the equations $x + y + z = 6$, $x - y + 2z = 5$, $3x + y + z = 8$ and $2x - 2y + 3z = 7$ are consistent and solve them.

$$A = \begin{pmatrix} 1 & 2 & 1 & 0 \\ -2 & 4 & 3 & 0 \\ 1 & 0 & 2 & -8 \end{pmatrix}$$

- (ii) Find the rank of the matrix _____ by reducing into the canonical form.

- (b) (i) Find the eigen values and eigen vectors of the matrix.

$$A = \begin{pmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{pmatrix}$$

- (ii) Diagonalise the matrix.

$$A = \begin{pmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{pmatrix}$$

And hence find A^4 .

12. (a) (i) The following table gives corresponding values of x and y . Obtain an equation of the form $y = ax + bx^2$.

| | | | | | | |
|-----|-----|------|------|------|------|------|
| x : | 1.1 | 2.0 | 3.2 | 4.0 | 5.5 | 6.3 |
| y : | 5.3 | 14.2 | 30.1 | 43.8 | 77.3 | 97.8 |

- (ii) Solve the difference equation.

$$Y_{x+2} - 8y_{x+1} + 16y_x = 4^x.$$

(b) (i) The data given below will fit a formula of the type $y = a + bx + cx^2$. Find the formula using the method of least squares :

| | | | | | |
|-----|---|----|----|----|----|
| x : | 1 | 2 | 3 | 4 | 5 |
| y : | 5 | 12 | 26 | 60 | 97 |

(ii) If Δ , ∇ , ∂ denote the forward, backward and central difference operators and E, M are respectively the shift and averaging operators show that

$$(1) \quad 1 + \partial^2 \mu^2 = \left(1 + \frac{1}{2} \partial^2\right)$$

$$(2) \quad \Delta = \frac{1}{2} \partial^2 + \partial \sqrt{1 + \frac{\partial^2}{4}}$$

$$(3) \quad \mu \partial = \frac{1}{2} \Delta e^{-1} + \frac{1}{2} \Delta$$

13. (a) (i) The following are data from the steam table :

| | | | | | |
|-----------------------------------|-------|-------|-------|-------|--------|
| Temp.°C | 140 | 150 | 160 | 170 | 180 |
| Pressure (Kgf / cm ²) | 3.685 | 4.854 | 6.302 | 8.076 | 10.225 |

Using the Newton's formula, find the pressure of the steam for a temperature of 142°C.

(ii) From the following table of values of x and y, find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ for $r = 1.25$.

| | | | | | | | |
|-----|--------|--------|--------|--------|--------|--------|--------|
| x : | 1.00 | 1.05 | 1.10 | 1.15 | 1.20 | 1.25 | 1.30 |
| y : | 1.0000 | 1.0247 | 1.0488 | 1.0724 | 1.0954 | 1.1180 | 1.1402 |

Or

(b) (i) By means of Newton's divided difference formula, find the value of f(8) given :

| | | | | | | |
|--------|----|-----|-----|-----|------|------|
| x : | 4 | 5 | 7 | 10 | 11 | 13 |
| f(x) : | 48 | 100 | 294 | 900 | 1210 | 2028 |

(ii) A curve is drawn to pass through the points given by the following table :

| | | | | | | | |
|-----|---|-----|-----|-----|---|-----|-----|
| x : | 1 | 1.5 | 2.0 | 2.5 | 3 | 3.5 | 4.0 |
| Y : | 2 | 2.4 | 2.7 | 2.8 | 3 | 2.6 | 2.1 |

Find the area bounded by the curve, the x-axis and the lines $x = 1$, $y = 4$.

14. (a) (i) Find the real root of the equation $x^3 - 2x - 5 = 0$ which lies between 2 and 3 correct to 3 places of decimals.

(ii) Solve by Gauss-elimination method $3x + 4y + 5z = 18$, $2x - y + 8z = 13$, $5x - 2y + 7z = 20$.

(b) (i) Find an iterative formula to find the reciprocal of a given number N and hence find the

value of $\frac{1}{19}$.

(ii) Solve, by Gauss-Seidel method, the following system :

$$28x + 4y - z = 32$$

$$x + 3y + 10z = 24$$

$$2x + 17y + 4z = 35$$

15. (a) (i) Using modified Euler method, find $y(0.2)$, $y(0.1)$ given

$$\frac{dy}{dx} = x^2 + y^2, y(0) = 1$$

- (ii) Using Runge-Kutta method of fourth order, solve $\frac{dy}{dx} = \frac{y^2 - x^2}{y^2 + x^2}$ given $y(0) = 1$ at $x = 0.2, 0.4$.

Or

- (b) Determine the value of $y(0.4)$ using Milne's method given $y' = xy + y^2$, $y(0) = 1$. Use Taylor series to get the values of $y(0.1)$, $y(0.2)$ and $y(0.3)$.

**APPLIED PHYSICS
MODEL QUESTION PAPER**

Time : Three hours

Max. Marks:75

SECTION A (10 X 1 = 10 MARKS)

1. The most widely sold and used laser is
 - a. Ruby Laser
 - b. He-Ne Laser
 - c. CO₂ Laser
 - d. Rare Earth Chelate Laser
2. In a CO₂ laser N₂ is added as a
 - a. Carrier of excitation
 - b. Quenching gas
 - c. For higher gain
 - d. Sealing of laser
3. The critical temperature of mercury found by H.K. Onnes is
 - a. 422°K
 - b. 42.2°K
 - c. 4.2°K
 - d. 0.42°K.
4. Cooper pairs are responsible for
 - a. Breakdown of superconductivity
 - b. Meissner effect
 - c. Josephson effect
 - d. Ferromagnetism.
5. The energy of a free electron is
6. The unit of electrical conductivity is
 - a. ohm^{-m}
 - b. oh^{m-1 m-1}
 - c. ohm m⁻¹
 - d. ohm⁻¹ m.
7. The resistivity range of a semiconductor is
 - a. 10⁻³ to 10³ ohm-m
 - b. 10⁻³ to 10³ ohm-m⁻¹
 - c. 10⁻³ to 10⁻¹ ohm-m
 - d. 10⁻³ to 10⁻¹ ohm-m⁻¹
8. A pure crystal of silicon is
 - a. an extrinsic semiconductor
 - b. an intrinsic semiconductor
 - c. a super conductor
 - d. an insulator
9. Each time the hysteresis loop is traversed, energy equal to the area of the loop is
 - a. absorbed as heat
 - b. dissipated as heat
 - c. converted into electric current
 - d. none of the above.
10. Commercial iron is a
 - a. semi conductor
 - b. hard magnetic material
 - c. soft magnetic material
 - d. ferrite

SECTION B (5 x 5 = 25 MARKS)

11. (a) With neat energy level diagram explain laser action in CO₂ laser.

Or

- (b) A pulse with a width of 10 ms is injected into a fibre. At the opposite end of the fibre a pulse with a width of 12.5 ms emerges. Find the dispersion loss.

12. (a) Distinguish type-I and type-II superconductors.

Or

(b) Write a short note on high temperature super conductors.

13. (a) State and prove Weidmann-Franz law.

Or

(b) How do magnetic field and allowing affect the resistivity of a conductor?

14. (a) What do you mean by zone refining? Explain how the principle of phase separation is used for zone refining.

Or

(b) Explain the conductivity of an extrinsic semiconductor.

15. (a) State and prove Curie-Weiss law.

Or

(b) At room temperature an ordinary piece of iron is not magnetic in the absence of an applied field even though its curie temperature is 1041°K . Explain this discrepancy using Domain theory.

SECTION C - (5 X 8 = 40 MARKS)

16. (a) Discuss the construction and working principle of He-Ne laser.

Or

(b) Give the general theory of operation of optical detectors and define their operational characteristics.

17. (a) Write the salient features of BCS theory.

Or

(b) Give the theory of ac and dc Josephson effects. Mention two applications of Josephson effects.

18. (a) Give the free-electron theory of Drude and Lorentz. Explain a property of metals based on it.

Or

(b) On the basis of band theory bring out the differences between conductors, insulators and semiconductors.

19. (a) Describe the Czochralski method for growing a semiconducting grade silicon.

Or

(b) Explain the various polarization process.

20. (a) (i) Draw a B-H curve for a typical ferromagnetic material and give an account of it.

(ii) A transformer core is wound with a coil carrying an alternating current at a frequency of 50 Hz. Assuming the magnetization to be uniform throughout the core volume of 0.01 m^3 , calculate the hysteresis loss. The hysteresis loop has an area of 60,000 units when the axes are drawn in units of 10^{-4} Wbm^{-2} and 10^2 Am-I .

Or

(b) What are ferrites? Give two examples. Explain an application of ferrites.

**FUNDAMENTALS OF DIGITAL COMPUTERS
MODEL QUESTION PAPER**

Time: Three hours

Maximum: 75 marks

SECTION A (10 X 1 = 10 MARKS)

1. The decimal equivalent of the hexadecimal number AB7 is -----
2. The hexadecimal equivalent of the octal number 1527 is -----
3. The dual of $X \cdot Y (Y + Z + X) + X \cdot Y$ is
4. The ----- for evaluating Boolean expressions is parenthesis, NOT, AND and OR.
5. A full adder can be realized using ----- half adders and ----- OR gates.
6. An adder subtractor circuit consists of a ----- and n number of full adders.
7. The ----- flip flop is used as latch.
8. The programmable logic array is a ----- device.
9. A ----- is volatile and either static or dynamic memory.
10. In a magnetic disk, the time required to move the read / write head to the addressed track is called ----- time.

SECTION B - (5 X 5 = 25 MARKS)

11. (a) What do you mean by complement of a number? Compare 1's and 2's complements.
Or
(b) What do you mean by radix? Obtain the weighted binary code for the base -12 using weights of 5421.
12. (a) Demonstrate by means of truth tables, the validity of De Morgan's theorems for three variables.
Or
(b) What do you mean by Don't care conditions? Discuss with examples.
13. (a) Draw the logic diagram of a binary half subtractor and explain.
Or
(b) Draw and explain the working of a 4 to 1 line multiplexer.
14. (a) What is a flip-flop? Explain how an S-R flip flop is realized employing NAND gates.
Or
(b) What is a shift register? List the various types of shift registers.
15. (a) What is ROM? Compare ROM and RAM.
Or
(b) Discuss the function of any one Digital to Analog converter with a neat diagram.

SECTION C - (5 X 8 = 40 MARKS)

16. (a) What do you mean by error detection codes? Discuss any one error detection codes with examples.
Or
(b) (i) With an example, explain how a decimal number can be converted into a binary number.
ii) With examples, multiplication and division.
17. (a) Discuss the basic theorems and properties of Boolean algebra with examples.
Or
(b) The following Boolean expression, $\overline{B}E + \overline{B}DE$ is a simplified version of the expression $\overline{A}BE + BCDE + \overline{B}CDE + \overline{A}BDE + \overline{B}CDE$.
Are there any don't care conditions? If so, what are they?
18. (a) With a neat block diagram, discuss the working of a parallel binary adder.
Or
(b) With a neat block diagram, explain the working of a BCD adder.
19. (a) Design and implement a counter using J-K flip-flops for the following binary sequence : 0, 1, 2, 4, 5, 6 and repeat.

Or

- (b) Design and implement a 4 bit magnitude comparator.
20. (a) (i) Compare static and dynamic random access memories.
(ii) Write a short note on linear select Memory organization.

Or

- (b) Discuss on the following :
- (i) Punched cards. (ii) Keyboard interfacing.

**FUNDAMENTALS OF SOFTWARE DEVELOPMENT
MODEL QUESTION PAPER**

Time: Three hours**Maximum: 75 marks****SECTION A (10 X 1 = 10 MARKS)**

1. component is used in the first generation of computers.
(a) Transistor (b) Vacuum Tube (c) IC (d) VLSIC
2. ----- is defined as data structures that enable the programs to adequately manipulate data
(a) Software (b) Hardware (c) Firmware (d) Human ware.
3. Variables that can be accessed by all program modules are called variable
(a) Global (b) Local (c) Instance (d) Static.
4. _____ error IS generated during compilation time
(a) Logical (b) Execution (c) Syntax (d) All of the above.
5. Bottom to Top approach is used in ----- programming
(a) Structured oriented (b) Procedure oriented (c) Object oriented (d) None.
6. A data object encapsulates only
(a) Object (b) Data (c) Attributes (d) Identifier.
7. ----- serves as a mechanism for identifying software requirement
(a) Analysis (b) Prototype (c) Refine (d) Redesign.
8. One can understand better about software requirements by ----- process
(a) Planning (b) Modeling (c) Deployment (d) Construction.
9. Expand PSP
(a) Personal Software Product (b) Personal Software Process
(c) Production of Software Product (d) None.
10. ----- is an operational principle for all requirement analysis method
(a) Data modeling (b) Behavioural modeling
(c) Functional modeling (d) Analysis modeling.

SECTION B - (5 x 5 = 25 marks)

11. (a) Write short notes on :
(i) Software (ii) Hardware.
- Or
- (b) What is meant by system software?
12. (a) What is meant by Syntax error and Logical error?
- Or
- (b) Explain in detail about the representation of Algorithm.
13. (a) Write short notes on :
(i) Software Engineering (ii) Human Engineering.
- Or
- (b) What is system analysis?
14. (a) Write the various analysis rules of Thumb.
- Or
- (b) What is system simulation?

15. (a) Write the various analysis modeling principles.

Or

(b) What is the use of Domain Analysis?

SECTION C - (5 x 8 = 40 marks)

16. (a) Explain in detail about the generation of computers.

Or

(b) Explain in detail about software Crisis. Discuss the problems and causes.

17. (a) Explain the various types of Control Flow structures.

Or

(b) Explain subprogram in problem solving with an example.

18. (a) What is proto typing? Explain its model.

Or

(b) Explain the waterfall model in detail.

19. (a) Explain Domain Analysis in detail.

Or

(b) Explain system modeling with its restraining factors.

20. (a) Explain the operational principles in Design Modeling.

Or

(b) Explain in detail about software prototyping with its design tools.

**ACCOUNTING AND FINANCIAL MANAGEMENT
MODEL QUESTION PAPER**

Time : Three hours

Maximum : 75 marks

SECTION A - (10 x 1 = 10 marks)

1. A concept which assumes that an enterprise, will continue to exist in foreseeable future is known as

- (a) Cost concept (b) Accounting period concept
(c) Going concern concept (d) Money measurement concept.

2. Double Entry System was invented by

- (a) Iuco Pacioli (b) J. Batty (c) H.J. Wheldon (d) Vanskicle.

3. Journal is a book of

- (a) Primary entry (b) Original entry
(c) Duplicate entry (d) Primary or original entry.

4. The second important stage in the accounting process IS

- (a) Depreciation a/c (b) Profit and Loss a/c
(c) Ledger (d) Subsidiary books.

5. The most important purpose of Cost Accounting System is to

- (a) help in the valuation of inventory (b) earn extra profits
(c) provide information to management for decision making (d) none of the above.

6. The system that pays wages according to production is

- (a) time rate (b) measured day work (c) guaranteed time rate (d) piece rate.

7. The earning per share helps in

- (a) determining the market price of the equity shares of the company
(b) deciding the face value of the equity shares of the company
(c) determining the face value of the preference shares of the company
(d) none of these.

8. Operating ratio is a complementary of

- (a) Net profit ratio (b) Price earning ratio
(c) Gross profit ratio (d) Payout ratio

9. A detailed plan of operation for some specific future period is called
 (a) Budget (b) Execution (c) Decision making (d) Planning.
10. Sales Budget is a
 (a) Master budget (b) Expenditure budget
 (c) Functional budget (d) Cash budget.

SECTION B - (5 x 5 = 25 marks)

11. (a) Explain the rules of Accounting.

Or

- (b) Prepare Trial Balance from the following :

Capital Rs.40,000; Sales Rs.25,000; Stock (opening) Rs.5,200; Debtors Rs.2,500; Creditors Rs.1,000; Purchases Rs.15,000; Salaries Rs.2,000; Rent Rs.1,500; Cash Rs.2,000; Insurance Rs.300; Drawings Rs.5,000; Plant Rs.28,000; Bank Rs.4,500.

12. (a) Explain any three methods of Depreciation.

Or

- (b) From the following, find how much is to be shown in Income and Expenditure Account for the year ending 31.12.1997 for subscription.

| | Rs. |
|--|--------|
| Subscription received during the year as per Receipts and Payments Account | 28,680 |
| Subscription outstanding on 1.1.1997 | 2,000 |
| Subscription outstanding on 31.12.1997 | 3,000 |
| Subscription received in advance on 1.1.97 | 1,800 |
| Subscription received in advance on 31.12.97 | 1,080 |

13. (a) Write short notes on : (i) Cost unit (ii) Cost centre.

Or

- (b) From the following data calculate:

- (i) P/V ratio (ii) Profit when sales are Rs. 20,000.

Fixed expenses Rs. 4,000

Break even point Rs. 10,000.

14. (a) What do you mean by Ratio Analysis? Bring out its uses.

Or

- (b) Calculate the earning per share from the following data:

Net profit before tax Rs.1,00,000 Taxation at 50% of net profit

10% preference share capital (Rs. 10 each) Rs. 1,00,000

Equity share capital (Rs. 10 per share) Rs. 1,00,000.

15. (a) Define Budgetary control and bring out its objectives.

Or

- (b) Prepare a Production Budget for three months ending 31st March 2004, for a factory producing four products, on the basis of the following information.

| Type of product | Estimated stock on 1st Jan. 2004 | Estimated sales during Jan.-March 2004 | Desired closing stock on 31st March 2004 |
|-----------------|----------------------------------|--|--|
| | (units) | (units) | (units) |
| A | 10,000 | 3,000 | 3,000 |
| B | 15,000 | 5,000 | 5,000 |
| C | 13,000 | 3,000 | 3,000 |
| D | 12,000 | 2,000 | 2,000 |

SECTION C - (5 x 8 = 40 marks)

16. (a) What is a Balance Sheet? Distinguish between a trial balance and a balance sheet .

Or

(b) From the following balances extracted from the books of a merchant, prepare trading and profit and loss account for the year ended 31st March 2004.

Bad debts Rs. 125; Opening stock Rs.3,460; Purchases Rs.5,465; Sales Rs.15,450; Sales returns Rs. 200; Purchases return Rs. 125; Postage and stationery Rs.875; Advertising Rs.450; Interest (Dr) Rs.118; Commission (Cr) Rs.1,250; Taxes and Insurance Rs.1,250; General expenses Rs.782; Salaries Rs.3,300; Closing stock Rs.3,250.

17. (a) What are the differences between Receipts and Payments Account and Income and Expenditure Account?

Or

(b) Journalise the following transactions:

| 2004 | | Rs. |
|----------|--------------------------------------|----------|
| April 1 | Kumar commenced business | 1,00,000 |
| April 5 | Bought goods for cash | 50,000 |
| April 8 | Sold goods to Babu on credit | 30,000 |
| April 10 | Purchased goods from Laxmi Narayanan | 60,000 |
| April 14 | Received cash from Babu | 20,000 |
| April 28 | Paid salary to Muthiah | 4,000 |

18. (a) Define Cost Accounting and discuss its objects.

Or

(b) Prepare a cost sheet from the following:

Raw material consumed Rs. 1,20,000; Wages Rs. 30,000; Work expenses is charged at 100% of wages; Office overhead is charged at 25% on work cost and selling overhead at 10% of cost of production.

19. (a) Explain the importance of Ratio Analysis.

Or

(b) (i) Current ratio 2.5; Working capital Rs.60,000.

Calculate the amount of current assets and current liabilities.

(ii) Opening stock Rs.29,000; Closing stock Rs.31,000; Sales Rs.3,20,000; Gross profit ratio 25% on sales. Calculate Stock Turnover Ratio.

20. (a) enumerate the objectives of budgeting.

Or

(b) A company incurs the following expenses to produce 1000 units of an article.

| | |
|--------------------------------------|-----------|
| Direct material | Rs.60,000 |
| Direct labour | Rs.30,000 |
| Power (20% fixed) | Rs.20,000 |
| Repairs and maintenance (15% fixed) | Rs.16,000 |
| Depreciation (40% variable) | Rs.12,000 |
| Administrative expenses (100% fixed) | Rs.24,000 |

Prepare a flexible budget showing individual expenses of production levels at 1500 units and 2000 units.

**APPLIED MATHEMATICS
MODEL QUESTION PAPER
SECTION – A (10 x 1 = 10)**

1. The differential equation $M dx + N dy = 0$ is exact if and only if
 - a. $\frac{\partial M}{\partial x} = \frac{\partial N}{\partial y}$
 - b. $\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$
 - c. $\frac{\partial M}{\partial x} = \frac{\partial N}{\partial x}$
 - d. $\frac{\partial M}{\partial y} = \frac{\partial N}{\partial y}$
2. Which of the following is true?
 - a. An equation of the form $M dx + N dy = 0$ has an integrating factor only if $Mx + Ny \neq 0$
 - b. An equation of the form $M dx + N dy = 0$ has an integrating factor only if $Mx - Ny \neq 0$
 - c. An equation of the form $M dx + N dy = 0$ has an integrating factor only if it is homogenous.
 - d. An equation of the form $M dx + N dy = 0$ always has an integrating factor.
3. The basic law of mechanics, namely $F = \frac{d}{dt}(mv)$ was given by
 - a. Kirchhoff
 - b. Newton
 - c. Euler
 - d. Taylor
4. If $J_n(x)$ represents Bessel function of first kind of order n , then its generating function is given by
 - a. $e^{\frac{x}{2}\left(t-\frac{1}{t}\right)}$
 - b. $e^{-\frac{x}{2}\left(t-\frac{1}{t}\right)}$
 - c. $e^{\frac{x^2}{2}\left(t-\frac{1}{t}\right)}$
 - d. $e^{\frac{x}{2}\left(t+\frac{1}{t}\right)}$
5. A square matrix A is called symmetric if
 - a) $A^T = -A$
 - b) $A^T = A^{-1}$
 - c) $A^T = A$
 - d) $AA^{-1} = I$
6. Which of the following is always true?
 - a. $\det(A^T) = \frac{1}{\det(A)}$
 - b. $\det(A^T) = \det(A)$
 - c. $\det(A^T) = -\det(A)$
 - d. $\det(A^T) = \frac{-1}{\det(A)}$
7. The point $(1,1,1)$ represents a point in
 - a) $x - y$ plane
 - b) $y - z$ plane
 - c) $x - z$ plane
 - d) None of these
8. The plane $2x + 3y + 5z + 6 = 0$ is parallel to the plane
 - a) $2x + 6y + 5z + 6 = 0$
 - b) $2x + 3y + 10z + 6 = 0$
 - c) $2x + 3y + 5z + 7 = 0$
 - d) $4x + 3y + 5z + 6 = 0$
9. With usual notations, the Cauchy – Riemann equations in Cartesian coordinates are given by
 - a. $u_x = v_y$ and $u_y = v_x$
 - b. $u_x = u_y$ and $v_x = v_y$
 - c. $u_x = u_y$ and $u_y = -v_x$
 - d. $u_x = u_y$ and $b_y = -v_x$
10. Which of the following is not true?
 - a. An analytic function with constant modulus is a constant
 - b. An analytic function whose real part is constant is a constant
 - c. An analytic function whose imaginary part is constant is a constant

d. If $f(z)$ and $\overline{f(\overline{z})}$ are simultaneously analytic, then f is a constant.

SECTION B (5 X 5 = 25 MARKS)

11. a. Show that $(5x^4 + 3x^2y^2 - 2xy^3)dx + 2x^3y - 3x^2y^2 - 5y^4)dy = 0$ is an exact equation and hence solve it.

[or]

b. Solve $u'' + y = \operatorname{cosec} x$ by the method of variation of parameters

12. a. A resistor of $R = 5$ ohms and a condenser of $C = 0.02$ farads are connected in series with a battery of $E = 100$ volts. If at $t = 0$ the charge Q on the condenser is 5 coulombs, find Q and the current I for $t > 0$.

[or]

b. If P_n is the Legendre function, find the value of $\int_{-1}^1 P_n^2(t) dt$.

13. a. Find the rank of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \\ 3 & 1 & 2 \end{bmatrix}$

[or]

b. Examine the consistency of the following equations

$$2x + 6y + 11 = 0, 6x + 20y - 6z + 3 = 0, 6y - 18z + 1 = 0$$

14. a. Find the direction cosines of the line joining the points $(1, 2, -4)$ and $(2, 1, -3)$

[or]

b. Find the equation of the sphere passing through the points $(0, 0, 0)$, $(1, 0, 0)$, $(0, 1, 0)$ and $(0, 0, 1)$.

15. a. Show that $f(z) = \overline{z}$ is nowhere differentiable

[or]

b. Show that the transformation $w = \frac{5-4z}{4z-2}$ maps the unit circle $|z|=1$ into a circle of radius unity and centre $\frac{-1}{2}$

SECTION - C (5 x 8 = 40 marks)

16. a. Solve : $\frac{dy}{dx} = \frac{6x + 5y - 7}{2x + 18y - 14}$

[or]

b. Solve : $\frac{dx}{dt} + 2x - 3y = t$, $\frac{dy}{dt} - 3x + 2y = e^{2t}$

17. a. A tank contains 100 gallons of brine made by dissolving 60 lb of salt in water. Salt water containing 1 lb. of salt per gal. runs in at the rate of 2 gal / min and the mixture kept uniform by stirring, runs out at the same rate, find the amount of salt in the tank at the end of 1 hour.

[or]

b. If $J_n(x)$ represents Bessel functions, show that

- a) Uniform synchronous asynchronous receiver transmitter
 b) Universal synchronous asynchronous receiver transmitter
 c) Universal synchronous asynchronous receiver terminal
 d) Universal synchronous asynchronous report transmitter
8. Interface is a
 a) Software b) gate c) logical device d) port
9. ADC means
 a) Asynchronous digital controller b) Analog to digital converter
 c) Analog to digital computer d) Asynchronous digital
10. In 8086, the memory is divided into banks
 a) 2 b) 4 c) 6 d) 8

SECTION – B (5 X 5 = 25)

11. a. Describe the flags available in 8085?
 (OR)
 b. Write the need for microprocessor based system
12. a. Describe the different types of instruction format
 (OR)
 b. What do you mean by assembler directives? Give example
13. a. What is interrupt? What are the types of interrupt ?
 (OR)
 b. Describe the interrupts available in 8085.
14. a. Compare memory mapped I/O with isolated I/O
 (OR)
 b. describe the features of USART
15. a. Write about data Acquisition.
 (OR)
 b. Describe the registers available in 8086.

SECTION – C (5 X 8 = 40)

16. a. Describe the architecture of 8085.
 (OR)
 b. Describe the microcomputer organization
17. a. Classify the instruction set of 8085 and explain.
 (OR)
 b. Write an ALP to find the maximum of three single bytes
18. a. Explain how the interrupts are handled
 (OR)
 b. With the block diagram, explain the operations of DMA.
19. a. What is address decoding? Explain
 (OR)
 b. Draw the diagram of PPI and explain its working.
20. a. Explain the application of Traffic light interface
 (OR)
 b. Explain the memory organisation of 80286.

**COMPUTER ORGANIZATION
MODEL QUESTION PAPER**

Time : Three hours

Maximum : 75 marks

SECTION A - (10 x 1 = 10 marks)

1. The range of numbers that can be represented using 4 bits by 2's complement method is
(a) +7 to -7 (b) +8 to -7 (c) +7 to -8 (d) +8 to -8
2. How many number of bits are used to represent an ASCII Character ?
(a) 7 (b) 8 (c) 6 (d) 9
3. Binary incrementor uses
(a) Full adder (b) Half adder (c) Multiplexer (d) Demultiplexer
4. Masking of certain bits can be done using
(a) AND operation (b) OR operation (c) XOR operation (d) Negate operation.
5. Booth algorithm is used for
(a) Adding two signed - 2's complement numbers
(b) Multiplying two signed - 2's complement numbers
(c) Dividing two signed - 2's complement numbers
(d) Multiplying two signed - 1's complement numbers.
6. Pointer variable concept is used in
(a) Direct addressing mode (b) Immediate addressing mode
(c) Indirect addressing mode (d) Implicit addressing mode.
7. Relative addressing mode uses
(a) Stack pointer (b) Index register (c) Base register (d) Any CPU register
8. Subroutine call uses
(a) Stack pointer (b) Index register (c) Base register (d) Any CPU register
9. Modem is used for
(a) Serial comm. (b) Parallel comm. (c) Interrupt driven (d) DMA.
10. Start - stop bits are used in
(a) Synchronous comm. (b) Interrupt driven (c) DMA (d) Asynchronous comm.

SECTION B - (5 x 5 = 25 marks)

11. (a) Explain the working principle of n-bit ripple carry adder.
Or
(b) Explain multiplier bit-pair recording method.
12. (a) What is the working principle of Three state bus buffer? Explain.
Or
(b) What is meant by single precision floating point and double precision floating point representations?
13. (a) What is meant by register stack? Explain
Or
(b) Explain about characteristics of RISC architecture.
14. (a) Differentiate Isolated I/O method with memory mapped I/O method.
Or
(b) Explain about direct mapping method used for cache memory
15. (a) Explain about multiport memory.
Or
(b) Explain the parallel arbitration logic for multi processor system.

SECTION C - (5 x 8 = 40 marks)

16. (a) What are the various ways of representing a signed integer? Explain.
Or
(b) Explain about shift micro operations and give the implementation details.

17. (a) Explain about the method used for binary division.
Or
(b) Write about BCD adder.
18. (a) How do you use stack in evaluating an arithmetic expression?
Or
(b) What are the various data transfer instructions? Explain.
19. (a) What is the match logic used in associative memory? Explain the read operation.
Or
(b) What is the necessity of DMA? Explain about DMA controller.
20. (a) Explain about hypercube architecture.
Or
(b) What is the cache coherence problem? Explain.

DATASTRUCTURES – I
MODEL QUESTION PAPER

Time : Three hours

Maximum : 75 marks

SECTION A - (10 x 1 = 10 marks)

1. A _____ is a measure of uncertainty which represents the presence of a two state condition.
(a) Instruction (b) Word (c) Bit (d) Data Structure
2. The _____ aspect of information transmission involved the action taken as a result of the interpretation of the information.
(a) Syntactic (b) Semantic (c) Discrete (d) Pragmatic
3. As per the _____ property, the sum of any two numbers is a natural number.
(a) Identity (b) Associative (c) closure (d) concatenation
4. A terminal production is a statement of the form _____
(a) $X \rightarrow Y$ (b) X (c) $X \leftrightarrow Y$ (d) $i \leq j$
5. _____ can be classified as arrays, lists and files.
(a) Non-Primitive data structure (b) Primitive data structure
(c) Non linear data structure (d) File
6. The _____ parameter is used to determine whether to remain in the loop.
(a) Decision (b) Update (c) Computation (d) Initialization.
7. In a _____ every node is accessible from a given node.
(a) Singly linked list (b) Deque (c) Linear list (d) Circular list.
8. The most straight forward method of accessing a symbol table is lay using the ----- technique.
(a) Binary search (b) Insertion sort (c) Linear search (d) Hashing.
9. If in a ----- the out degree of every node is less than or equal to m, then the tree is called an m-ary tree.
(a) Undirected (b) Binary tree (c) Ordered tree (d) Directed tree.
10. A search of a nonordered binary tree requires that the tree be traversed using one of the _____ traversals.
(a) One (b) Six (c) Four (d) Three.

SECTION B - (5 x 5 = 25 marks)

11. (a) With a diagram discuss a general information transmission process.
Or
(b) Compare continuous and discrete information transmission.
12. (a) With an example discuss concatenation.
Or
(b) What do you mean by simple production? Discuss.
13. (a) With an example discuss a three-dimensional array representation.
Or
(b) What do you mean by array of structures? Discuss.
14. (a) Discuss an algorithm which inserts a node into a linked linear list.
Or
(b) Give an algorithm for deleting a node from a linked list.
15. (a) Discuss the steps involved in a pre order traversal of a binary tree.
Or
(b) What is sparse matrix? Discuss.

SECTION C - (5 x 8 = 40 marks)

16. (a) Write a short note on storage of information.
Or
(b) With examples discuss how real numbers are stored in a computer.
17. (a) With suitable examples discuss string manipulation in pascal.
Or
(b) What do you mean by primitive functions? Discuss.
18. (a) What is a stack? List the applications of stack. Discuss anyone in detail.
Or
(b) What do you mean by priority queue? With an example, explain 'insertion' and 'deletion' in a queue.
19. (a) Write a short note on doubly linked linear list.
Or
(b) Discuss the application of linked list in polynomial manipulation.
20. (a) Write a short note on threaded storage representation of binary trees?
Or
(b) With suitable example discuss an algorithm for converting a general tree to binary tree.

**COBOL AND BUSINESS DATA PROCESSING
MODEL QUESTION PAPER**

Time : Three hours

Maximum : 75 marks

SECTION A - (10 x 1 = 10 marks)

1. The type of literal constants available are _____ and _____
2. The figurative constants have _____ names and refer to _____ values.
3. The paragraph PROGRAM-ID must be the _____ paragraph in the _____ division.
4. Two of the most important sections in Environment Division are _____ and _____ section.
5. The processing mode of any file is always specified in the _____ paragraph.
6. Level indicator _____ are indicated in margin A where as the levels ----- are specified in the margin B.
7. The PIC clause specifies _____ and _____ information of an elementary item.
8. Data items defined in the _____ belong to any file.
9. Several arithmetic operations may be combined in the _____ command.

10. A subscript may be a numeric literal or _____ with an _____ value.

SECTION B - (5 x 5 = 25 marks)

11. (a) Distinguish between numeric literal and non-numeric literal.

Or

- (b) Write short notes on COBOL coding sheet.

12. (a) Distinguish between file section and working-storage section.

Or

- (b) Write a note on RENAME clause.

13. (a) Distinguish between GO TO and PERFORM statements.

Or

- (b) What is the function of SORT verb?

14. (a) Analyse the demerits of sequential file organization.

Or

- (b) Write short notes on primary key.

15. (a) What is an invoice? List out its basic contents to identify the data-items.

Or

- (b) List out the major files involved in sales order processing.

SECTION C - (5 x 8 = 40 marks)

16. (a) Explain the rules of forming identifiers in COBOL. Give the difference between keyword and reserved word.

Or

- (b) How many divisions are there in a COBOL program? Explain the functions of each.

17. (a) Explain the differences between: (i) Elementary and group items (ii) Group item and record.

Or

- (b) Write notes on :

- (i) GO TO DEPENDING ON (ii) REDEFINES Clause

18. (a) An employee file consists of the following fields: Employee number, Employee name, Sex, Gross salary, Tax deduction, PF deduction and Net salary. Assume suitable record layout and file organization.

A monthly transaction file consists of the following fields :

Employee number, Employee name, sex and Gross salary. Assume suitable record layout and file organisation.

Calculate Tax deduction = 30% of Gross salary.

Calculate PF deduction = 8% of Gross salary.

Then, update the master file using transaction file. Write a COBOL program to do the above.

Or

- (b) An input file consists of the following fields :

Depositor number, Depositor name, Amount of deposit and Period of deposit. Assume suitable record layout.

The rate of interest is calculated as follows :

On deposits of Rs. 5,000 or above and for 3 years or above, the interest is 10%. On deposits \geq Rs.5,000 and less than 3 years, the interest is 9%. On deposits below Rs.5,000 regardless of the period, the interest is 7%.

Write a COBOL program which will give an output file with the same information and two more fields : one with interest on deposit and other is net amount of the depositor.

19. (a) An indexed sequential file consists of the following fields : Register number, name, total mark. Assume suitable record layout. Write a COBOL program to print in neat format. Specify your output design.

Or

- (b) Write a COBOL program to do the following with necessary subroutines.
- Read name, sex and marital status of an individual from the input file.
 - If sex code is 'M' (Male), then print the title of the person as "Mr".
 - If sex code is 'F' (Female), then if marital status is "U" (unmarried), then print the title as "Miss", otherwise print the title as "Mrs".
 - Print the title as generated in the previous steps and the name of the individual.
20. (a) Write a COBOL program to print a payslip. Assume suitable data items and record layout on your own. Design your output.

Or

- (b) Write a COBOL program to print statement of marks. Assume suitable data items and record layout on your own. Design your output.

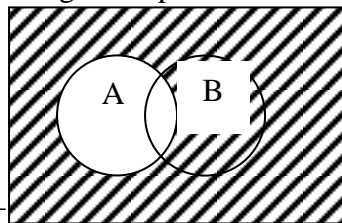
DISCRETE STRUCTURES MODEL QUESTION PAPER

Time : Three hours

Maximum : 75 marks

SECTION A - (10 x 1 = 10 marks)

- For any predicate $p(x)$, cardinality of $\{x | p(x) \wedge \neg p(x)\}$ is
 (a) 0 (b) 1 (c) ∞ (d) None of the above
- The following Venn diagram represents



- $B - A$ (b) $A - B$
- If $f : \mathbb{N} \rightarrow \mathbb{N}$ is defined by $f(n) = n \pmod{3}$ then
 (a) f is both injective and surjective (b) f is injective but not surjective
 (c) f is surjective but not injective (d) f is neither nor surjective
 - A non-empty set $(S, 0)$ is called a monoid if
 (a) 0 is a binary operation (b) 0 is associative (c) S has an identity
 (d) None of the above
 - Let $G = (V, E)$ be a simple digraph with $|V| = n$ and $|E| = m$. Then order of the adjacency matrix is
 (a) $n \times n$ (b) $n \times m$ (c) $m \times n$ (d) $m \times m$
 - A leaf in a directed tree is a node with
 (a) Indegree 0 (b) Outdegree 0 (c) Indegree 1 (d) Outdegree 1
 - Type 2 grammar is also called
 (a) Phrase structure (b) Context – Free (c) Context Sensitive (d) Regular
 - If we restrict the production $\alpha \rightarrow \beta$ of a phrase structure grammar, that $|\beta|$ be at least as long as $|\alpha|$, then its language is
 (a) Context free (b) Context sensitive
 (c) Phrase structure (d) Regular
 - A push down automaton differs from deterministic finite automaton in
 (a) Set of states (b) Input alphabet
 (c) Stack alphabet (c) Transition function
 - In a turing machine, a problem is unsolvable if
 (a) The machine moves left (b) The machine moves right
 (c) The machine halts (d) The machine never halts

SECTION B - (5 x 5 = 25 marks)

11. (a) For any two sets A and B, prove that $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$.

Or

(b) Construct the truth table for $(P \rightarrow Q) \wedge (Q \rightarrow P)$.

12. (a) Show that the functions $f(x) = x^3$ and $g(x) = x^{1/3}$ for $x \in \mathbb{R}$ are inverse of one another. Here \mathbb{R} represents the set of real numbers.

(b) Define a semigroup. Show that the set of positive even integers is a semigroup with usual addition. Is it a monoid ?

13. (a) Find the path matrix of the graph given below :

(b) Find the post-order traversal of the rooted tree given below :

14. (a) Find the right-linear grammar and left-linear grammar that generates the language $0(10)^*$.

Or

(b) with $\Sigma = \{a, b\}$, draw deterministic finite automaton containing odd number of b's.

15. (a) Define the following :

- (i) Push down automaton
- (ii) Turing machine

Or

(b) Write a brief note on halting problem.

SECTION C (5 X 8 = 40 MARKS)

16. (a) State and prove the De Morgan's laws. Or

(b) Obtain the principal disjunctive normal form of $P \rightarrow ((P \rightarrow Q) \wedge (Q \vee P))$ and hence deduce the principal conjunctive normal form.

17. (a) Solve the recurrence relation $a_{n+2} - 4a_{n+1} + 3a_n = -200$, $n > 0$, $a_0 = 3000$, $a_1 = 3300$.

(b) Suppose code words transmitted contain n binary digits in which the first m digits contain the information part. Devise a single – error correcting group code and the associated decoding table with $m = 4$ and $n = 8$.

18. (a) Write an algorithm to find the shortest path between any two vertices. Using the algorithm, find the shortest path between v_1 and v_7 in the graph given below :

(b) (i) Construct the binary rooted tree for the algebraic expression $((7 - a)/5)^*(a + b) \uparrow 3$.

(ii) Find the value of $+4/*23+1-9 \uparrow 23$, expressed in prefix notation.

19. (a) Construct a finite state automata that accepts only those words that begin or end with a double letter.

Or

(b) If $M = (\{q_0, q_1\}, \{0, 1\}, \delta, q_0, \{q_1\})$ is a nondeterministic finite automaton with $\delta(q_0, 0) = \{q_0, q_1\}$, $\delta(q_0, 1) = \{q_1\}$, $\delta(q_1, 0) = \phi$ and $\delta(q_1, 1) = \{q_0, q_1\}$, construct a deterministic finite automaton that accepts $L(M)$.

20. (a) Construct a Push Down Automaton to identify or accept a palindrome.

Or

(b) Construct a Turing machine accepting a regular expression $(0+1)^*010$.

**OPERATIONS RESEARCH
MODEL QUESTION PAPER**

Time : Three hours

Maximum : 75 marks

SECTION A - (10 x 1 = 10 marks)

1. The coefficients (a_{ij}), of the dual variables in the constraints the same as the coefficients of the primal variables, expect that they are transposed. True / False
2. A necessary and sufficient condition for the existence of a feasible solution to a transportation problem is that $\sum a_i = \sum b_j$. True / False.
3. The distribution of the time interval between two consecutive arrivals is exponential. True / False.
4. In a single server queue with infinite capacity, first in first out discipline, Poisson arrivals and exponential services the probability that there will be exactly n customers in the p" (1- p) True / False.
5. The fixed costs associated with obtaining goods by placing of an order or purchase is known as the setup cost. True / False.
6. For the economic lot size inventory model with uniform demand the optimum ordering interval $t^* = (2C_3 / RC_1)^{1/2}$ Where C_1 is the holding cost, C_3 is the setup cost and R is the demand rate. True / False
7. $C_{min} = (2C_1C_3D / T)^{1/2}$ where D is the total time period T, C_1 is the holding cost and C_3 is the setup cost. True / False.
8. The expected opportunity loss of the optimal strategy is the same as expected value of perfect information. True / False.
9. The optimistic time is the shortest possible time in which the activity can be finished. True / False.
10. The variance for the activity is given by $[(t_p - t_o)/6]^2$ where t_o is the optimistic time and t_p is the pessimistic time. True / False.

SECTION B - (5 x 5 = 25 marks)

11. (a) Write down the dual of the following linear programming problem and then solve graphically.

$$\begin{aligned} \text{Minimize } Y &= 24y_1 + 21y_2 + 9y_3 \\ \text{Subject to } &y_1 + 3y_2 + y_3 \geq 2, \quad 4y_1 + y_2 + y_3 \geq 5, \quad y_1 \geq 0, y_2 \geq 0 \text{ and } y_3 \geq 0 \end{aligned}$$

Or

(b) Explain Phase – I simplex method of solving a Linear Programming Problem.

12. (a) Derive the distribution of the time interval between two consecutive arrivals in a single server queue.

Or

(b) Discuss the problem of replacement of items whose maintenance costs increase and the money value changes with time.

13. (a) Describe the basic characteristics and classifications of inventory system.

Or

(b) Obtain the expression for the optimum economic order quantity q^* for the economic lot size inventory system when the demand rate is uniform.

14. (a) Distinguish between perfect information and imperfect information criterion by providing an example.

Or

(b) Explain the concept of expected value criterion in decision theory.

15. (a) Define the terms

(i) Total float and

(ii) Free float pertaining to a PERT

(b) Write a note on project time cost trade off curve.

SECTION C - (5 x 8 = 40 marks)

ANSWER ALL QUESTIONS.

16. (a) Use simplex method to

$$\begin{aligned} \text{Maximize } & Z = 3x_1 + 5x_2 \\ \text{Subject to } & 3x_1 + 2x_2 \leq 18 \\ & x_1 < 4, x_2 < 6, x_1 > 0 \text{ and } x_2 \geq 0 \end{aligned}$$

Or

(b) Solve the following transportation problem by North West corner rule.

| | D ₁ | D ₂ | D ₃ | Supply |
|----------------|----------------|----------------|----------------|------------|
| O ₁ | 2 | 7 | 4 | 5 |
| O ₂ | 3 | 3 | 1 | 8 |
| O ₃ | 5 | 4 | 7 | 7 |
| O ₄ | 1 | 6 | 2 | 14 |
| Demand | 7 | 9 | 18 | Total : 34 |

17. (a) Explain the M/M/C1 : FIFO / ∞ queueing model and obtain the steady state probability.

Or

(b) The cost of a machine is Rs.15,000 and its maintenance costs and resale values are as follows :

| Year | 1 | 2 | 3 | 4 |
|-------------------|----------|----------|----------|----------|
| Maintenance Costs | 10,000 | 50,000 | 20,000 | 25,000 |
| Resale value | 1,30,000 | 1,20,000 | 1,15,000 | 1,05,000 |
| Year | 5 | 6 | 7 | 8 |
| Maintenance Costs | 30,000 | 40,000 | 45,000 | 50,000 |
| Resale value | 90,000 | 75,000 | 60,000 | 50,000 |

Determine at which time it is profitable to replace the machine ?

18. (a) Derive the optimum order quantity q^* for the single item deterministic inventory model.

Or

(b) Derive the optimum order quantity q^* for the production lot size inventory model when the demand rate is constant, production is finite and shortages are allowed.

19. (a) Explain the terms

- (i) Max-Min decision criterion
- (ii) Min-max regret criterion and
- (iii) the criterion of equal likelihood in decision making under uncertainty.

Or

(b) Discuss in detail the structure of decision making problems and the choice of decision making under risk.

20. (a) A project has the following time schedule :

| Activity | Time (in weeks) |
|----------|-----------------|
| 1 – 2 | 4 |
| 1 – 3 | 1 |
| 2 – 4 | 1 |

| | |
|--------|---|
| 3 – 4 | 1 |
| 3 – 5 | 6 |
| 4 – 9 | 5 |
| 5 – 6 | 4 |
| 5 – 7 | 8 |
| 6 – 8 | 1 |
| 7 – 8 | 2 |
| 8 – 9 | 1 |
| 8 – 10 | 8 |
| 9 – 10 | 7 |

Construct PERT network and compute

- I. the critical path and its duration
- II. float for each activity and
- III. T_E and T_L for each activity

Or

(b) Explain the concept of profitability of meeting scheduled date of completion of projects with an example.

DATA STRUCTURES – II

Time : Three hours

Maximum : 75 mark

SECTION A - (10 x 1 = 10 marks)

1. ----- search can be used to find the shortest distance between some node in a graph and all remaining nodes.
(a) Depth-first (b) Linear (c) Breadth-first (d) Binary.
2. Any matrix whose elements are either 0 or 1 is called a ----- matrix.
(a) Sparse (b) Binary (c) Symmetric (d) Identity.
3. _____ is the operation of arranging the records of a table into some sequential order according to an ordering criterion.
(a) Searching (b) Sorting (c) Indexing (d) Merging.
4. _____ command is used to release certain blocks of storage in Dynamic Storage Management
(a) Dispose (b) Clear (c) Refresh (d) Release.
5. What is the best case space complexity analysis of
(a) $O(1)$ (b) $O(N)$ (c) $o(\log N)$ (d) $O(N^2)$.
6. A ----- structure is a complete m-ary tree in which each node consists of 'm' components
(a) List (b) Binary Tree (c) Trie (d) Spanning Tree.
7. A record item that uniquely identifies a record in a file is called a -----
(a) Field (b) File- (c) Primary key (d) Secondary key.
8. ----- processing is the accessing of records, one after the other, according to the physical order in which they appear in the file
(a) Serial (b) Random (c) Direct (d) Multi.
9. A ----- table is simply a table of keys unique external storage address is assigned to each key
(a) Hash (b) Cross-reference (c) Relational (d) Symbol.
10. In Direct Files, ----- function defines a mapping from the key space to the address space.

- (a) Hashing (b) List (c) Member (d) Friend.

SECTION B - (5 x 5 = 25 marks)

11. (a) Discuss about adjacency and path matrices for graphs.
(OR)
(b) Write short notes on: PERT. graph.
12. (a) Write short notes on: Garbage collection.
(OR)
(b) Discuss the working of Radix sort with an example
13. (a) Discuss the algorithm for Linear search
(OR)
(b) Discuss about any two hashing functions with suitable examples
14. (a) Write short notes on : structure of sequential files
(OR)
(b) Discuss the working of oscillating sort with an example
15. (a) Discuss the structure of direct files.
(OR)
(b) Discuss the algorithm to insert a record into direction file

SECTION – C (5 x 8 = 40)

16. (a) Explain the Breadth First Search Algorithm with an example
(OR)
(b) Explain the minimal spanning Tree algorithm with an example
17. (a) Describe the general algorithm for a topological sort
(OR)
(b) Describe the working principle of Address calculation sort
18. (a) Describe the working of ACCESS procedure in a weight – balanced binary Tree with an example
(OR)
(b) Explain the working of TRIE – SEARCH procedure of Trie structures with an example
19. (a) Explain about external storage devices.
(OR)
(b) Explain the structure and processing of indexed sequential files
20. (a) Describe the insertion and retrieval operations algorithms of Direct files
(OR)
(b) Describe System analysis and system design phases of an on-line Banking system.

**SOFTWARE SYSTEM - OPERATING SYSTEMS
MODEL QUESTION PAPER**

Time : Three hours

Maximum : 75 marks

SECTION A - (10 x 1 = 10 marks)

1. If a processor encounters ---- while executing a user program, an error interrupt occurs.
(a) instruction (b) privileged instructions (c) a routine (d) a coroutine
2. The most notable additional feature that is useful for --- is the hardware that supports I/O interrupts and DNA.
(a) batch system (b) multiprogramming (c) operating system (d) time sharing
3. --- is defined as the execution of an individual program.
(a) Task (b) State (c) PCB (d) Context switching
4. When a process is created by the operating system at the explicit request of another process, the action is referred to as ---

- (a) Context switching (b) Spooling(c) Process spawning (d) Data misuse
5. In --- the partitions used are of variable length and number.
(a) Relocation (b) Dynamic partitioning (c) Segmentation (d) Overlaying
6. --- is particular example of logical address, in which the address is expressed as a location relative to some known point, usually the beginning of the program.
(a) Physical address (b) Relocation (c) Virtual address (d) Relative address
7. The --- is invoked whenever an event occurs that may lead to the interruption of the current process or that may provide an opportunity to preempt the currently running process in favour of another.
(a) long term scheduler (b) short term scheduler
(c) medium term scheduler (d) I/O scheduling
8. --- is defined as the rate at which processes are completed.
(a) Response time (c) Access rate (b) Turn around time (d) Throughput
9. --- is a collection of related fields that can be treated as a unit by some application programs.
(a) Database (b) Record (c) File (d) Program
10. --- is the primary interface with the environment outside of the computer system.
(a) Basic I/O (b) Device driven (c) Basic File System (d) Logical I/O

SECTION B - (5 x 5 = 25 marks)

11. (a) What is serial processing? What are the main problems with serial processing.
Or
(b) List the advantages and disadvantages of simple batch systems.
12. (a) What is a process? Discuss a two state process model.
Or
(b) What do you mean by reusable resources? Discuss.
13. (a) What is relocation? Discuss.
Or
(b) What do you mean by thrashing of an operating system? Discuss.
14. (a) With a diagram relates the scheduling functions to the process state transition.
Or
(b) List the different steps in I/O function.
15. (a) Discuss the common terms used with a file.
Or
(b) What is Disk interleaving? Discuss.

SECTION C - (5 x 8 = 40 marks)

16. (a) Write a short note on Multiprogrammed Batch Systems.
Or
(b) What is an operating system? Discuss the operating system as a User/Computer interface.
17. (a) What are the reasons for process termination? Discuss.
Or
(b) Discuss on the following: (i) Concurrency (ii) Mutual Exclusion.
18. (a) Discuss the strengths and weaknesses of different memory management techniques.
Or
(b) Discuss the different operating system policies for virtual memory.
19. (a) Compare the different scheduling policies.
Or
(b) With an example explain fair-share scheduling.
20. (a) List the different file allocation methods. Discuss any two in detail.
Or
(b) Write short notes on the following : (i) File directories (ii) File management.

**OBJECT ORIENTED PROGRAMMING AND C++
MODEL QUESTION PAPER**

Time : Three hours

Maximum: 75 marks

SECTION A (10 X 1 = 10 MARKS)

1. Objects are nothing but _____ of a class.
2. A security mode used in inheritance is _____
3. An operator used in the inheritance syntax is _____
4. Special operators used for formatted I / O are called _____
5. To share a single member by several object, we should declare the member as _____
6. A base class that donot have a concrete implementation is known as _____
7. Polymorphism uses _____ binding.
8. What is the use of operator overloading ?
9. Specify the syntax for multiple inheritance.
10. What are streams ?

SECTION B - (5 x 5 = 25 marks)

11. (a) Define the term class and objects. Or
(b) What are in-line functions? Give an example.
12. (a) What are constructors? Explain user defined constructor with an example. Or
(b) What are default arguments? Mention the rules for assigning values to default arguments.
13. (a) Compare class with structure. Or
(b) List any four manipulators and their role.
14. (a) What is meant by overriding? How is it differ from overloading?
Or
(b) How constructors are defined in derived class? Give an example.
15. (a) Mention the general requirements of a polymorphic program.
Or
(b) Write short notes on command line arguments.

SECTION C - (5 X 8 = 40 MARKS)

16. (a) Explain the structure of a C++ program with an example.
Or
(b) Define the following terms
(i) Static members (ii) Friend class (iii) Destructor (iv) Dynamic binding.
17. (a) Explain any four control structures of c++.
Or
(b) Write a program in C++ to overload '+' and '*' operators to perform addition and multiplication of complex objects.
18. (a) Explain function overloading with an example.
Or
(b) What is ambiguity in multiple inheritance? How it is resolved? Explain.
19. (a) What is meant by data conversion? Explain with examples, how conversion differ from type casting?
Or
(b) What are pointers? How pointers are useful to access objects? Explain the method of using function pointers with suitable example.
20. (a) Explain the features of stream I/O classes.
Or
(b) Write short notes on the following: (i) Polymorphism
(ii) Pointer to Pointer.

**PROBABILITY AND STATISTICS
MODEL QUESTION PAPER**

Time : Three hours

Maximum : 75 marks

SECTION A - (10 x 1 = 10 marks)

Answer ALL questions.

1. All possible outcomes of an experiment is called
(a) Sample Space (b) Probability Space
(c) Measure Space (d) Event Space
2. An impossible event A will have $P(A)$ equal to
(a) 0 (b) 1 (c) $1/2$ (d) ϕ
3. Mean of binomial distribution is
(a) $(n-1)$ (b) $p(n-1)q$ (c) np (d) npq .
4. Length of the ordinate in Normal distribution is
(a) $1/\sigma\pi$ (b) $1/\sigma\sqrt{\pi}$ (c) $1/\pi\mu$ (d) $2/\sigma\pi$
5. Level of significance is the level at which a hypothesis
(a) May be accepted or rejected (b) Is rejected
(c) Is accepted (d) Accept a composite hypothesis.
6. Rejecting a hypothesis when in fact it is true is called
(a) Type-2 error (b) Sampling error (c) Non-sampling error (d) Type-1 error.
7. If the expected value of an estimator is not equal to its parametric function $\tau(\theta)$ it is said to be
(a) An unbiased estimator (b) Biased estimator
(c) Consistent estimator (d) Efficient estimator.
8. If t is a consistent estimator of θ then
(a) t^2 is also a consistent estimator of θ^2 (b) t is also a consistent estimator of θ^2
(c) e is also a consistent estimator of θ (d) t is also a consistent of $1/\theta$
9. Variation in the items produced in a factory is due to
(a) Chance causes (b) Assignable causes
(c) Both (a) and (b) (d) Miss classification
10. The relationship between the expected value of R , $E(R)$ and σ with usual constant factors is
(a) $d_1\sigma$ (b) $D_1\sigma$ (c) $d_2\sigma$ (d) $D_2\sigma$

SECTION B - (5 x 5 = 25 marks)

Answer ALL questions.

11. (a) When do the two events A and B are said (i) mutually exclusive and (ii) independent.
Or
- (b) Write a note on conditional expectation and conditional variance.
12. (a) Obtain the mean and variance of Beta distribution.
Or
- (b) Given $r_{12} = 0.6$ $r_{13} = 0.5$ and $r_{23} = 0.4$, Determine r_{123} .
13. (a) A sample of 100 observations gave a mean of 20 and a standard deviation of 5. Examine at 5% level of significance whether the population mean could be 21?
Or
- (b) Explain the principles of analysis of variance.
14. (a) Distinguish between point estimation and interval estimation.
Or
- (b) What is time series? What are its components?
15. (a) Explain the basis for control charts.
Or

(b) Write briefly a note on control charts for variables.

SECTION C - (5 x 8 = 40 marks)

16. (a) Write down the axioms of probability and explain the concept of conditional probability.

Or

(b) If $f_{xy}(x,y)=6x^2y$ for $0 \leq x,y \leq 1$ determine the marginal and conditional densities of X and Y.

17. (a) Obtain the mean and variance of exponential distribution.

Or

(b) Write down the properties of t, F and χ^2 and establish the relationship between them.

18. (a) Out of a sample of 100 items from the production line 20 are found to be defective. From another sample of 50 items it is found that 15 are defective. Examine at 5% level of significance whether these two samples were drawn from the same population.

Or

(b) Use Analysis of variance to test whether there is any significant difference between the treatments.

Treatments

T₁ : 21, 23, 24, 22, 25

T₂ : 23,24,21,25,27,21

T₃ : 26,25,26,28,27,22,24

T₄ : 27,25,21,24,22,25,27

19. (a) Explain how the interval estimates are obtained in testing for the difference between means.

Or

(b) Explain how the measurement of trend is made by fitting a straight line.

20. (a) Explain the construction of X and R chart.

Or

(b) Explain the construction of p and u chart

**COMPUTER GRAPHICS
MODEL QUESTION PAPER**

Time : Three hours

Maximum : 75 marks

SECTION A - (10 x 1 = 10 marks)

1. A _____ consists of a small, vertical lever mounted on a base that is used to steer the screen cursor around.

(a) track ball (b) digitizer (c) joystick (d) data glove.

2. The process is called scan conversion.

(a) digitization (b) penetration (c) persistence (d) cell encoding.

4. ----- is a rigid body transformation that moves objects without deformation.

(a) Rotation (b) Reflection (c) Scaling (d) Translation.

5. For _____ clipping, we require an algorithm that will generate one or more closed areas that are then scan converted for the appropriate area fill.

(a) Text (b) Point (c) Curve (d) Polygon.

7. Curve and ----- equations can be expressed in either a parametric or a non-parametric form.

(a) Line (b) Surface (c) Cartesian (d) Polar.

8. The spline approximation method was developed by-----

(a) Pierre Bezier (b) Markov (c) Spline (d) Hughes.

10. In an image space algorithm, visibility is decided point key point at each pixel position on

the

- (a) parallel projection (b) perspective projection
(c) centre of projection (d) projection plane.

11. A more efficient method for obtaining rotation about a specified axis is to use a representation for the rotation transformation.

- (a) Quaternion's (b) Tweening (c) Cartesian (d) Matrix.

13. ----- fractals have parts that are formed with different scaling parameters S_x , S_y , S_z in different coordinate directions.

- (a) Self-similar (b) Invariant (c) Self-affine (d) Graftals.

14. Provide a method for describing plants.

- (a) Fractals (b) Graftals (c) Octrees (d) Ray-Casting

SECTION B - (5 x 5 = 25 marks)

11. (a) Compare random and raster scan displays.

Or

(b) Discuss on raster scan display processor.

12. (a) What do you mean by two-dimensional transformations? Give examples.

Or

(b) What is clipping? Discuss line clipping.

13. (a) List the properties of B spline curve.

Or

(b) Discuss on curved lines and surfaces.

14. (a) What do you mean by parallel projection? Discuss.

Or

(b) What is Animation Graphics? Discuss.

15. (a) What is Turtle graphics? Discuss.

Or

(b) What do you mean by Koch curves? Discuss.

SECTION C - (5 x 8 = 40 marks)

16. (a) With a neat diagram explain the function of a Cathode Ray Tube.

Or

(b) What do you mean by Input/Output devices?

Discuss any two input devices.

17. (a) Explain any one line drawing algorithms with example.

Or

(b) Discuss a region fill algorithm.

18. (a) Write a short note on curved surfaces.

Or

(b) Discuss on surface and planes.

19. (a) Discuss any one Hidden line removal algorithms.

Or

(b) Write a short note on three dimensional transformations.

20. (a) Discuss any one graphics standard.

Or

(b) Discuss on the following : (i) Ray tracing (ii) C curves.

**SYSTEM SOFTWARE
MODEL QUESTION PAPER**

Time : Three hours

Maximum : 75 marks

Answer ALL the questions.

SECTION A - (10 x 1 = 10 marks)

1. _____ programs are intended to support the operation and use of the computer itself, rather than any particular application.
2. _____ are directly concerned with the management of nearly all of the resources of a Computer System.
3. All of the literal operands used in an assembly language program are gathered together into one or more _____.
4. Expressions are classified as either _____ expressions or _____ expressions depending upon the types of value they produce.
5. _____ search process allows a programmer to use standard subroutines without explicitly including them in the program to be loaded.
6. A _____ editor produces a linked version of the program which is written to a file or library for later execution.
7. A _____ represents a commonly used group of statements in the Source Programming Language.
8. The most common use of macro processors is in _____ language programming.
9. The _____ processor accepts inputs from the user's input devices and analyzes the tokens and syntactic structure of the commands.
10. _____ devices are two-dimensional analog-to-digital converters that position a cursor symbol on the screen by observing the user's movement of the device.

SECTION - (5 x 5 = 25 marks)

11. (a) Write short notes on : Components of System Software.
Or
(b) What are Operating Systems? Discuss its functions.

 12. (a) Write short notes on : Program Relocation.
Or
(b) What are Control Sections? Give example.
 13. (a) Write the algorithm for an Absolute Loader.
Or
(b) What is Dynamic Linking? Give an example.
 14. (a) Write Short Notes on : Concatenation of Macro Parameters.
Or
(b) Discuss about keyword Macro Parameters.
 15. (a) Discuss the overview of the Editing Process.
Or
(b) Discuss about user Interface in Text Editors.
- PART C - (5 x 8 = 40 marks)**
16. (a) Explain the different Functions of System Software.
Or
(b) Describe the structure of the simplified Instructional Computer.
 17. (a) Describe the algorithm for Pass 1 of Assembler.
Or
(b) Explain about Two - Pass Assembler with overlay structure.
 18. (a) Discuss the various Machine - Dependent Loader.

Or

(b) Write about dynamic linking ?

19. (a) Describe the algorithm for a One - Pass macro processor.

Or

(b) Explain about Macro Processing within Language Translators.

20. (a) Explain about Typical Editor structure with a neat block diagram.

Or

(b) Discuss in detail, Debugging Functions and Capabilities.

STRUCTURED SYSTEM ANALYSIS AND DESIGN MODEL QUESTION PAPER

Time : Three hours

Maximum : 75 marks

SECTION – A (10 X 1 = 10)

Fill ups

1. The modeling tool that we use to describe the transformation of inputs into outputs is a _____
2. The designer _____ is the person who will receive the output of your system analysis work.
3. The environmental model consists of statement of purpose, _____ activity and event list.
4. The _____ diagram shows the objects and relationships

Say True Or False

5. The most common model for organizing the activity within a single, synchronous unit is the flow chart
6. The activity of design involves developing a series of models
7. The purpose of functional testing is to ensure that the system can recover properly from various types of failures

Choose the Correct Answer

8. The degree of coupling is _____
 a) higher for data communication b) highest for modules
 c) higher for control communication d) none of these
9. Internal data streams and data stores are developed during _____
 a) External design b) Architectural design
 c) Internal design d) None of these
10. _____ typically involves planning and execution of test cases
 a) verification b) testing c) validation d) none of these

SECTION – B (5 X 5 = 25)

11. a. Write the major issues of system analysis and development.
(OR)
b. Write about ER Diagram.
12. a. Describe the environmental model.
(OR)
b. Describe the steps in Analysis process.
13. a. Write the objectives of structured design.
(OR)
b. What do you mean by alternative design strategy.
14. a. Write the necessity of input validation.
(OR)
b. Describe different types of files.

15. a. Write short notes Audit trails
(OR)
b. Write the importance of post implementation
- SECTION – C (5 x 8 = 40)**
16. a. What are the major issues in system development? Explain
(OR)
b. Explain the structured project life cycle with neat diagram?
17. a. What are the four major system models in the life cycle? Explain in detail
(OR)
b. How to draw a context diagram for a system? So explain how to use the context diagram and event list to build the environmental model?
18. a. (i) What are the three levels of system design? Explain
(ii) Explain how to use coupling and cohesion to evaluate a design
(OR)
b. Write short notes on
(i) Transaction Analysis
(ii) Transform analysis
19. a) What are the issues involving human interaction in the design of output? Explain briefly.
(OR)
b) Explain different types of file organizations with example
20. a) Explain the role of the systems analyst in programming and testing
(OR)
b) What are different types of software testing? Explain in detail.

**COMPUTER NETWORKS
MODEL QUESTION PAPER**

Time : Three hours

Maximum: 75 marks

SECTION A (10 X 1 = 10 MARKS)

1. Modems are used between digital and ----- systems.
2. OSI reference model is composed of ----- layers.
3. HDLC is a -----layer protocol.
4. Highly reliable switching scheme is -----
5. Token bus scheme is a _____ Access scheme.
6. UDP is a -----layer protocol.
7. To connect two dissimilar networks a ----- is used.
8. LAP is used in ----- networks.
9. Encryption converts a plain text into -----
10. E-mail uses ----- protocol.

SECTION B - (5 x 5 = 25 marks)

11. (a) Define the term protocol and interlace.
Or
(b) Explain the working of CRC code.
12. (a) Define the term multiplexing. Mention different types.
Or
(b) Sketch the frame format of Ethernet frame.
13. (a) Explain IEEE 802 protocol stack.
Or
14. (a) What are virtual circuits? Specify their role.
Or

- (b) Write short notes on private networks.
15. (a) What are block ciphers? Mention their use.
Or
(b) Explain the concept of public and private keys
- SECTION C - (5 x 8 = 40 marks)**
16. (a) Explain different types of networks and their features.
Or
(b) Compare analog and digital communication.
17. (a) Explain different guided communication media in detail.
Or
(b) Explain different token passing networks.
18. (a) Discuss the working of TCP/IP.
Or
(b) What are internetworking devices? Explain any three.
19. (a) Discuss the ISDN network features.
Or
(b) Discuss the EDI advantages and standards.
20. (a) Discuss about public key cryptography.
Or
(b) Write short notes on : (i) Digital signature (ii) VAN application

**CLIENT SERVER COMPUTING
MODEL QUESTION PAPER**

Time: Three hours

Maximum: 75 marks

SECTION A (10 X 1 = 10 MARKS)

1. Define : Client.
2. What are web servers ?
3. A ----- key identifies the column or columns whose value uniquely identify a row of data in the table.
4. What are Triggers?
5. ODBC stands for -----
6. A _____ is a software program which translates the ODBC calls into a DBMS specific calls.
7. IDE stands for -----
8. GDI stands for -----
9. Write a note on : Class Wizard.
10. OLE stands for -----

SECTION B - (5 x 5 = 25 marks)

11. (a) Write short notes on : Right sizing.
Or
(b) Briefly discuss about Transaction Servers.
12. (a) Write about Stored Procedures.
Or
(b) What are Transaction Processing Monitors?
13. (a) What is the need for Database Connectivity?
Or
(b) Write a note on : ODBC 2.5.
14. (a) Write the steps involved in creating a new project using VC++ App Wizard.
Or

- (b) Write a note on : General-purpose MFC classes.
15. (a) Write a note on : GDI Setpixel function.
Or
(b) Write about Dynamic Data Exchange.
- SECTION C - (5 x 8 = 40 marks)**
16. (a) Explain about Upsizing and Downsizing.
Or
(b) Describe in detail, Three-Tier Client/Server Architecture.
17. (a) Explain the Hybrid architecture of SQL database servers.
Or
(b) Describe about different classes of Client / Server Applications.
18. (a) What are the various components of ODBC architecture? Explain briefly.
Or
(b) Compare Microsoft's ODBC with proprietary database access.
19. (a) Explain about Windows Programming model.
Or
(b) Discuss in detail, Model and Modeless Dialog Boxes.
20. (a) What are the major classes in VC++ to facilitate ODBC data access? Explain.
Or
(b) How will you develop an MDI application using VC++ AppWizard? Discuss briefly.

**PRINCIPLES OF COMPILER DESIGN
MODEL QUESTION PAPER**

Time : Three hours

Maximum : 75 marks

SECTION A - (10 x 1 = 10 marks)

1. The _____ analyzer groups tokens together into syntactic structures.
2. _____ expressions are suitable for describing tokens.
3. What are Parse Trees?
4. Define : Parser.
5. _____ Parsers scan the input from left-to-right and construct a right most derivation in reverse.
6. _____ item of a grammar G to be a production of G with a dot at some position of the right side.
7. Define : Synthesized Translation.
8. What is the Postfix Notation for $(a + b) * C$ expression?
9. A symbol Table is merely a table with _____ and _____ fields.
10. Define : DAG.

SECTION B - (5 x 5 = 25 marks)

11. (a) What are the different phases of a compiler? Discuss briefly.
Or
(b) Discuss about Role of a Lexical Analyzer.
12. (a) What are the capabilities of Context free Grammars? Discuss briefly.
Or
(b) Write short notes on : Recursive Descent Parsing.
13. (a) Discuss the structure of LR parsers.
Or
(b) Discuss about LR (1) sets of items construction.
14. (a) Write the syntax-directed translation scheme for infix-postfix translation.
Or

(b) Discuss about Quadruples and Indirect Triples with examples.

15. (a) Discuss about the use of Search Trees and Hash Tables to construct symbol tables.

Or

(b) Write short notes on : Code Optimization.

SECTION C - (5 x 8 = 40 marks)

16. (a) Explain the various basic constructs of high level programming languages with suitable examples.

Or

(b) Describe the algorithm for constructing an NF A from a regular expression with example.

17. (a) Explain the working of Shift-Reduce Parser with example.

Or

(b) Describe about Predictive Parsing Program with example.

18. (a) Explain about how to construct the canonical collection of set of LR(0) items for an augmented grammar with example.

(b) Construct SLR parsing table for the grammer

$E \rightarrow E+T$

$E \rightarrow T$

$T \rightarrow T * F$

$T \rightarrow F$

$F \rightarrow (E)$

$F \rightarrow id$

19. (a) Describe the Syntax-Directed construction of Syntax Trees with examples.

Or

(b) Explain the Syntax-Directed Translation Scheme for Assignment Statements with Integer Types.

20. (a) Explain the algorithm for constructing a DAG with example.

Or

(b) What are the problems in Code Generation? Explain with examples.

**HUMAN PSYCHOLOGY AND COMMUNICATION SKILLS
MODEL QUESTION PAPER**

Time : Three hours

Maximum : 75 marks

SECTION A - (10 x 1 = 10 marks)

1. Psychology means _____
2. There are minimum _____ variables in an experiment
3. Drivers of automobiles requires _____ perception.
4. Emotion involves _____ changes.
5. Permanent change in behaviour is termed as _____
6. The STM is of _____ duration.
7. Rational thinking is known as _____
8. Dreams are a form of _____
9. Psychoanalytic theory was profounded by _____
10. Without a _____ the sentence will be meaningless.

SECTION B - (5 x 5 = 25 marks)

11. (a) State the uses of Psychology.

Or

(b) Explain the method of case-history

12. (a) State the functions of brain.

Or

(b) Explain the depth perception.

13. (a) Explain the mechanism of sensation.

Or

(b) Explain the hierarchy of motives.

14. (a) Discuss the basics of mental hygiene.

Or

(b) Describe classical conditioning.

15. (a) Discuss the use of symbols and images in learning languages.

Or

(b) How to conduct a seminar?

SECTION C - (5 x 8 = 40 marks)

16. (a) Discuss the methods of introspection and its limitations.

Or

(b) Discuss the psychoanalytic concepts.

17. (a) Discuss the physiological changes during emotion.

Or

(b) How to improve memory?

18. (a) Explain trial and error, and insight learning.

Or

(b) Give an account of non-verbal tests of intelligence.

19. (a) Write a note on oral communication

Or

(b) Bring out the uses of visual aids.

20. (a) How to prepare short speeches?

Or

(b) Write briefly a welcome speech of the inaugural meeting of students union.

**OBJECT ORIENTED ANALYSIS AND DESIGN
MODEL QUESTION PAPER**

Time : Three hours

Maximum : 75 marks

SECTION A - (10 x 1 = 10 marks)

Answer ALL the questions.

Fill in the blanks

1. PL / 1 and ALGOL 68 are _____ generation
2. A _____ is any object that uses the resources of another object.
3. _____ is the means whereby we order knowledge.
4. A _____ diagram is used to show the existence of classes and their relationships in the logical view of a system.
5. A _____ is a piece of hardware capable of executing programs.
6. The purpose of the _____ phase is to grow and change the implementation through successive refinement, ultimately leading to the production system.
7. Software _____ involves "the systematic activities providing evidence of the fitness for use of the total software product".
8. _____ documentation must be produced to capture the semantics of the system's function points as viewed through scenarios.
9. _____ structures collection of nodes and arcs, which may not contain cycles or cross-references.

10. _____ structures allow sequence of items can be added and removed from the same end.

SECTION B - (5 x 5 = 25 marks)

11. (a) Write short notes on : Different kinds of Programming Paradigms.

Or

- (b) Define the following terms with examples : (i) Object (ii) Destructor.

12. (a) What is meant by classical classification? Discuss briefly.

Or

- (b) What is the use of State Transition Diagram? Give an example.

13. (a) Write short notes on : Object-oriented Metrics.

Or

- (b) What are the benefits of object-oriented development?

14. (a) Distinguish between subsystem testing and system testing.

Or

- (b) Discuss about Documentation Contents.

15. (a) Distinguish between Unbounded forms of an Abstraction.

Or

- (b) Write a note Mechanism in Frameworks.

SECTION C - (5 x 8 = 40 marks)

16. (a) Explain the following terms with examples : (i) Abstraction (ii) Concurrency.

Or

- (b) Explain about Multiple Inheritance with example.

17. (a) Describe in detail, object-"oriented analysis.

Or

- (b) Explain about essentials and advanced concepts of process diagrams.

18. (a) Describe in detail, The Micro Development Process.

Or

- (b) Explain about Development Team Role.

19. (a) Explain about Release Management.

Or

- (b) Describe the different kinds of tools that are applicable to object-oriented development.

20. (a) Discuss about foundation class library requirements.

Or

- (b) Explain about evolution phase of frameworks with examples.

**DATABASE MANAGEMENT SYSTEM
MODEL QUESTION PAPER**

Time: Three hours

Maximum: 75 marks

SECTION A - (10 x 1 = 10 marks)

- The _____ model uses a collection of tables to represent both data and the relationships among those data.
- _____ users interact with the .system without writing programs.
- _____ relational calculus uses domain variables that take an values from an attributes domain, rather than values for an entire tuple.
- The SQL operations _____, _____ operate on relations and correspond to the relational algebra operations \cap and \cup .
- The minimal superkey is termed the entity set's _____ key.
- A relation is in BCNF if and only if every _____ is a candidate key.
- In _____ data model, the overall logical structure of a database is represented by a

directed graph.

8. DBTG provides _____ command for locating a described record.
9. Database _____ ensured that the data in the database is correct and consistent.
10. The _____ command in SQL is used to take away a privilege that was granted.

SECTION B - (5 x 5 = 25 marks)

11. (a) Write short notes on Instances and Schemes.

Or

(b) Discuss briefly about different types of DML

12. (a) Write short notes on Tuple Relational Calculus.

Or

(b) What are Domain Constraints? Discuss with example.

13. (a) What is meant by functional dependency? Discuss with an example.

Or

(b) Write short notes on Buffer Management.

14. (a) Write about Data Description in the Network Model.

Or

(b) Write short notes on Data definition in Hierarchical data model.

15. (a) Write short notes on security threats.

Or

(b) Discuss about SQL security commands.

SECTION C - (5 x 8 = 40 marks)

16. (a) Describe the major disadvantages of fileprocessing systems with examples.

Or

(b) Explain the overall system structure with a neat block diagram.

17. (a) Explain about the various fundamental operations in Relational Algebra with examples,

Or

(b) Describe the following with examples: (i) Referential integrity

(ii) Assertions.

18. (a) Explain about normalization using Join dependencies with example.

Or

(b) Write short notes on:

(i) Domain-key normal form (ii) Data dictionary storage.

19. (a) Explain about DBTG Data Manipulation Facility with examples

Or

(b) Explain mapping hierarchies to files with examples.

20. (a) Describe in detail, statistical database.

Or

(b) Explain the overall database design of savings bank enterprise.

**MODERN COMMUNICATION TECHNOLOGY
MODEL QUESTION PAPER**

Time: Three hours

Maximum: 75 marks

SECTION A (10 X 1 = 10 MARKS)

1. PRI stands for _____
2. Modem is used to connect the computer to _____
3. A TM network uses _____ between sending and receiving nodes.
4. The layer of ATM that is responsible for packet segmentation and reassembly is _____
5. Modern communication uses _____ medium for very high speed data transfer.
6. A protocol used for security in ATM is found in _____ layer.

7. FCS field in LAPD frame is used for _____
8. Mention any two services of ISDN.
9. List any two advantages of mobile communication.
10. Specify the need for error control.

SECTION B – (5 x 5 = 25 Marks)

- 11.a. Define the terms networks and interface.
(Or)
- b. Name the ISDN interfaces used in customer premises.
12. a. Explain the role of different ISDN channel.
(Or)
- b. What are the layers of ISDN channel.
- 13.a. Mention any four features of B-ISDN.
(Or)
- b. Specify the need for cell relay in ATM networks.
- 14.a. Mention the performance characteristics of ATM networks.
(Or)
- b. What is the role of AAL ?
- 15.a. Name the elements of modern communication system.
(Or)
- b. Write short notes on VAN.

SECTION C - (5 x 8 = 40 marks)

16. (a) Define the following: (i) Standard (ii) Reference point (iii) Interface (iv) Protocol (v) Service (vi) QOS.
Or
(b) Discuss the evolution of ISDN.
17. (a) (i) Explain different ISDN interface.
(ii) Describe the features of customer premises ISDN equipments.
Or
(b) (i) Explain different types of virtual circuits used in ISDN.
(ii) What is meant by packet mode operation?
18. (a) Explain the AALI format and ATM header format with a neat sketch.
Or
(b) Discuss the fundamental functions of information handling.
19. (a) Discuss the features of modern communications.
Or
(b) Explain the characteristics of ATM LAN.
- 20 (a) Discuss different methods used for merging voice, data and video.
Or
(b) Write short notes on :
 - (i) Frame relay
 - (ii) Mobile communication
 - (iii) Internet.

**INTERNET AND JAVA PROGRAMMING
MODEL QUESTION PAPER**

Time : Three hours

Maximum : 75 marks

SECTION A - (10 x 1 = 10 marks)

1. _____ is an electronic message sent from one computer to another.
2. Microsoft Internet Explorer is a _____
3. WWW stands for _____
4. Alta Vista is a _____ on the Web.
5. Java is an _____ Oriented Language.
6. A member with _____ access is visible only within its class.
7. The Keyboard _____ is used before a block of statements that can throw an exception.
8. A method in Java can be declared with the _____ modifier to indicate that it's just a Prototype.
9. _____ are groups of related Java classes and Interfaces.
10. AWT stands for _____.

SECTION B - (5 X 5 = 25 Marks)

- 11.a. Describe the types of Internet connections.(Or)
- b. Write about Client / Server Model.
- 12.a. What is hypertext ?(Or)
- b. How can you introduce comment in HTML ?
- 13.a. Mention any four string handling functions in Java and Explain.(Or)
- b. Explain the working of if structure.
- 14.a. With an example explain the use of method.(Or)
- b. Write about virtual function.
- 15.a. What is Interface ? Give an example.(Or)
- b. Illustrate the use of AWT.

SECTION C - (5 x 8 = 40 marks)

16. (a) (i) Write short notes on : DNS. (ii) Discuss in detail about FTP.
Or
- (b) (i) Write short notes on : Web Browsers.
(ii) Discuss about GOPHER and WAIS.
17. (a) (i) Explain about Uniform Resource Locator in Internet.
(ii) Write short notes on : SGML.
Or
- (b) (i) Explain about Basic components of HTML with examples.
(ii) Discuss the tags used in Formatting the HTML Text with examples.
18. (a) (i) Compare Java with C language.
(ii) Write a Java program to find the average of 'n' given numbers. Or
(b) (i) Describe the program structure of Java with an example.
(ii) Write a Java program to find the Biggest number among Three given numbers.
19. (a) Explain about overloading constructors in Java with example.
Or
- (b) Discuss in detail about Exception Handling in Java with examples.
20. (a) What are Threads? Write an example Java program that illustrates creation of Multiple Threads.
Or
- (b) What are Applets? Explain about Applet Life Cycle.

SOFTWARE PROJECT MANAGEMENT

Time: Three hours

Maximum: 75 marks

SECTION A - (10 x 1 = 10 marks)

Answer ALL the questions.

1. People who have stake or interest in the project are known as
(a) Project trainees (b) Stakeholders
(c) Project Managers (d) System Analysts.
2. The performance measure that include mean-time between failures is known as
(a) usability (b) re-usability (c) reliability (d) availability.
3. The analysis that evaluate the economic benefits of any project is
(a) Feasibility (b) Performance (c) Technical assessment
(d) Cost-benefit analysis.
4. The working model of one or more aspects of the projected system is presented by
(a) DFD (b) Prototype (c) Waterfall Model
(d) V-process model
5. The earliest date on which each event may be achieved is calculated using ----- rule.
6. The cost of money as a resource is a factor taken into account in ----- evaluation.
7. The overall responsibility for ensuring satisfactory progress on the project is the role of ----
--committee.
8. The progress of a project is tracked using
9. Delayed projects can be brought on track by ----- activity.
10. Traffic light technique IS a technique.

SECTION B - (5 x 5 = 25 marks)

11. (a) List the various activities of management. or
(b) What are the problems with software projects?
12. (a) Define the term program and portfolio managements. or
(b) List the contents of technical plan.
13. (a) What is meant by software prototyping? Mention the types of prototyping. or
(b) List any four software effort estimation techniques.
14. (a) Mention the four qualities of software projects of software project or
(b) List the steps involved in the procedure oriented approach.
15. (a) Mention any two advantages and disadvantages of time and material contracts. or
(b) Mention any four categories of reporting.

SECTION C - (5 x 8 = 40 marks)

16. (a) Discuss the various activities covered by software project management. or
(b) Explain the project control cycle helps to project manager to perform management control.
17. (a) Explain the various steps involved in the analysis of project characteristics. or
(b) Discuss the steps involved in cost-benefit analysis.
18. (a) (i) Explain the characteristics that need prototyping.
(ii) What is spiral model? Explain. or
(b) Explain any two approaches used for identifying the project activities.
19. (a) Discuss the methods involved in sequencing and scheduling of activities. or
(b) Discuss different strategies used for risk ____
20. (a) Explain any two tools used for visualizing the progress of the project. or
(b) Write short notes on : (i) Critical path (ii) Standards.

**PRINCIPLES OF MANAGEMENT AND MARKETING
MODEL QUESTION PAPER**

Time : Three hours

Maximum : 75 marks

SECTION A (10 X 1 = 10 MARKS)

1. The thinking function of management is _____
2. The management function that compares actual results with the standard is called _____
3. The concept of scientific management was given by _____
4. Authority can be delegated but _____ cannot be delegated.
5. Departmentation on the basis of needs of customer is called -----
6. _____ is an informal communication
7. ----- is a statement of anticipated results
8. It is a method of buying as agreed upon by two parties to buy and sell mutually their own products. This is known as -----
9. The ideas collected and scrutinised to eliminate those inconsistent with the product policies and objective of the firm this stage is called -----.
10. In the _____ stage, demand tends to reach a saturation point

SECTION – B (5 x 5 = 25)

11. a. Define management and explain its scope.
(Or)
b. Explain the distinctive contributions of Taylor to the theory of management.
12. a. Explain the principles of organization.
(Or)
b. Suggest the various bases for departmentation in a business enterprise.
13. a. Explain the principles of direction.
(Or)
b. Explain the importance of motivation in an organisation.
14. a. Describe the functions of marketing.
(Or)
b. Explain the major determinants of consumer behaviour.
15. a. Describe the elements of marketing strategy.
(Or)
b. Explain the functions of distribution channels.

SECTION C - (5 x 8 = 40 marks)

Answer ALL questions.

16. (a) Explain the Principles of Management.Or
(b) What are the steps in planning?
17. (a) Discuss the principles, advantages and disadvantages of delegation. Or
(b) Describe in brief the various theories of motivation.
18. (a) Outline the requirements of an effective control system and examine the tools of controlling.
Or
(b) State the different styles of leadership and explain the need for leadership.
19. (a) Marketing both begins and ends with the customer - Discuss. Or
(b) Explain the term 'Modern Marketing Concept'. What are its benefits?
20. (a) Explain the meaning and bases for market segmentation. Or
(b) What are the various stages in the product development of a new product?

**SOFTWARE QUALITY ASSURANCE
MODEL QUESTION PAPER**

Time : Three hours

Maximum : 75 marks

Answer ALL questions.

SECTION A (10 X 1 = 10 MARKS)

Say True / False

1. In software, quality and productivity just do not separate.
2. Data flow diagrams are used for representing information flows within a system.
3. Testing tools must be used from the very beginning of the development life cycle.
4. The purpose of corrective action is to prevent non-conformity.
5. The software audit process improves the availability and reliability of software and the products supported by software.
6. The audit makes use of the computer to apply statistical methods for error prediction.
7. The model for the process being managed is developed and documented by a process - modelling tool.
8. Quality system is one of the clauses in the ISO 9001.
9. DIT stands for _____
10. Software availability is $= \frac{MTTF}{(MTTF + \text{_____})}$

SECTION C (5 X 5 = 25 MARKS)

- 11.a. Explain quality and quality system.(Or)
- b. Write short notes on : Design Control.
- 12.a. Write short notes on : Process Control.(Or)
- b. What are test tools ? Explain.
- 13.a. Write short notes on : Quality records.
- b. Write short notes on : Servicing.
14. a. What do you mean by computer Interface ? Explain.
- b. What is QA ? Explain.
15. a. What is ISO 9001 ? Explain.(Or)
- b. Compare ISO 9000 with ISO 9001.

SECTION C - (5 x 8 = 40 marks)

16. (a) What are the Management responsibilities for maintaining quality in their activities.
Or
- (b) Explain the following (i) Design control (ii) Document control.
17. (a) Explain in detail about process control.
Or
- (b) Explain in detail about identification of testing tools.
18. (a) Explain the statistical techniques for quality of products.
Or
- (b) Explain about the internal quality audits in detail.
19. (a) What are the new technologies in quality assurance? Explain.
Or
- (b) Explain in detail about process Modelling.
20. (a) Explain in detail about the elements of ISO 9001.
Or
- (b) Explain in detail about the policies in ISO 9001

**SOFTWARE TESTING
MODEL QUESTION PAPER**

Time: Three hours

Maximum: 75 marks

SECTION A - (10 x 1 = 10 marks)

1. What are the different roles of testing?
2. What are defects?
3. What are the major tasks in developing test plan?
4. _____ is the accuracy of the data may be changed.
5. List the tasks involved in design phase testing.
6. _____ is to enhancing the role of a tool manager.
7. List the concerns of testing the software changes.
8. What is the relation between use case and test case?
9. Compliance testing requires that be _____ IS compare to the standards for that _____
10. List any two measurable characteristics of application system testing.

SECTION B - (5 x 5 = 25 marks)

- 11.a. What are common computer problems ? (or)
- b. Explain the criteria for testing policy.
12. a. What are the general objectives for the design phase ? (or)
- b. What are the more common programming phase deliverables that are the input for testing ?
13. a. What are the types of parametric models ? (or)
- b. What are the functions of inspectors ? Explain.
14. a. What are the concerns that testers must address about client / server systems ? (or)
- b. Explain the spiral test planning process.
- 15.a. What are the guidelines for preparing test report ? Explain. (or)
- b. What are the test assessment steps ?

SECTION C - (5 x 8 = 40 marks)

16. (a) Explain the eight considerations In developing testing methodologies.
Or
- (b) (i) What are the different role of testing? Explain them.
(ii) What is testing policy? Explain the contents of it.
17. (a) Briefly explain about any 10 requirements phase test factors.
Or
- (b) Briefly explain about the test file process.
18. (a) Explain the steps to be followed in installing of new software.
Or
- (b) What are the tasks to be performed the change version of software? Explain it.
19. (a) Why we need assessment of software? What are the seven task appeared while assessment? Explain the tasks.
Or
- (b) Explain about software development process maturity levels.
20. (a) What are the major tasks involved in the system documentation? Briefly explain it.
Or
- (b) Briefly explain about different testing matrix.