

DIPLOMA INFORMATION TECHNOLOGY

FIRST SEMESTER OF SECOND YEAR

1. Fundamentals of Data Structure
2. Fundamentals of Operating System
3. Introduction to System Analysis and Design
4. Programming with C
5. Microprocessor and Assembly Language Programing
6. Applied Mathematics III

SUBJECT NAME: FUNDAMENTALS OF DATA STRUCTURE

1. BASIC CONCEPTS OF DATA REPRESENTATION:

- Cells
- Fields
- Arrays
- Records

2. STACKS AND QUEUES

- What is a Stack?
- Operation of Stack (PUSH & POP)
- Implementation of Stack
- What is Queue?
- Implementation of the Queues
- Priority Queues

3. LINKED LISTS

- Pointers and Linked allocation.
- Linked lists of Sequential List.
- Difference between Linked & sequential List.
- Operations of linear lists using singly linked & doubly linked storage structure.
- Circular linked list.
- Application of linked lists.

4. SEARCHING AND STORING

- Various sorting techniques: Selection sort, bubble sort, Quick sort, Merge sorting, tree sorting, Shell sort, Radix sort.
- Sequential searching.
- Binary searching.
- Hash tables – methods.
- Hashing functions.
- Collision resolution techniques.

5. TREES

- Definitions and Concepts.
- Binary trees.
- Operations of binary trees.
- Binary tree and tree traversal algorithms.
- Operations on binary trees.
- List representation of Tree.

6. STRINGS

- Strings and their representations.

- String Conversion.
- String manipulation.
- String arrays.

PRACTICAL:

1. Develop an algorithm for push and pop stack operations and implement using array data structure and pointer.
2. Develop an algorithm for insert and delete operations of queue and implement using array and pointer data structures.
3. Develop algorithms for following ordered singly linked list operations:
 - Addition new nodes into three
 - Deletion nodes from the tree
 - Searching a node into tree
 - Display current nodes of the tree
 Write program for the above operations and test it.
4. Develop algorithm for sequential search write program for the same and test it.
5. Develop algorithm for sequential search write program for the same and test it.
6. Develop algorithm for many section. While program for the same and first act.
7. Develop algorithms for following sorting methods, write programs for each and test it.
 - Double sort
 - Selection sort
 - Merge sort
 - Radix sort
 - Insertion sort
 - Shell sort
 - Quick sort
8. Develop algorithms for following string operations and implement them
 - Finding length of a given string
 - Copying a string into another string
 - Concatenating two strings
 - String comparison
 - Finding a substring into a string

REFERENCE BOOKS:

1. Pascal + Data Structure, Dale/Lilly, TMH
2. Introduction to Data structure With applications, Trembly & Sorenson, Mc-Graw Hill
3. Introduction to Data structure, Bhagat Singh & Thomas Waps Robert Kruse, THM PHI
4. Data Structures and program Design, Robert Kruse, PHI

SUBJECT NAME: FUNDAMENTALS OF OPERATING SYSTEM

1. INTRODUCTION TO OPERATING SYSTEM

- What is operating system
- Evolution of operating system
- types of operating system
- multiprocessor systems
- Scheduling
- semaphores
- Monitors, messages
- memory management
- file management
- The user view and operating system view

2. UNIX OPERATING SYSTEM

- Design principle
- Programmer interface
- user interface
- file system
- Process management
- Memory management
- i/o system
- Inter process communication
- Unix Commands and Utilities

3. UNIX OVERVIEW

- The kernel
- Running a command: The shell.
- Files and Directories
- Peripheral Devices and Unix:-special files

4. PROBLEM SOLVING APPROACHES UNIX

- Using single and compound UNIX commands
- Shell scripts
- C programs for solving problems.
- Building command library of programs.

5. BOURNE SHELL:-

- Filename expansion: Shell match characters.
- Shell variable
- Shell Scripts.
- Shell Commands.

6. SHELL SCRIPTS:

- The for loop, choice making, Conditional looping
- 'if' and 'test' command
- Error checking
- Adding arithmetic to a shell script.

- Count down loop.
- Shell scripts with multiple options.
- Passing arrangements to scripts.
- The spell command

7. THE UNIX-C INTERFACE

- Accessing standard input & output Files.
- The macros of <ctype.h>
- How to add an option to a Program.
- How to process multiple files with c program
- How to get system information to a program.

TEXT BOOK:-

1. Operating system concepts: jams Peterson Wesley siferschtz.
2. Advanced UNIX & Programmer guide Stephan B.P.B
3. operating system Milinkovic McGraw-Hill

REFERENCE:-

1. Programming in c for UNIX, Schjrmer
2. Operating system design & implementation, tanen baum
3. The UNIX programming environment, kernighan & Pike pretice Hall
4. The Design of Unix Operating system, buch

SUBJECT: INTRODUCTION TO SYSTEM ANALYSIS AND DESIGN

1. Introduction:

- System definition and Concepts
- Characteristics and type of systems.
- Manual and Automated Systems.
- Types of Information.
- Real – life business sub – system.
- Production, HRM, Research, Design & Development.
- Marketing.
- Personal.
- Material.
- Finance.
- System Model; Types of Models.
- System Environment and Boundaries
- Real – time and Distributed System.
- Basic Principles of Successful systems.

2. System Analyst:

- Role and need of System Analyst.
- Qualification and responsibility.
- Tools used by System Analyst.

3. System Development Life Cycle:

- Introduction to system development life cycle (SDLC).
- Various phases.
- Study.
- Analysis.
- Design.
- Development.
- Implementation and maintenance.
- System Documentation consideration.
- Principles of system Documentation
- Types of documentation and their importance.
- Enforcing documentation discipline in an organization.

4. System Planning:

- Data and fact gathering techniques.
- Interviews
- Group communication
- Presentation

- Site visits
 - Feasibility study and its importance.
 - Types of feasibility reports.
 - System selection plan and proposal.
 - Prototyping
 - Cost – benefit analysis.
- 5. System Design and Modelling:**
- Process modeling.
 - Logical and Physical Design.
 - System Flowchart and structured charts.
 - Data Flow Diagram.
 - Common diagramming convention and guidelines using DFD and ERD for data modelling and system Analysis.
 - Decision tables.
- 6. Input and Output:**
- Classification of forms.
 - Input/output forms design.
 - User – interface Design.
 - Graphical Interface.
 - Validation of Input Data.
 - Objects of Output Design.
 - Design of Output Reports.
- 7. Modular and structured Design:**
- Module Specification.
 - Module coupling and cohesion.
 - Top – down and bottom – design.
- 8. System Implementation and Maintenance:**
- Planning Consideration.
 - Conversion method, Procedure and controls.
 - System Acceptance criteria.
 - System evaluation and performance.
 - System Testing and validation.
 - System Quality control and assurance.
 - Maintenance activities and issues.

TEXTBOOKS:

1. Analysis and Design of Information Systems by V.Rajaraman.
2. Analysis and Design of System by Elias.M.Award.

SUBJECT NAME: MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING

1. MICROPROCESSOR ARCHITECTURE AND MICROCOMPUTER SYSTEM:

- Microprocessor Architecture and its operations: Microprocessor initiated operations and 8085 BUS organization, internal data operations and 8085 registers.
- **Memory:** Memory organization, Memory map, Memory read and write.
- Microcomputer system
- 8085 Microprocessor:
- Block diagram, Address and data bus, control and status signals, Power – supply and clock
- Frequency, Interrupts and externally initiated operations, serial I/O ports, BUS timings, Flags.

2. 8085 INSTRUCTION AND TIMINGS:

- Instruction classification: Review of 8085 operations.
- Instruction Formats: Single byte, Two byte and Three bytes instructions, Opcode format,
- Instruction Timings and operation status, Simple programs.

3. 8085 INSTRUCTION SET:

- Data transfer instructions.
- Arithmetic Instructions.
- Logic Operations.
- Branch operations.
- Stack, I/O and machine control Instructions.
- Simple programs using 8085 Instructions.

4. PROGRAMMING TECHNIQUES:

- Flow chart Symbols & Flowcharts.
- Looping, Counting and Indexing.
- Logic operations.
- Counter and Timing delays.
- Stack and Subroutines.
- Code conversion, BCD Arithmetic and 16 bit Data operations.
- Macros.

5. ASSEMBLERS:

- Assembler Types – 1 pass, 2 pass.
- Loader, Linker.
- Assembler Directives.
- Symbols, Memory Allocation.
- Programs in Assembly Languages.
- Assembler Listing and Hex Files.
- Use of Macro and Subroutines, Include Files.

- Disassemble.
- Down Loading and Uploading.
- 6. 8086/8088 MICROPROCESSOR ARCHITECTURE:**
- Organization of 8086 memory organization, register structure and addressing modes.
- Bus structure & timing of 8086 bus execution mits. Bus cycles, maximum & minimum mode status signals.
- 7. PERIPHERALS CHIPS**
- 8255 PPI
- 8253/54 COUNTER
- 8279 KEYBOARD
- 8251 USART

PRACTICALS:

Practical shall be based on the prescribed syllabus.

TERMWOK:

Term work shall be consisting of prescribed course of practical laboratory work done and duly recorded and certified in the journal. Term work is to be defined by oral.

BOOKS:

Textbooks:

1. Microprocessor Archi. Programming & Applications with 8085 and 8080 a. – by R.S.Gaonkar – Willey Eastern Ltd.
2. Fundamentals of Microprocessor and Microcomputers By B.Ram Dhanpat Rai Publication

Reference Books:

1. Introduction to Microprocessors: Software, Hardware, Programming -By Lance A. Leventhal – PHI publication.
2. 8080 a/8085 Assembly Language Programming –By Lance A. Leventhal –Mc Graw Hill
3. Introduction to Microprocessors –By A.P. Malvino –TMH publications.
4. Digital Computer Electronics –By A.P. Malvino –TMH publications.
5. Microprocessor / Microcomputers: An introduction -By Donald D. Givone and Robert P. Roesser –Mc Graw Hill
6. The 8086/8088 Family: Design programming and interfacing.-By John Uffenbeck.

DIPLOMA INFORMATION TECHNOLOGY

SECOND SEMESTER OF SECOND YEAR

1. Introduction to Visual Basic
2. Fundamentals of DBMS
3. Principles of Data Communications
4. Computer Peripherals and Interfaces
5. Object Oriented Programming & C++

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SUBJECT NAME: INTRODUCTION TO VISUAL BASIC

1. Introduction
2. Code and events
3. Using VB controls
4. Using strings
5. Using numbers
6. Using control statements
7. Using dialogue boxes
8. Working with menus
9. Using files and databases
10. Using the internet and intranet
11. Debugging applications and error handling

TEXT BOOKS:

1. Teach yourself Visual Basic – Tech media Publications
2. Visual Basic 6.0 Complete Reference – Peter Norton

SUBJECT NAME: FUNDAMENTALS OF DBMS

1. Overview of Database management System:

- Data, Information and Knowledge.
- Data processing versus Data Management.
- File Oriented Approach versus Database Oriented Approach to Data Management.
- Data Independence
- Database Administrative Roles.
- DBMS Architecture.
- Different kinds of DBMS Users.
- Data Dictionary.
- Types of Database Languages.
- Data Models (ANSI/SPARC 3 Level Architecture)
- Different Types of Database.
 - (Distributed Database, Client – server Database, Object – Oriented Database).

2. Relation Model

- Definition of Relation, Properties of Relational Model (Codd's 12 Rules or Equivalent).
- Concepts of Keys: Candidate Key, Primary Key, Alternate Key, Foreign Key.
- Fundamental Integrity Rules: Entity Integrity, Referential Integrity.
- Relational Algebra: Select, Project, Cross – Product, Different Types of Joins (theta join, Equijoin, Natural Join, Outer Join); Set Operations.
- Tuple Relational Calculus.
- Domain Relational Calculus.
- Simple and Complex Queries using Relational Algebra.
- Stand alone and Embedded Query Languages.

3. SQL (Structured Query Language)

- SQL Constructs (SELECT...FROM...WHERE...GROUP BY...HAVING...ORDER BY...)
- INSERT, DELETE, UPDATE.
- VIEW Definition and Use.
- Temporary Tables.
- Nested Queries.
- Correlated Nested Queries.
- Transaction Processing and SQL.
- Integrity Constraints: NOT NULL, UNIQUE, CHECK, PRIMARY KEY, FOREIGN KEY, REFERENCE KEY.

4. Embedded SQL

- Introduction.

- Operations Not Involving Cursors.
- Operations Involving Cursors.
- Dynamic Statements.
- Introduction to ODBC.

5. **Database Design**

- Entity – Relationship Model as a Tool for Conceptual Design.
- ER Diagram.
- Converting an ER model into Relational Scheme.
- Normalization Concept in Logical (Relational) Model; update Anomalies.
- Issue in Physical Design.
- Concepts of Indexes.
- File Organization of Relational Table.
- Denormalization.
- Clustering of Indexes and Tables.
- Types of File Organization.

6. **Database Concurrency and Database Recovery**

- Ill effects of Concurrency.
- Transaction Log.
- Concepts of Two – Phase Locking.
- Deadlocks.
- Database Security

PRACTICALS:

1. Create table which stores all types of data defined Primary Key.
2. Insert Record in table created.
3. Update records in created table.
4. Delete records in created table.
5. Group the information on collected columns.
6. Create two different tables and define primary key and foreign key and reflection integrate both these two tables.
7. Create a view of selected columns.
8. Join two table and display information from these tables of selected column from two tables.
9. To write nested queries for tables created.
10. Create cursor for updating the records of selected condition.
11. Using front end tool, Insert, delete, update information in Back and server table.
12. Create an index key on suitable column on table you have created.
13. Operate a cluster on selected column of given tables.

TEXTBOOK:

- | | | | |
|----|-------------------|--------|-----------------------------|
| | DATABASE | SYSTEM | |
| 1. | CONCEPTS | | BY HENRY F. KORTH (III Ed.) |
| 2. | DATABASE CONCEPTS | | BY JAMES MARTIN |
| 3. | DATABASE CONCEPTS | | BY C.J. DATE |

SUBJECT NAME: PRINCIPLES OF DATA COMMUNICATIONS

1. An Introduction to communication?

- What is communication?
- Uses of communication
- The structure and Types of communication Systems
- Communication Systems and Data Communications

2. Communications Channel Characteristics

- The Communication Channel.
- Electromagnetic Waves.
- Frequency Wavelength.
- The Electromagnetic Spectrum.
- Band-width.
- Band-width and channel capacity.
- Band-width and distance.

3. Modulation

- Modulation and demodulation.
- Types of modulation (AM, FM, PM).
- Analog versus Digital Modulation.
- Synchronous and Asynchronous Modulation.

4. Analog Communication and Multiplexing

- Multiplexing.
- Space Division Multiplexing.
- Frequency Division Multiplexing.
- Time Division Multiplexing.
- Combine Modulation System

5. Digital Communication

- Description of Digital System.
- Advantages of Digital System.
- Multiplexing and modulation of Digital System.

6. Fibre Optics

- The Role of Media.
- Noise
- Principle of Optical Communication.
- Types of Optical Cables
- Losses of Optical Cables.
- Coupler Types.
- Conversions of signals.
- Comparator of Studies.

7. Communication System Requirement

- Data communication System Issue.
- Codes and Formats.
- Protocol.
- Synchronous and Asynchronous System.
- Data Rates and Serial & Parallel Communication.

8. Telephone System and Modems

9. ISDN and Broadband ISDN

10. Satellite Communication

- Types of Satellites.
- Calculation of Heights and Orbit
- Up & Down Frequency Calculation.

PRACTICAL:

1. Measurement of modulation index of amp. Modulation
2. Measurement of Freq. deviation of FM.
3. Study of Pulse amplitude modulation.
4. Study of Pulse width modulation.
5. Build & Test circuit of Diode detector.
6. Build & Test circuit of ration detector.
7. Build & Test circuit of T.D.M.
8. Build & Test circuit of F.D.M.
9. Study of fiber optics.
10. Application of Modem in data transfer.
11. Study of ISDN/(Local visit)

REFERENCE BOOKS:

1. Data Communication by William L. Schweber MGH
2. Data & Computer Communication by William Stallings PHI

SUBJECT NAME: COMPUTER PERIPHERALS AND INTERFACES

- 1. The role computer peripherals**
- 2. Computer peripherals:**
 - introduction to peripherals,
 - character display,
 - LED display, LCD,
 - text display and cathode ray tube,
 - Use of CRT as an alphanumeric display raster SCAN tech,
 - key boards,
 - Switches- contact switches, hall effect, capacitive, magnetic reed, ferrite core, mercury contact switches, magnetic tape,
 - floppy disk, hard disk,
 - VDU unit- cursor, microprocessor based VDU block diagram, microcomputer as a terminal.
- 3. Printers and other I/O devices:**
 - general features of printers,
 - dot matrix, inkjet, laser printer,
 - connection printer to computer,
 - microcontroller control of printers,
 - optical mark readers and optical character reader with block diagram,
 - scanner and various scanning tech,
 - web camera.
- 4. Connection of peripherals to computer and data communication:**
 - interface unit and connection of interface unit,
 - interfacing method,
 - asynchronous and synchronous serial interface,
 - introduction to data communication,
 - data transmission and data transmission media,
 - MODEMS,
 - acoustic coupler,
 - introduction to terminal network,
 - data link control and HDLC.
- 5. Peripheral interfacing:**
 - key board interfacing,
 - key bouncing-debouncing circuits, rollover,
 - encoded keyboard,
 - ASCII key serial keyboard interface,
 - LED & 7 segment interface, matrix, LED, multiplexing LED,
 - UART- interface using MAX 232,
 - stepper motor interface,

- floppy disc interfacing,
- characteristic and basic interfacing signals.

6. Graphic system:

- introduction, random scan graphic displays, raster-scan graphic display,
- input device graphic displays, software, graph plotter.

7. Bus standard:

- parallel bus standard- S100, 6800, IEEE-488,
- serial interface, serial EIA-RS232c, RS422,RS423,
- various bus structures,
- USB port.

BOOKS:

1. microprocessor interfacing programming and hardware- D.V.Hall

REFERENCE:

1. introduction to computers and information processing by DON cassel- martin Jackson
2. Microprocessor and microcomputers hardware and software by Ronald j tocci.

SUBJECT NAME: OBJECT ORIENTED PROGRAMMING & C++

1. Principle of Object oriented programming.

- Procedure Oriented programming
- Object Oriented programming paradigm
- Basic concepts of object oriented programming
- Benefits of object oriented programming
- Object oriented Languages
- Application of Object Oriented Programming

2. Beginning with c++

- What is c++
- Application of c++
- More c++ statements.
- Structure of c++ program
- Creating the file, compiling and linking

3. Tokens, Expression and control Structure

- Tokens keywords, identifiers, basic data types User defined data types. Derived data types symbolic constant, Type compatibility declaration of variable, dynamic initialization of variables, reference variables
- Operators in c++, scope resolution operator, member differencing operators, memory management operator, manipulators, Operator precedence, control structures.

4. FUNTION IN C++

- The main function
- function prototype
- call by reference, return by reference
- inline function
- default arguments, const arguments
- function overloading
- friend function and virtual functions.

5. CLASS AND OBJECTS

- c structure revisited
- specifying class
- Defining member function, nesting of member function, Privet member function, making outside function inline.
- Arrays within a class
- memory allocation for objects
- static data member function

- Arrays of objects.
- objects as function arguments
- friendly function
- Returning objects
- const member function
- Pointer to member function

6. CONSTRUCTORS AND DESTRUCTORS

- Constructors, parametrized constructors Multiple constructor in a class.
- Constructor with default arguments. Dynamic initialization of objects.
- Copy constructors, dynamic constructors.
- Constructing Two- Dimensional arrays.
- Destructors.

7. OPERATOR OVERLOADING AND TYPE CONVERSIONS

- defining operator overloading
- Overloading unary operators, binary operators, and binary operators using friends.
- manipulation of string using operators
- Rules for overloading operators.
- type conversion

8. INHERITANCE: EXTENDING CLASSES

- defining derived class
- single inheritance
- making a private member inheritance
- multilevel inheritance and multiple
- hierarchical inheritance, hybrid inheritance
- virtual base class, abstract class
- Constructor in derived classes.
- Member class: Nesting of Classes.

9. POINTER, VIRTUAL FUNCTION AND POLYMORPHISM

- pointer to object
- pointer to derive classes
- virtual function, pure virtual function

10. MANAGING CONSOL I/O OPERATORS

- c++ stream
- c++ stream classes
- unformatted i/o operation
- formatted i/o operation
- managing output with manipulators

11. WORKING WITH FILES

- Classes for file stream operations
- Opening and closing a file, error handling during files operations.
- Opening and closing a file error handling file operations.
- File modes, file pointers.
- Sequential input and output operations
- updating a file: Random access
- command-line arguments

TEXT BOOKS:

1. object oriented programming with c++ by E. Balaguruswamy-TMH

REFERENCE BOOKS:

1. Object oriented programming in turbo c++ by Robert Lafore- Waite Group-Gulgotia Pub.

DIPLOMA INFORMATION TECHNOLOGY

FIRST SEMESTER OF THIRD YEAR

1. Computer Graphics, Multimedia and Animations
2. Computer Networking
3. Programming in JAVA
4. Interactive WEB Application

SUBJECT NAME: COMPUTER GRAPHICS, MULTIMEDIA AND ANIMATION

1. Transformation & projections

- Bresenham's Line Drawing Algorithm.
- Homogeneous Coordinate System (2D & 3D)
- Transformation matrices for translation, scaling, rotation, shear.
- Rotation about an arbitrary axis (3D)
- Parallel Projection
 - Oblique projection on xy plane
 - Isometric projection.
- Perspective Projection
 - One Vanishing Point (V.P.) projection from a point on z axis.
 - Generation of 2V.P. Projection. Computing location V.P.

2. Clipping

- Sutherland – Cohen algorithm.
- Cyrus – Beck algorithm.

3. Curves & Surfaces

- Development of Bresenham's algorithms to draw octant of a circle.
- Bezier Curves
 - 4 point and 5 point Bezier curves using Bernstein polynomials.
 - Condition for smoothly joining curves segments.
- B – Spline Curves
 - Cubic B - spline curves using uniform knot vectors.
 - Testing for first and second order continuities.

4. 3-D

- 3-D representation.
- 3-D transformation.
- 3-D rendering.

5. Hidden Surface Removal

- Floating Horizon Method ☒ Back Face Detection
- Depth Buffer (Z-Buffer, A-Buffer) Method. ☒ Scanline Method.
- Depth Sorting Method. ☒ BSP – Tree Method.
- Area Subdivision Method.

6. Shading

- Illumination model for diffused reflection.
 - Effect of ambient lighting Distance.

- Specular Reflection model
 - Computing reflection vector.
- Curved Surfaces
 - Polygonal approximation
 - Gouraud shading.
 - Phong model.

7. **Multimedia**

- Introduction to multimedia
- Hardware, Networking, Software – applications, Environment.
- CD – ROM, WORM Optical Drivers.
- Flat, panel Displays.
- Non – Temporal Media
 - Text, Hypertext.
 - Images, Image Operations.
 - Music, MIDI.
- Digital Audio, Wave Files.
- Graphics Animation
- Tweening, Morphing.
- Simulating Acceleration, Motion specification.
- Video
 - Analog video : Operations
 - Digital video, Compression, MPEG, JPEG, Operations.
 - Multimedia Authoring Systems.
 - Understanding concept of Video Conferencing.

PRACTICAL:

- 1) Draw line using different line style.
- 2) Draw the circle using Bresenham's algorithm.
- 3) Perform the operation of scaling for two dimension picture.
- 4) Perform the operation of translation for two dimensional pictures.
- 5) Perform the operation of transformation for 3D picture.
- 6) Perform the operation of windowing and clipping technique.
- 7) Perform the operation of animation using segment technique.
- 8) Perform the experiment to draw the polygon.
- 9) Draw the polygon using filling technique.
- 10) Draw the curve using B – spline algorithm.
- 11) Animation by using multimedia.

BOOKS:

- 1) Procedural elements for computer graphics, D.F. Rogers, Mc Graw Hill.
- 2) Mathematical Elements for Computer Graphics, Roger & Adams, Mc Graw Hill.
- 3) Computer Graphics, D.Hearn & P.M. Baker, Prentic Hall of India.
- 4) Fundamentals of Interactive Computer Graphics, J.D. Foley & A.Van Dam
- 5) Multimedia System Design, Prabhat k. Andleigh & Kiran Thakkar.
- 6) Multimedia Programming – Objects, Environment & Framework, S.J. gibbs & d.C. Tschritzis.

SUBJECT NAME: COMPUTER NETWORKING

1) Introduction to Computer Network

- Use of Computer networks.
- Network Hardware.
- Network Software.
- Reference Models (Layer).
- Example of Networks.
- Example data communication services.
- Network Standardization.

2) Components of LAN

- Transmission Media
- Servers
- Connectors
- NIC
- Software for Networks

3) Interconnection Devices

- Repeater.
- Bridges.
- Router.
- Gateway.
- Switches.

4) Network Administration

- Installation of Network (H/W,S/W)
- Maintenance of Network

5) Network Application

- Network Security
- DNS Domain Name System
- Electronic Mail
- File Transfer
- ftp
- Internet
- Component of internet

- Various tools of internet www.telnet. Etc.
- Connection of internet.

PRACTICAL:

- 1) Install & test various network connector, cables.
- 2) Install & test various network cards.
- 3) Prepare computer system for network
- 4) Install network file, server.
- 5) Install network print server.
- 6) Prepare workstation for remote booting.
- 7) Install and test active & passive hub.
- 8) Install internet
- 9) Use of internet
- 10) Surfing
- 11) E-mail
- 12) Study of router, repeater & bridge.

BOOKS:

- 1) Computer Networks (3rd ED.) by Andrew S. Tanenbaum, PHI.

SUBJECT NAME: PROGRAMMING IN JAVA

1. Fundamentals
2. Using Classes And Methods
3. Introducing Java's Control Statements
4. More About Control Statements And Operators
5. Creating Classes
6. Inheritance
7. Interfaces And Packages
8. Exceptions
9. Multithreaded Programming
10. Introducing The Java Class Libraries
11. The Basic Abstract Window Toolkit
12. An Introduction To Event Handling
13. Applets

TEXTBOOKS:

- 1) Java 2, The Computer Reference, Tata McGraw Hill Edition Teach Yourself Java – Joseph Neol

SUBJECT NAME: INTERACTIVE WEB APPLICATION

1. Web Page & Site Design Fundamentals
2. Introduction To Web Designing Tools
3. Html – Hyper Text Markup Language
4. Introduction To Client Side Scripting
5. Introduction To Server Side Scripting
6. Dhtml

TEXT BOOKS:

- 1) HTML COMPLETE – BPB publications
- 2) HTML COMPLETE REFERENCE
- 3) Active Server Pages 2.0 in 21 Days - Techmedia
- 4) Mastering JavaScript & Jscript – James jaworski

DIPLOMA INFORMATION TECHNOLOGY

SECOND SEMESTER OF THIRD YEAR

1. Client Server Architecture & Internet
2. E-Commerce
3. Fiber optics communication
4. RDBMS ORACLE

SUBJECT NAME: CLIENT SERVER ARCHITECTURE & INTERNET

- 1. CLIENT SERVER CONCEPT:**
 - 2-tire and 3-tire client servers.
 - Single and multiple servers.
- 2. CLIENT SERVER – 3 COMPONENTS:**
 - Client, GUI interface
 - Servers
 - Types of Servers
 - Hardware
 - Software
- 3. NETWORK:**
 - Types of Network
 - Middle ware
- 4. CLIENT TOOLS:**
 - Database servers
 - Relational DBMS using SQL
- 5. DISTRIBUTED NETWORK MANAGEMENT:**
 - Wireless Networking
 - TCP/IP Protocol

SUBJECT NAME: E-COMMERCE

1. **Introductory concept:** E-commerce framework, media convergence, consumer application, organization application.
2. **Network infrastructure:** Information way, access equipment, internet structure-resources and services, connectivity option, internet application, intranets-implementation and services, concept world wide web, E-commerce application of internet, intranets and extranets.
3. **Network security:** security concerns, client-server security, security solutions-cryptosystem, digital signatures, public-key certificates, DES and RSA, authentication-smart card, third party, firewalls.
4. **E-commerce and WWW:** architectural frame work, application services, WWW as the architecture, hypertext and hyper media.
5. **Consumer oriented E-commerce:** Application examples –finance and home banking, home shopping, home entertainment, mercantile process models, consumer perspective, merchants' perspective.
6. **Electronic payment system:** Types token-based system E-cash, E-cheque, smart cards, credit cards-third party processing, design issues, risks.
7. **Inter-organizational commerce and Edi:** EDI concept, application in business-components of international trade, customs, financial EDI, electronic fund transfer, manufacturing using EDI, UN/EDIFACT standard-EDIFACT message, interchange structure, message directories.
8. **Intra organizational E-commerce:** internal information system, internal commerce, organizational structures, works flow related technologies, customization, supply chain management-logistics marketing, distribution, customer response, electronic brokerages.

TEXT BOOKS:

1. R.Kolakata and AB Whinston, "frontiers in electronic commerce", Adison-wisley
2. K.K.Bajaj and D.NAG, "E-commerce – The cutting edge of business", Tata McGraw-Hill.

SUBJECT NAME: FIBER OPTICS COMMUNICATION

- 1. Principle of fiber optics communication:**
Advantages of optical fiber optics communication, Elements of fiber optics communication
Types of optical fibers, Principles of light propagation within the fiber, Fiber splicing & joining of fibers.
- 2. LOSSES IN FIBRES:**
Various types of losses in fibres and its effects
- 3. FIBRE OPTICAL SOURCE DEVICES :**
Light emitting diodes, Semiconductor LASER diodes, Gas LASERS.
- 4. OPTICAL DETECTOR AND CONNECTORS :**
PIN diodes, Avalanche photodiode, Photo conductors, Coupling of fibres to detectors. Optical connectors.
- 5. OPTICAL MODULATION AND MODULATORS :**
Various methods of LASER Modulation and modulators
- 6. OPTICAL RECEIVER AND DETECTORS :**
Receiver, Photodetectors, Diodes circuit models, Optical receiver models.
- 7. OPTICAL COMMUNICATION SYSTEM :**
Transmitter design, Receiver design, Device used and their characteristics, Line guided optical system, Comparison with others.
- 8. REPEATERS :**
Optical repeaters, PCM generation, Equalizer, Repeater spacing, Power consumption.
- 9. INTEGRATED OPTICS :**
Material and fabrication techniques used in the integrated optics, Application of integrated optics. Photoreceptor optics.
- 10. APPLICATIONS :**
Telephone, Video distribution, Telemetry, Military application, Passive and Active sensing.

BOOKS :

- | | | | |
|----|-----------------------------|---------------------------|---|
| 1. | Fibre optic Communication | D.C.Agrawal.
M.J.Homes | & |
| 2. | Optical fibre Communication | D.V.Morgan. | |
| 3. | Electrical Communication | Roddy-Coolen | |

SUBJECT NAME: RDBMS ORACLE

1. **Introduction:**
Overview of database management, database architecture, data independence.
2. **Entity – Relationship Modelling :**
Entities, Relationships, Mappings, Dependency Constraints and Notations.
3. **Relational Database design :**
Database design, Anomalies insertion, deletion and update anomalie, Objectives of normalization, various normal forms – 1NF, 2NF, 3NF, Decomposition Process, Mapping ER model into relational structures.
4. **Introduction to Oracle:**
Database and information management, Oracle architecture (Memory, Processes), Oracle communication mechanism, Oracle database objects. Duties of Oracle DBA, SQL PLUS, Oracle Forms, Oracle Reports and other supporting tools.
5. **Structured Query Language (SQL):**
SQL features: Data definitions, Data types, Integrity Constraints, Check Constraints, Comparison Operators, Pseudo Columns, Functions of JOINS, SET operators. Data constraints – Primary Foreign, Unique and Check constraints. Object – Tables, indexes, Synonyms, Views Clusters, Sequences.
Data Manipulation, EXPLAIN PLAN facility, data Transaction Language and Data Control Language.
6. **Data on Disk:**
Physical storage, storage hierarchy, disks, files, operations of files.
7. **Transaction Processing:**
Storage types in database system, failure types, storage hierarchy, read and write operations, COMMIT, atomicity and durability, ROLL BACK command, concurrency.
8. **Log – based Recovery Techniques:**
Log – based Recovery, log data structure, recovery from failure.
9. **Write – ahead Logging Techniques:**
WAL concepts, normal operation, buffer management, OS and Databases.
10. **Concurrency Control:**
Schedules, serial and non – serial schedules, conflict instructions, conflict serializability, transforming into serializable schedule, lock based protocols, two – phase locking protocol.
Multi granularity locking – intention mode locks, compatibility matrix for MGL, MGL scheme, update mode.

11. Security and Integrity:

Aspects pertaining to Databases.

CASE STUDY: A complete case study involving all the features covered are explained and demonstrated with a real – life application.

BOOKS:

1. An introduction to Database System By C.J. Date, Addison Wesley
2. Fundamentals of Database System By R.Elmasri, S.B. Navathe, Addison Wesley.
3. Database System Concepts By H.Korth, A. Sillerchatz
4. Distributed Database By S.ceri and Relagalli
5. PL/SQL By Even bayross