

Swami Ramanand Teerth Marathwada University, Nanded
B.Sc Second Year Semester Pattern Information Technology (Optional)
With Effect from 2010-11

B.Sc. II Year. Information Technology (Optional)

Paper No.	Paper Title	Teaching Periods Per Week (Theory/ Practical)	Marks (University Evaluation)	Marks (Internal Evaluation)	Total Marks	Total Periods	Duration of Examination
Semester-III							
VI	Programming in C++	03 Periods Theory	40	10	50	40	03 Hours
VII	Operating System	03 Periods Theory	40	10	50	40	03 Hours
Semester –IV							
VIII	Computer Network	03 Theory Periods	40	10	50	40	03 Hours
IX	Programming in Java	03 Periods Theory	40	10	50	40	03 Hours
X	Computer Lab-II Annual Practical (Practical on Paper VI and VIII)	01 Practical (03 Periods)	100	-----	100	20 Minimum Practicals	03 Hours
XI	Computer Lab-III Annual Practical (Practical on Paper VII and IX)	01 Practical (03 Periods)	100	-----	100	20 Minimum Practicals	03 Hours
Total Marks					400		

B.Sc. III semester Information Technology
Paper VI - Programming in C++

(Marks 50, Periods 40)

1. Introduction and basic concepts of C++

Basic concepts of OOP's., Benefits and Applications. Structure of C++ program

Keywords, identifiers, Data-types, Operators in C++, Operator precedence and associativity

2. Branching and Looping Statements

Simple If statement, If... Else statement, Nested If ... Else statement, The Switch statement, The while statement, The Do-While statement, The For statement

3. Functions in C++

Function, Function prototyping, Default arguments, Reference variable, Call by Reference, Return by Reference, Inline function, Function overloading, Friend and Virtual Function.

4. Class and object

Specifying a class , Defining Member Function, Nesting of member function, Private Member Function, Memory allocation for objects, Introduction to Constructor and destructor

6. Operator Overloading and Type Conversion

Defining Operator Overloading, Unary and Binary Operator Overloading, Rules for Overloading Operator, Type Conversion

7. Inheritance and Polymorphism

Defining Derived Class, Type of Inheritance (Single, Multiple, Multilevel, Hierarchical, Hybrid Inheritance), Polymorphism

7. Console I/O Operation and Working with File

Classes for File stream, Unformatted I/O operations, Formatted console I/O operation , Managing Output with manipulators. Classes for file stream operations, Opening and Closing file

8. Templates and Exception Handling

Class Template, Class Template with Multiple Parameter, Function Templates, Function Templates with Multiple parameters

9. Exception Handling

Basics of Exception Handling, Exception Handling Mechanism, Throwing mechanism, Catching Mechanism, Rethrowing an Exception.

Reference Books:-

1. Object-Oriented Programming with C++ -E-Balgurusamy
2. The C++ Complete Reference -TMH Publication
3. Let us C++ -Yashwant kanetkar

Paper VII - Operating System

Marks: 50, Period: 40

1. Introduction to Operating system

Operating system, Evolution of Operating System, Types of, Operating System. Function of Operating System – I/O management, Device Management, File management, Memory Management, Single user, Single,tasking operating system, Single user multi tasking operating system multi user multi tasking operating system.

2) Process Management: Basic Concepts, Process Life cycle, and scheduling.

3) Memory Management: Introduction, Process Loading, Logical Versus Physical address space, Swapping memory allocation methods, Virtual paged memory (Mechanics of Virtual Memory) Protection and sharing- Limit registers, paging system segmentation.

4) Input Output Management: Organization of I/O Software and Hardware, objectives of I/O System, Structure of I/O System.

5) File Management: General Principles-File types, file identification,Directories, paths and paths name, Alias File names, volume concept, file management techniques- Allocation of file space, improving performance of disk system.

6) Concurrent Process: Basic Principles, deadlock-deadlocks examples, conditions for deadlocks, dealing with deadlocks, deadlock prevents, Avoidance and detection, inter process communication.

7) Security: Authentication, Program Threats, System Threats, Encryption.

8) Various Operating System: DOS and Its features, Unix Operating System features-concept of kernel and shell programming, windows. (6)

Books Recommended –

1. Operating Systems – Colin Ritchie.
2. Operating Systems Concepts – Godbole.
3. Operating System – J.P.Hays.

B.Sc. IV Semester Information Technology

Paper VIII Computer network (50 marks Periods 40)

1. Introduction to Computer Networks

Goals of computer Networks, LAN, MAN, WAN., Introduction to Wireless Networks. Network Software-Protocol Hierarchy, Design and Issues for Layer, Synchronous and asynchronous transmission, Network Topologies- Bus, Ring, Star, Tree and other Topologies. Networking Devices – Repeaters, Bridges, Routers, Gateways, Hub and Switch.

2. Network Standards and Network protocols

Reference Models: OSI reference model, TCP/IP reference model. Different Protocols: -- IP protocol, SMTP, PPP, FTP, HTTP, SNMP. IP-addresses, Domain Name System.

3. Connection, Interfacing and Devices

Connection oriented and connectionless services, Serial and Parallel connections. Half duplex and full duplex communication. Connectors - D and RJ-45

4. Multiplexing and Switching

Concept of modulation and their application., Multiplexing – Time division and Frequency division, Switching - Circuit Switching, Packet Switching, Message Switching.

5. Internet and Network Security

Internet verses Intranet, Internet Service Providers, E-mail – Architecture and Services. Introduction to cryptography, Two Fundamentals Cryptographic principals.

Ref. Books:

1. Computer Networks By Andrew S. Tanenbaum (Prentice Hall India) Fourth Edition

Paper IX Java Programming (Marks : 50. Periods: 40)

1.Introduction of Java

Java history, Java features, How Java Differs from C & C++, Java & Internet, Java Environment, Java virtual machine, Constant, Variables, Data types, Scope of Variable, Branching – if, if...else, Nested if...Else, Switch Statement,Looping – while, do while, for Statement

2. Classes, Objects & Methods

Introduction, Defining a Class, Field, Method Declaration, Creating Objects, Constructors, Method Overloading, Static Members, Method overriding, Final Variables & methods, Final classes, Finalizer Methods,

3. Arrays, Strings and Vectors .

Introduction to Arrays, Strings, Vectors

4. Exception Handling

Types of Errors, Exceptions, Multiple Catch Statements, Using Finally Statement, Throwing Our Own Exceptions,

5 Packages & Interfaces-Multiple Inheritance .

Introduction of Package, Java API Packages, Using System Packages, Creating Packages, Accessing a Packages, Using a Package, Defining Interfaces, Extending Interfaces, Implementing Interfaces,

6. Multithreaded Programming

Introduction, Creating Threads, Extending the Thread Class, Stopping & Blocking a Thread Life Cycle of Thread, Thread Priorities, Synchronization,

7. APPLET Programming .

Introduction, How Applet differ from Applications, Preparing to Write Applets, Building Applet Code, Applet Life Cycle, Applet Tag, Passing parameters to Applets,

Reference Books

1. Programming With JAVA A Primer. Balagurusamy 3rd Edition
TATA McGraw HILL
2. The Complete Reference JAVA 2. H. Schlidt.
3. Mastering JAVA 2 J2SE 1.4 John Zukowski BPB Publication.

Paper X Computer Lab-II Parcatical Based on Paper VI and VIII (Marks 100)

Minimum 20 Practical's

Paper XI Computer Lab-III Parcatical Based on Paper VII and IX (Marks 100)

Minimum 20 Practical's

Prof Dr. S.B Thorat

Dean , Faculty of Computer Studies.

Prof. S.B. Jagtap

Chairman, BOS in Computer Science.

Dr. H. S. Fadewar

Member, BOS in Computer Science.