

M.SC. COMPUTER TECHNOLOGY

FIRST YEAR

PAPERS	Subject	Max. Marks	Exam Hrs
1	Computer fundamentals	100	3
2	Network Technologies	100	3
3	Operating System	100	3
4	Object Oriented Programming System	100	3
5	Software Engineering	100	3
Practical 1	Object Oriented Programming System	100	3

SECOND YEAR

PAPERS	Subject	Max. Marks	Exam Hrs
1	Internet and Java Programming	100	3
2	Principles of Compiler Design	100	3
3	Principles of E-Commerce	100	3
4	Dot Net Programming	100	3
5	Web Design	100	3
6	Java and Web Design	200	3
Project	Viva-voce	200	-

FIRST YEAR

Paper – 1

COMPUTER FUNDAMENTALS

UNIT I:

Introduction to computers – computer generations – evaluation of computers – characteristics of computers – types of computers – classification of computers.

UNIT II:

Types of connections, components of computers-types of languages-Number system: binary, octal, hexa decimal, decimal.

UNIT III:

Bits-bytes & words: 1's complement-2's complement. Memory Organizations: Types of memory. Input/output devices.(Keywords, etc) storage devices .

UNIT IV:

Hardware, Software, System software: Types of Software, translators-compilers, interpreters and assemblers-Operating system: Functions of OS-storage management-I/O management.

UNIT V:

Application software: Types of programming language-Packages: Data base management system-spread sheets-word processing-software development steps.

TEXT BOOKS:

- 1.Computer studies C.S.French Galgotia BOOK, Source.
- 2.Introduction to computer science- Satish Jain, BPB publications 1990.
- 3.Pradeep K.Sinha and Priti sinha “Computer fundamentals concepts; systems and Applications”, BPB Publications, 2003.
- 4.Fundamentals of computers-V.Rajaram, Prentice Hall publications.

Paper – 2

NETWORK TECHNOLOGIES

1. INTRODUCTION

Communication model - Data communications networking - Data transmission concepts and terminology - Transmission media - Data encoding -Data link control.

2. NETWORK FUNDAMENTALS

Protocol architecture - Protocols - OSI - TCP/IP utilities – Error detection and correction -LAN architecture - Topologies - MAC - Ethernet, Fast Ethernet, Token ring, FDDI, Wireless LANS - Bridges.

3. NETWORK LAYER

Network layer - Switching concepts - Circuit switching networks - Packet switching - Routing - Congestion control - X.25 - Internetworking concepts and X.25 architectural models - IP - Unreliable connectionless delivery - Datagram - Routing IP datagram's - ICMP.

4. TRANSPORT LAYER

Transport layer - Reliable delivery service - Congestion control - connection establishment - Flow control - Transmission control protocol - User datagram protocol.

5. ADVANCED NETWORK ARCHITECTURE

IP Forwarding Architecture-Overlay Models- MPLS – RVSP – Differentiated Service – Security protocol – Security and Cryptographic Algorithm- Security protocols Cryptography Algorithms.

Text Book

William Stallings, Data and Computer Communications, 5th edition, PHI,1997.

References:

1. Larry L.Peterson & Bruce S.Davie, Computer Networks - A systems Approach, 2nd edition, Harcourt Asia/Morgan Kaufmann, 2000.
2. Communication Network – Fundamental concepts and key Architecture by Leon Garcia and Widjaja.

Paper – 3
OPERATING SYSTEM

UNIT –I

Introduction - Hardware concepts - Software concepts - Design issues System models - Load balancing - Client server model - Remote Procedure calls - Process migration.

UNIT-II

Clock synchronization - Mutual exclusion - Election algorithms - Atomic transactions - Deadlocks - Threads.

UNIT – III

Processor allocation - scheduling - Distributed File System design Implementation- Trends in distributed file systems.

UNIT-IV

Real time Operating systems: Introduction - Performance measures for Real Time Systems - Estimating program Run Times. Task Assignment and Scheduling: Introduction - Classical uniprocessor - Scheduling Algorithms - RM Scheduling Algorithm [only description] - Preemptive EDF Algorithm[Only description] - Task Assignment - Mode changes - Fault Tolerant Scheduling.

UNIT - V

Real time databases : Real Time Vs Gener\11 purp9se Databases – Main, memory databases - Transaction priorities - Transaction aborts -. Concurrency control issues - Databases for hard real time systems - Real time communications.

TEXTBOOKS:

1. A.S. Tanenbaum, 'Modern operating Systems', Prentice Hall of India 1977 (Unit I, II & III).
2. C.M. Krishna and Kang G. Shin, 'Real - Time Systems' , McGraw Hill, 1997. [Unit IV & V].

REFERENCE BOOKS:

1. Sinha.P. "Distributed Operating System', PHI.

Paper – 4

OBJECT ORIENTED PROGRAMMING SYSTEM

UNIT I:

Introduction to Object Oriented Programming – Basic concepts – Benefits of OOP, Object Oriented Languages – Application of OOP.

UNIT II:

C++ : Introduction – Identifiers and keywords – data types – constants – operators – Type conversion – Variables – Statements – Feature of iostream.h – Manipulators – I/O stream flags – control statements.

UNIT III:

Functions and program structures – Arrays – Pointers – Structures – Union and Bit fields.

UNIT IV:

Classes and Objects – Constructors – Destructors – Inline member functions – Static class members – Friend functions – Dynamic Memory allocations - Inheritance – Overloading.

UNIT V:

Polymorphism – Templates and exception handling – data file operations.

TEXT BOOKS:

1. Object Oriented Programming C++, Balagurusamy, T.M.H. (Unit I)
2. Programming with C++, D.Ravichandran, T.M.H.

REFERENCE BOOKS:

1. Programming with C++ , Schaum's outline series, T.M.H.
2. Teach yourself C++, Herbert Schildt, T.M.H., 3rd Edition, 1998.

Paper – 5

SOFTWARE ENGINEERING

UNIT – I FORMAL SPECIFICATIONS

Models - Specification languages - Abstraction levels - Domain specification language.

UNIT – II SOFTWARE MEASUREMENT

Frame work - Process attributes - Effort, time and cost measurement - Cost estimation - Product attributes - Size - Control flow structure - Modularity - Complexity measures - Technical metrics.

UNIT – III SOFTWARE REUSABILITY

Reuse dimensions - Reuse of intermediate products - Reuse and the Software Life cycle - Reuse tools and techniques.

UNIT – IV TOOLS

Computer aided software Engineering - Project management tools - Analysis and design tools - Programming tools - Integration and testing tools.

UNIT – V SOFTWARE ENGINEERING STANDARDS

ISO - SET - Specification - Design - Programming -Testing

References:

1. Hans van Vilet, software Engineering Principles and Practice, John Wiley and Sons Ltd, 2000.
2. Roger Pressman, Software Engineering - A Practitioner Approach, 5th Edition, McGraw Hill, 2000.
3. Normal. E. Fenton, Software Metrics, Chapman and Hall, 1991.
4. J.B.Wordworth, Software Development with Hall, 1991.
5. J.B.Wordworth, Software Development with Z, Addison Wesley, 1992.

SECOND YEAR
Paper – 6
INTERNET AND JAVA PROGRAMMING

UNIT I :

Internet connection concepts – Intranets : Connecting LANs to the internet – E-Mail concepts – E-Mail security : Reasons to secure the messages, Public key cryptography, Using cryptography with E-Mail – Online Chatting and Conferencing Concepts – WWW concepts.

UNIT II:

Fundamentals of Object Oriented Programming – Java evolution – Overview of JAVA Language – constants, variables and Data types- Operators and Expressions – Decision making: Branching and Looping.

UNIT III:

Classes, Objects and Methods – Arrays, Strings and Vectors – Multiple inheritance.

UNIT IV:

Packages – Multithreaded Programming – Managing Errors and Exceptions.

UNIT V:

Applet programming – Graphics Programming – Managing Input / Output files.

Reference Books

1. D.Norton and H.Schildt, Java2 : the complete reference, TMH 2000.
2. Internet & World wide Web How to program, Deitel & Deitel, Prentice Hall 2000.
3. Java How to program, Deitel & Deitel, Prentice Hall 1999.
4. Core Java Vol.1 and Vol. 2, Gary Cornell and Cay S.Horstmann, Sun Microsystems Press 1999.
5. Active X source Book, Ted Coombs, Jason Coombs and Don Brewer, John Wiley & sons 1996.

Paper – 7
PRINCIPLES OF COMPILER DESIGN

UNIT – I

Introduction to Compilers: Simple one-pass compiler – Lexical Analysis.

UNIT – II

Symbol tables: Incorporating a symbol table – symbol tables – entries – list data structures for symbol table – Hash tables – scope information – syntax analysis – parsing.

UNIT – III

Syntax – directed translation – Type checking type systems – specifications of simple type checker.

UNIT – IV

Runtime organization: Source language issues Organizations – Storage allocation strategies – parameter passing. Intermediate code generation: Intermediate languages – declarations – assignment statements – Boolean expressions – case statements.

UNIT – V

Code generation: Issues in design of code generator – target machine – run-time storage management – basic blocks and flow graphs – a simple code generator. Code optimization: Introduction – principle sources of optimization of basic blocks – loop in flow graphs.

TEXT BOOKS:

1. A.S. Aho. R. Sethi and J.D. Ullman, compilers – Principles, Techniques and tools, Addition Wesley Publishing Company, 1986.

Reference:

1. Allen L. Holub, ‘Compiler Design in C’, Prentice Hall of India, 1993.

Paper – 8

PRINCIPLES OF E-COMMERCE

1. INTRODUCTION

Infrastructure for Electronic Commerce - Networks - Packet switched networks - TCP/IP internet protocol - Domain name services - Web service protocol - Internet applications - Intranets and Extranets - Virtual private network - Strategies for e-commerce - Organizational and business barriers.

2. E-COMMERCE ARCHITECTURE

Electronic commerce models - Shopping cart technology - E-commerce solutions using IIS architecture - Domain model - Site server application - Intelligent agents - Internet marketing - XML and E-Commerce - Development of B2B and B2C web sites.

3. ELECTRONIC PAYMENT SYSTEM

Real World Payment System - Electronic funds transfer - Digital payment - Internet Payment System - Micro payments - Credit Card transactions - Case studies.

4. SECURITY

Threats to Network security - Public key cryptography - Secured sockets layer - Secure electronic transactions - Network security solutions - Firewalls.

5. INTER/INTRA ORGANIZATIONAL ELECTRONIC COMMERCE

EDI-EDI application in business legal, Security and Privacy issues - EDI and Electronic commerce - Standards - Internet commerce - Workflow automation and coordination - Customization and Internet commerce - Supply chain management - Back-End integration.

References:

1. Ravi Kalakota and Andrew B. Whinston, "Frontiers of Electronic Commerce", Addison Wesley, 1996.
2. Pete Loshin, Paul A. Murphy, "Electronic Commerce , II Edition", Jaico Publishers, 1996.
3. David Whiteley, "Electronic Commerce: Strategy, Technologies and Applications" – McGraw Hill, 2000.

Paper – 9

DOTNET PROGRAMMING

UNIT – I

Introduction - .NET objects .NET Name Spaces – Assemblies – Object Oriented Programming features – Inheritance – Object Constructors - .NET Memory Management – Interoperation with COM – Transactions in .NET – Structured Exception Handling – Code Access Security.

UNIT – II

ASP.NET – Writing a simple ASP.NET page – More on Web Controls – Managing and Configuring Web Application Projects: The Web. config file – ASP.NET State Management – Security in ASP.NET – Authentication – Authorization – Identity – Process management.

UNIT – III

.NET Web Services – Writing an XML Web Service – The WSDL file – Writing XML Service Clients – XML Web Service support in Visual Studio.NET – Windows Forms – DATA access in .NET.

UNIT – IV

Handling XML – Simplest example: Basic Serialization – Controlling Serialization – XML schemas and serialization.

UNIT – V

.NET Remoting - Simplest example – Configuration files – Activation types - Lifetime management - Hosting and Deployment – Security – Performance - .NET Reflection – Object Creation and Method Invocation.

Text Book:

1. David S. Platt, Introducing Microsoft .NET, Prentice Hall of India, New Delhi – 1

Reference:

1. Mac Donald, Matthew, ASP.NET: The Complete Reference, Tata McGraw-Hill, New Delhi.
2. Dong Seven, ASP.NET: Tips, Tutorials and Code.
3. Erik.T Ray Learning XML.

Paper – 10
WEB DESIGN

UNIT - I

Introduction to internet - Resources of, internet - H/w & S/w requirements of internet - Internet service -Protocols - Concepts - Internet clients and internet servers.

UNIT – II

Introduction to HTML - Function of HTML in web publishing - Basic structural-Elements und their usage - Traditional text and formatting - Style. Sheets formatting - Using tables for organization and layout - Advanced layout and positioning ;with style sheets - forms - frames and frame sets – Using images with HTML - Merging Multimedia, controls and plug-ins with HTML - Using the HTML object model and creating dynamic HTML pages manipulating objects and responding to user interactions - Saving using preferences - Cookies and OPS.

UNIT- III

Scripting basics - Client side image maps - Introducing Java Script – Creating simple Java scripts - Using Java Scripts for forms - Using Java Scripts with Style sheets. Introduction to Java programming - JVM - Applet programming - Java Beans - JARS and Sate Computing - Integrating Java and Java Script.

UNIT –IV

Introduction to CGI and scripting languages for server side- Types of scripting language - Basis CGI - CGI Application - User Interaction - DB connectivity - Web, indexing specific technologies for server side programming - Introduction to ASP - Active server objects - Active server components Database Management with ASP - Java Network Programming - Java servlets - serialization and RMI - JDBC.

UNIT - V

Emerging and alternate Web Technologies - ActiveX controls for. the WWW XML -
COM - DCOM - CORBA - E-Commerce

TEXT BOOKS:

1. Shelly Powers et al , "Dynamic Web Publishing", Techmedia, 1998.
2. Jamic Jaworski, "Java 1.2 Unleashes", Techmedia, 1998.
3. Robert Niles et al, "CGI by Examples", Que. 1996.
4. Scot Johnson ct 111 , "Using Active Server Pages", Que. 1997.