

Semester-VI

Theory Courses

Course Code	Title	Scheme of Examination				Hrs./Week		
		Duration (hrs)	IA	UE	Total Marks	L	T	P
ITE-621	Cryptography & Network Security	3	40	60	100	3	1	0
ITE-622	Mobile & Wireless Communication	3	40	60	100	3	1	0
ITE-623	Java Programming	3	40	60	100	3	1	0
ITE-624	Data Communication & Computer Networks	3	40	60	100	3	1	0
ITE-625	Management Information System	3	40	60	100	3	1	0
ITE-626	Internet & Web Technology	3	40	60	100	3	1	0
Total			240	360	600			

Laboratory Courses

ITE-631	Java Programming	2	25	25	50	0	0	2
ITE-632	Internet & Web Technology	2	25	25	50	0	0	2
ITE-633	Mini Project	2	25	25	50	0	0	2
Total			75	75	150			
Total (Theory + Lab)			315	435	750			

At the end of semester VI students are required to attend an Industrial Training for 6 weeks duration, during summer vacations. After the completion of training every student is required to prepare a detailed report of the training work which he/she has attended in an Organization/Industry/Company. Industrial Training shall be an essential component of curriculum to fulfill the eligibility criteria for appearing in semester VII university examination.

Semester VI

Course Title: Cryptography & Network Security

Course Code: ITE-621

Duration of Exam: 3 hours

Max Marks: 100

University Exam: 60

Internal Assessment: 40

Objective: To understand the principles of encryption algorithms: conventional and cryptography. To have a detailed knowledge about authentication, hash functions and application level security mechanisms.

Unit-I

Introduction: To Security Attacks, Services and Mechanisms, Introduction to Cryptology. Conventional Encryption Model, Classical Encryption Techniques- Substitution Ciphers & Transposition Ciphers, Cryptanalysis, Stream & Block Ciphers.

Unit-II

Modern Block Ciphers: Block Ciphers Principles, Standards (DES), Strength of DES, Differential & Linear Cryptanalysis of DES, Block Cipher Modes of Operation, Triple DES, AES Encryption & Decryption, Key Distribution, Random Number Generation.

Unit-III

Public Key Cryptography: Principle of Public Key Cryptography, Prime and Relative Prime Numbers, Modular Arithmetic, Key Management. Diffie-Hellman Key Exchange, Elliptic Curve Architecture and Cryptography. Introduction to Number Theory, RSA.

Unit-IV

Authentication and Hash Function: Authentication Recruitments, Authentication Functions and Message Authentication Codes. Digital Signatures, MD5 Message Digest Algorithm. Secure Hash Algorithm-I (SHA-1).

Unit-V

Network Security & System Level Security:

Electronics Mail Security: Pretty Good Privacy (PGP), S/MIME IP Security: IP Security Overview, Architecture, Authentication Header.

Web Security: Security Socket Layer & Transport Layer Security.

System Security: Intruders, Viruses and Related Threads, Firewall Design Principles.

Text Book:

1. **William Stallings**, Cryptography and Network Security, Principles and Practices, Prentice Hall of India, Third Edition, 2003.
2. **Johannes A. Buchmann**, Introduction to cryptography, Springer Verlag.

Reference Books:

1. **Kaufman C., Perlman R. & Spenser M.**, Network Security, PHI.

2. **Bellovin S. & Chesvick W.**, Internet Security and Firewalls, Second Edition, Addison-Wesley.
3. **Trappe & Washington**, [Introduction to Cryptography with Coding Theory](#), PHI.

Note for paper setter: The question paper shall comprise of 10 questions. Two questions will be set from each unit. The student has to attempt five questions selecting at least one question from each unit.

Semester VI

Course Title: Mobile & Wireless Communication
Course Code: ITE-622
Duration of Exam: 3 hours

Max Marks: 100
University Exam:60
Internal Assessment:40

Objective: The course has been designed to get student acquainted with basic concepts, principles and applications related to field. Emphasis is given to latest technologies

Unit-I

Cellular Mobile Radio Systems: Introduction to Cellular Mobile System, basic cellular system, Performance criteria, operation of cellular systems, improving coverage & capacity in cellular systems(Cell splitting/sectoring) and frequency reuse, micro cells, hand off strategies.

Unit-II

Interference: Introduction to Co-Channel Interference, system capacity, channel planning for wireless systems adjacent Channel interference, power control for reducing interference. Fading in mobile environment (flat fading, frequency selective fading, fast fading & slow fading), inter symbol interference (ISI).

Unit-III

Cell Coverage For Signal And Traffic: Free space propagation model, reflection, diffraction and scattering, effect of human made structures, phase difference between direct and reflected paths, constant standard deviation, straight line path loss slope, multipath propagation.

Unit-IV

Cell Site And Mobile Antennas: Radiation patterns, antenna gain, omni directional antennas, directional antennas for interference reduction, space diversity antennas, umbrella pattern antennas, minimum separation of cell site antennas, high gain antennas.

Unit-V

Multiple Access Techniques & Wireless Systems: Multiplexing techniques - FDMA, TDMA, CDMA, SDMA, spread spectrum direct sequence spread spectrum and frequency hopping spread spectrum, WLL, GSM.

Text Books

1. **W.C.Y. Lee**, Mobile Cellular Telecommunications, McGraw Hill, 2nd Edn. 1989.
2. **Theodore. S. Rapport**, Wireless Communications, Pearson education.

Reference Books:

1. **R. Blake**, Wireless Communication Technology, Thompson Asia Pvt. Ltd.
2. **Jon W. Mark & Weihua Zhqung**, Wireless Communication & Networking, PHI.
3. **Lee**, Cellular & Mobile Communications – TMG.
4. **William Stallings**, Wireless Communications & Networks

Note for paper setter: The question paper shall comprise of 10 questions. Two questions will be set from each unit. The student has to attempt five questions selecting at least one question from each unit.

Semester VI

Course Title: Java Programming
Course Code: ITE-623
Duration of Exam: 3 hours

Max Marks: 100
University Exam: 60
Internal Assessment: 40

Objective: To enhance skills of student with the ever demanding programming language Core Java.

Unit-I

Overview of Java: Introduction to Java, Features of Java, Object Oriented Concepts, Lexical Issues, Data Types, Variables, Arrays, Operators, Java Virtual Machine, Bytecode, Control Statements: Selection, Iteration and Jump Statements, Java Bean Standards.

Unit-II

Classes and Inheritance: Classes, Objects, Constructors, Overloading Method, Access Control, Static and Final Keywords, Nested and Inner Classes, Abstract Class, Object Class, Inheritance, Overriding Methods, Using Super, Dynamic method Dispatch. Packages, Access Protection, Importing Packages, Interfaces.

Unit-III

Exception Handling and Multithreading: Exception Handling, Multiple Catch Clauses, Nested Try and Throw. Multithreading: Thread, Creating a Thread, Creating Multiple Threads, Synchronization, Inter Thread Communication, Deadlock, Suspending, Resuming and Stopping Threads, Multithreading.

Unit-IV

I/O, Applets and String Handling files: Files, Stream Classes, Serialization, Reading Console Input, Writing Console Output, PrintWriter Class, Reading And Writing Files, Transient And Volatile Modifiers, Instanceof, Strictfp, Native Methods.

Applets: Introduction: Applet Fundamentals, Applet Architecture.

Strings: String Constructors, String Operations, String Buffer, String Builder, Sting Tokenizer.

Unit-V

Collections Framework: Collections Overview, Collection Interfaces, Collection Classes, Accessing a Collection via Iterator, Map Classes and Map Interfaces, Comparators, Arrays, Legacy Classes and Interfaces, Wrapper Classes.

Text Books:

1. **P. Naughton & H. Schildt**, Java2 (The Complete Reference), 3rd Edn, TMH 1999.
2. **K. Arnold & J. Gosling**, The Java Programming Language, 2nd Edn, Addison Wesley, 1996.

Reference Books:

1. **Cay S. Horstmann, Gary Cornell**, Core Java 2 Volume I Fundamentals, 5th Edn. PHI, 4000.

Note for paper setter: The question paper shall comprise of 10 questions. Two questions will be set from each unit. The student has to attempt five questions selecting at least one question from each unit.

Semester VI

Course Title: Data Communication & Computer Networks

Course Code: ITE-624

Duration of Exam: 3 hours

Max Marks: 100

University Exam: 60

Internal Assessment: 40

Objective: The objective of this subject is to understand the use of computer network, different types of network, communication protocol and concept of data communication.

Unit-I

Communication concepts: Bandwidth and Channel Capacity, Nyquist Law, Shannon's Law, Key Components in Data Communication Systems. Data Transmission Concepts: Simplex, Half Duplex, Full Duplex. Characteristics of Signals.

Unit-II

Transmission Media: Guided and Unguided Transmission Media. Reliable Transmission of Data: Asynchronous and Synchronous Transmission. Error Detection: Parity Based, CRC Based, FCS Computation. Error Control and Recovery Techniques.

Unit-III

Goals and applications of networks: Classification, LAN, MAN, WAN. Network Topology. Network Architecture, ISO-OSI Reference Model, TCP/IP Model. IP Addresses, Subnetting, Internet Protocol (IP). Internet Control Protocols: ICMP, ARP and RARP.

Unit-IV

Routing: Types of Routing. Routing Algorithms: Interior (RIP, OSPF), Exterior (BGP).

Transport Layer: UDP and TCP Concepts.

Unit-V

Data Link Layer Protocols: SLIP, PPP. MAC Sub Layer. Channel Allocation Issues.

Multiple Access Protocols: ALOHA (Pure and Slotted) Protocol, CSMA/CD.

High Speed LANS (Fast, Ethernet and FDDI).

Text Books:

1. **James F. Kurose and Keith W. Ross**, Computer Networking, a Top-Down Approach Featuring the Internet.
2. **Behrouz A. Forouzan**, Data Communications and Networking, Fourth Edition.
3. **W. Stallings**, Data and communications, 6th Edn., Prentice Hall, 2000.

Reference Book:

1. **Gallo**, Computer Communications & Networking Technologies, Cengage India.
2. **Peterson and Davie**, Computer networks: A systems approach, 2nd Edn. Morgan Kaufman.
3. **Tanenbaum A. S.**, Computer Networks, 4th Edn. Prentice Hall.

Note for paper setter: The question paper shall comprise of 10 questions. Two questions will be set from each unit. The student has to attempt 5 questions selecting at least one question from each unit.

Semester VI

Course Title: Management Information Systems
Course Code: ITE- 625
Duration of Exam: 3 hours

Max Marks: 100
University Exam: 60
Internal Assessment: 40

Objective: The objective of this subject is to understand the concept of MIS in terms of its various components and as an integrated system.

Unit-I

Introduction: Definition and Importance of MIS, Evolution of MIS, Concept of MIS, Function of MIS, Characteristics of MIS, Managerial Functions, Management Hierarchy, System: Elements of a system, Cybernetic System.

Unit-II

Structure of MIS: MIS structure based on Operating Elements, MIS structure based on Decision Support, MIS structure based on Management Activities, MIS structure based on Organizational Function, Synthesis of MIS Structure: Conceptual and Physical Structure.

Unit-III

Classification of MIS & Information Concept: MIS Classification: Operation Support System, Management Support System and Other Support System. Data and Information, Characteristics of Information, Quality of Information, Classification of Information: John Dearden Classification, Classification in terms of Application and Classification on the basis of usage. Methods of Data and Information Collection, Methods to Avoid misuse of Information.

Unit-IV

Decision-Making and DSS: Types of Decisions: Purpose of Decision Making, Level of programmability, Knowledge of outcomes. Decision Making Models: Simon's

Model of Decision Making and Implicit Favorite Model. Decision Support System: Elements of DSS, Objective of DSS, Characteristics of DSS, Classification of DSS.

Unit-V

Enterprise Resource Planning: Introduction, Main Features of ERP, Evolution of ERP, General Model of ERP, Benefits of ERP, Role of Consultants ,Vendors and Users in ERP,ERP Implementation Methodology.

Text Books:

1. **D. P. Goyal**, MIS, Macmillan Publishers.
2. **Davis and Olson**, MIS, TMH.
3. **Vinod Kumar Garg**, ERP, PHI Learning Pvt. Ltd.

Reference Books:

1. **Sangeeth Gupta**, MIS.
2. **CSV Murthy**, MIS, Himalaya Publishing House.

Note for paper setter: The question paper shall comprise of 10 questions. Two questions will be set from each unit. The student has to attempt five questions selecting at least one question from each unit.

Semester VI

Course Title: Internet & Web Technology
Course Code: ITE-626
Duration of Exam: 3 hours

Max Marks: 100
University Exam: 60
Internal Assessment: 40

Objective: To impart basic understanding of the methods and techniques of developing websites.

Unit-I

Internet & Web: History and growth of Internet and Web, Introduction to WWW, Web Servers, Web Browsers and Search Engines, TCP/IP Suite, Cyber laws, Web engineering, Symantec Web Technology.

Unit-II

HTML: Introduction to HTML, Elements of HTML syntax, Head and Body sections, Building HTML documents, Lists, types and implementation of lists, Hyperlinks. Presentation and control: Images, Image as buttons, Image maps, Text, Colors and Backgrounds, CSS, Tables: Use of table tags.

Unit-III

Frames: Developing Web pages using frames. Interactivity: Forms, DHTML, JavaScript, Use of Java Applets.

Unit-IV

Security: Principles of security, Web Security: Cryptography, Digital certificates, Digital Signatures, Secure Socket Layer, Network Security: Firewalls, IP Security, Virtual Private Networks.

Unit-V

Wireless Internet: Mobile IP, Mobile TCP, GPRS, Wireless Application Protocol (WAP).

Introduction to server side programming: CGI, ASP, JSP, Servlets.

Text Books:

1. **Thomas Powell**, Complete Reference HTML/XHTML.
2. **S. Achyut Godbole and Atul Kahate**, Web Technologies, Tata McGraw Hill.
3. **Raj Kamal**, Internet & Web Design, Tata McGraw Hill.

Reference Books:

1. **Xavier C.**, Web Technology & Design, New Age International Publishers.
2. **Ann Navarro**, Effective Web Design, BPB publications.
3. **Stephen E**, Will Train, HTML 4.0, BPB publication.
4. **Xavier C.**, World Wide Web Design with HTML, Tata McGraw Hill.

Note for paper setter: The question paper shall comprise of 10 questions. Two questions will be set from each unit. The student has to attempt five questions selecting at least one question from each unit.

Semester VI

Course Title: Java Programming
Course Code: ITE-631
Duration of Exam: 3 hours

Max Marks: 50
University Exam: 25
Internal Assessment: 25

List of Experiments:

1. The Fibonacci sequence is defined by the following rule. The first two values in the sequence are 1 and 1. Every subsequent value is the sum of the two values preceding it. Write a Java program that uses both recursive and non recursive functions to print the nth value in the Fibonacci sequence.
2. Write a Java program that reads a file name from the user then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.
3. Write a Java program that reads a file and displays a file and displays the file on the screen, with a line number before each line.
4. Write a program to demonstrate the concept of command line arguments
5. Write a program to demonstrate various string operations like concatenation, string copy etc
6. Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.
7. Write a program to demonstrate exception handling
8. Write a program to demonstrate Applet
9. Write a program to demonstrate the concept of single thread creation and multithread creation, inter thread communication
10. Write a program to create package, use that package in some other program. Use different access modifiers to demonstrate
11. Write a program to demonstrate the concept of ArrayList and LinkedList

Note: This is only the suggested list of experiments. Instructor may add or change some experiments relevant to the course contents.

Semester VI

Course Title: Internet & Web Technology

Course Code: ITE-632

Duration of Exam: 3 hours

Max Marks: 50

University Exam: 25

Internal Assessment: 25

1. **Overview of HTML**

Overview of HTML, Introduction to HTML, Creating an HTML Document

2. **Formatting text with HTML**

Paragraph Formatting with HTML, Character Formatting with HTML, Comparing Procedural and Descriptive Formatting

3. **Adding local and remote links**

Adding Local and Remote Links, Adding Internal Links with the Named Anchor Tag

4. **Adding graphics**

Linking and Embedding Graphics, **Creating lists in HTML**, Creating Lists and Nested Lists

5. **Creating tables in HTML**

Creating and Modifying Tables, Creating Advanced Table Elements

6. **Setting Body and Background Attributes**

Setting Background and Text Colors, **Web Page Design Guidelines**, Web Page Design Guidelines

7. **Adding Links to other Internet Services**

Links to Non-Web Internet Services

8. **An introduction to Java applets and graphical programming**

Graphical User Interfaces; Drawing; Components

Java basics: types, variables, statements, syntax

Testing and debugging programs

Setting up applets on the Internet

Note: This is only the suggested list of experiments. Instructor may add or change some experiments relevant to the course contents.

