

L	T	P
3	1	–

Class Work: 50  
 Exam: 100  
 Total: 150  
 Duration of Exam: 3 Hrs.

**Unit-1:** Data warehousing Definition, usage and trends. DBMS vs data warehouse, Data marts, Metadata, Multidimensional data model, Data cubes, Schemas for Multidimensional Database: stars, snowflakes and fact constellations.

**Unit-2:** Data warehouse process & architecture, OLTP vs OLAP, ROLAP vs MOLAP, types of OLAP, servers, 3-Tier data warehouse architecture, distributed and virtual data warehouses, data warehouse manager.

**Unit-3:** Data warehouse implementation, computation of data cubes, modelling OLAP data, OLAP queries manager, data warehouse back end tools, complex aggregation at multiple granularities, tuning and testing of data warehouse.

**Unit-4:** Data mining definition & task, KDD versus data mining, data mining techniques, tools and applications.

**Unit-5:** Data mining query languages, data specification, specifying knowledge, hierarchy specification, pattern presentation & visualisation specification, data mining languages and standardisation of data mining.

**Unit-6:** Data mining techniques: Association rules, Clustering techniques, Decision tree knowledge discovery through Neural Networks & Genetic Algorithm, Rough Sets, Support Vector Machines and Fuzzy techniques.

**Unit-7:** Mining complex data objects, Spatial databases, Multimedia databases, Time series and Sequence data; mining Text Databases and mining World Wide Web.

**Text Books:**

- Data Warehousing In the Real World; Sam Anahory & Dennis Murray; 1997, Pearson
- Data Mining- Concepts & Techniques; Jiawei Han & Micheline Kamber- 2001, Morgan Kaufmann.
- Data Mining Techniques; Arun Pujar; 2001, University Press; Hyderabad.

**Reference Books:**

- Data Mining; Pieter Adriaans & Dolf Zantinge; 1997, Pearson,
- Data Warehousing, Data Mining and OLTP; Alex Berson, 1997, Mc Graw Hill.
- Data warehousing System; Mallach; 2000, Mc Graw Hill.
- Building the Data Warehouse; W.H. Inman, 1996, John Wiley & Sons.
- Developing the Data Warehouses; W.H. Inman, C. Klelly, John Wiley & Sons.
- Managing the Data Warehouses; W.H. Inman, C.L. Gassey, John Wiley & Sons. .

**Note:** Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

**Unit-1: Introduction to Software Project Management (SPM):** Definition of a Software Project (SP), SP Vs. other types of projects activities covered by SPM, categorizing SPs, project as a system, management control, requirement specification, information and control in organization.

**Unit-2: Stepwise Project planning:** Introduction, selecting a project, identifying project scope and objectives, identifying project infrastructure, analyzing project characteristics, identifying project products and activities, estimate efforts each activity, identifying activity risk, allocate resources, review/ publicize plan.

**Unit-3: Project Evaluation & Estimation:** Cost benefit analysis, cash flow forecasting, cost benefit evaluation techniques, risk evaluation. Selection of an appropriate project report; Choosing technologies, choice of process model, structured methods, rapid application development, water fall-, V-process-, spiral- models. Prototyping, delivery. Albrecht function point analysis.

**Unit-4: Activity planning & Risk Management:** Objectives of activity planning, project schedule, projects and activities, sequencing and scheduling activities, network planning model, representation of lagged activities, adding the time dimension, backward and forward pass, identifying critical path, activity throat, shortening project , precedence networks.

**Risk Management:** Introduction, the nature of risk, managing risk, risk identification, risk analysis, reducing the risks, evaluating risks to the schedule, calculating the z values..

**Unit-5: Resource allocation & Monitoring the control:** Introduction, the nature of resources, identifying resource requirements, scheduling resources creating critical paths, counting the cost, being specific, publishing the resource schedule, cost schedules, the scheduling sequence.

**Monitoring the control:** Introduction, creating the frame work, collecting the data, visualizing progress, cost monitoring, earned value, prioritizing monitoring, getting the project back to target, change control.

**Unit-6: Managing contracts and people:** Introduction, types of contract, stages in contract, placement, typical terms of a contract, contract management, acceptance, Managing people and organizing terms: Introduction, understanding behavior, organizational behavior: a back ground, selecting the right person for the job, instruction in the best methods, motivation, working in groups, becoming a team, decision making, leadership, organizational structures, conclusion, further exercises..

**Unit-7: Software quality:** Introduction, the place of software quality in project planning, the importance of software quality, defining software quality, ISO 9126, Practical software quality measures, product versus process quality management, external standards, techniques to help enhance software quality.

**Unit-8: Study of Any Software Project Management software:** viz Project 2000 or equivalent

**Text Book:**

- Software Project Management (2<sup>nd</sup> Edition), by Bob Hughes and Mike Cotterell, 1999, TMH

**Reference Books:**

- Software Engineering – A Practitioner's approach, Roger S. Pressman (5<sup>th</sup> edi), 2001, MGH
- Software Project Management, Walker Royce, 1998, Addison Wesley.
- Project Management 2/c. Maylor
- Managing Global software Projects, Ramesh, 2001, TMH.

**Note:** Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

L	T	P
3	1	–

Class Work:	50
Exam:	100
Total:	150

Duration of Exam: 3 Hrs.

**UNIT-1 :** Introduction to Systems and Network Administration: The Scope of Systems and Network Administration, The Goals of Systems and Network Administration, System Components and their Management: Operating Systems: Windows and Unix Variants, File Systems and Standards (UFS, NFS, NTFS), Processes and Job Control, Privileged, User and Group Accounts, Logs and Audits, Systems Performance Tuning:

Host Management: Booting and Shutting down of an Operating System, Formatting, Partitioning and Building a File System, File System Layout, Concept of swap space, Cloning Systems, OS Installation, Installation and configuration of devices and drivers, Software Installation and Structuring Software, Open Source Software: The GNU Project, Superuser/Administrator Privileges, User Management, Adding/Removing users, Controlling User Resources, Disk Space Allocation and quotas, Process Management and Monitoring, Scheduling Processes, Killing/Stopping processes, Restarting a Process, Monitoring Process Activity, Maintaining Log Files, File System Repair, Backup and Restoration, , Handling Man Pages/Help System, Kernel Customization, Integrating Multiple Operating Systems, System Sharing, User IDs, Passwords and Authentication.

**UNIT-2 :** Network Administration: Introduction to Network Administration Approaches, Addressing and Subnetting : Fixed Vs Variable Masks, VLAN Principles and Configuration, Routing Concepts, Static and Dynamic Routing, Routing Protocols: RIP, OSPF, BGP, Network Address Translation (NAT), Configuring a Linux/Windows Box as a Router, Dial-up configuration and Authentication: PPP, Radius, RAS, Configuring a DNS Server, Configuring Sendmail Service, Configuring a Web Server, Configuring a Proxy Server, TCP/IP Troubleshooting: ping, traceroute, ifconfig, netstat, ipconfig, Network Management.

**UNIT-3 :** Host and Network Security :Security Planning, Categories of Security: C1, C2, C3, C4, Password Security, Access Control and Monitoring: Wrappers, Firewalls: Filtering Rules, Detection and Prevention of Denial of Service (DOS) Attacks, Automatic Identification of Configuration Loop Holes, Security Information Resources: CERT, Installing and Upgrading System Software, Use of Scripting tools: Shell Scripting, Perl/Python Scripting, Use of Make Option

**UNIT-4 :** Security Planning, Categories of Security: C1, C2, C3, C4, password security, Access Control and Monitoring.

#### **BOOKS RECOMMENDED**

- “Principles of Network and System Administration”, Mark Burgess, 2000, John Wiley and Sons Ltd,
- “TCP/IP Network Administration” (3<sup>rd</sup> Edition), Craig Hunt, O’Reilly and Associates Inc., 2002.
- “Windows 2000 Administration”, George Splading, 2000, McGraw-Hill.
- “Linux Network Administrator’s Guide”, Olaf Kirch and Terry Dawson, (2<sup>nd</sup> Edition), O’Reilly and Associates Inc., 2000, (Shroff Publishers and Distributors, Calcutta),

Software Requirements : Microsoft Windows 2000, Linux, Perl/Python

**Note:** Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

**IT-405- E****Introduction to E-commerce & ERP**

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Class Work:	50
Exam:	100
Total:	150
Duration of Exam: 3 Hrs.	

**Part-A**

**Unit-1: Introduction and Concepts:** Networks and commercial transactions – Internet and other novelties; networks and electronic transactions today, Model for commercial transactions; Internet environment – internet advantage, worlds wide web and other internet sales venues; Online commerce solutions.

**Unit-2: Electronic Payment Methods:** Updating traditional transactions; Secure online transaction models; Online commercial environments; digital currencies and payment systems; Offline secure processing; private data networks. Security protocols.

**Unit-3: Electronic Commerce Providers:** On-line Commerce options: Company profiles. Electronic Payment Systems: Digital payment systems; First virtual internet payment system; cyber cash model. On-line Commerce Environments: Servers and commercial environments; Ecommerce servers.

**Unit-4: Digital Currencies:** Operational process of Digicash, Ecash Trail; Using Ecash; Smart cards; Electronic Data Interchange: basics, EDI versus Internet and EDI over Internet. Strategies, Techniques and Tools, Shopping techniques and online selling techniques.

**Part- B**

**Unit-5: ERP- An Enterprise Perspective:** Production Finance, Personnel disciplines and their relationship, Transiting environment, MIS Integration for disciplines, Information/Workflow, Network Structure, Client Server Integrator System, Virtual Enterprise.

**Unit-6: ERP – Resource Management Perspective:** Functional and Process of Resource. Management, Introduction to basic Modules of ERP System: HRD, Personnel Management, Training and Development, Skill Inventory, Material Planning and Control, Inventory, Forecasting, Manufacturing, Production Planning, Production Scheduling, Production Control, Sales and Distribution, Finance, Resource Management in global scenario.

**Unit-7: ERP - Information System perspective:** Introduction to OLAP (Online Analysis and Processing), TP, OAS, KBS, MRP, BPR,. SCM, REP, CRM, Information Communication Technology.

**Unit-8: ERP-Key Managerial issues:** Concept Selling, IT Infrastructure, Implication, of ERP Systems on Business Organization, Critical success factors in ERP System, ERP Culture Implementation Issues, Resistance to change, ERP Selection issues, Return on Investment, Pre and Post Implementation Issues.

**Text Book:**

- “Frontiers of electronics Commerce” Ravi lalakota, Andrew Whinston ,1996, Addison Wesley,
- Enterprise Resource Planning-Concepts and Practice, V.K. Garg and N.K. Venkita Krishna, 1998, PHI.

**Reference Books:**

- The SAP/3 Handbook, John Antonio, Fernandez, TMH.
- “The E-Business Revolution” Denial amor Addison Wesley
- “From Edi to E-Commerce: A Business Initiative” Sokol TMH
- “E Commerce” Greenstein and Feinman TMH
- ”E Commerce” Excel, Diwan, Sharma
- Asset International “Net Commerce” TMH
- “E Commerce: The Cutting Edge of Business” Bajan And Nag TMH
- E-Commerces- Jaffrey F. Rayport , Bernard J. Jaworski, 2002, T.M.H
- Electronic Commerce – Security , Risk management and Control , Greenstein, Feinman, 2002, T.M.H

**Note:** Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all but at least two from each Part A & Part B.

IT 407-E

**System and Network Administration Lab.**

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Class Work: 50  
Exam: 50  
Total: 100  
Duration of exam: 3 hrs.

- Management of the users & the domain.
- Configuring DHCP.
- Setting up the local security policy.
- Start and stop services from user window and command prompt.
- Use of event viewer.
- Use of the performance monitor.
- Management of the IIS and FJP server.
- Setting up of local area network.
- Setting up of router in Window 2000 server.
- Use of utilities     (a) Ping     (b) Trocert   (c) netstat   (d) net  
                                 (e) IP configuration     (f) Path ping
- Use of network monitor.
- Setting up of a DNS.
- Setting up and use “Terminal Clinet Services”.

**CSE-409 E****Visual Programming Lab.**

L     T     P  
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Class Work:        25  
Exam:                50  
Total:                75  
Duration of Exam: 3

Hrs.

Study of Visual Basic 6.0.NET and Visual C++ 6.0.NET.

- 1) Study Windows API's. Find out their relationship with MFC classes. Appreciate how they are helpful in finding complexities of windows programming.
- 2) Get familiar with essential classes in a typical (Document- view architecture) VC++ Program and their relationship with each other.
- 3) Create an SDI application in VC++ that adds a popup menu to your application which uses File drop down menu attached with the menu bar as the pop-up menu. The pop-up menu should be displayed on the right click of the mouse.
- 4) Create an SDI application in VC++ using which the user can draw atmost 20 rectangles in the client area. All the rectangles that are drawn should remain visible on the screen even if the window is refreshed. Rectangle should be drawn on the second click of the left mouse button out of the two consecutive clicks. If the user tries to draw more than 20 rectangles, a message should get displayed in the client area that " No more rectangles can be drawn"
- 5) Create an application in VC++ that shows how menu items can be grayed, disabled and appended at run time.
- 6) Write a program in VC++ to implement serialization of inbuilt and user defined objects.
- 7) Write a program in VC++ to create archive class object from CFile class that reads and stores a simple structure (record).
- 8) Make an Active X control in VC++ derived from a standard control.
- 9) Write a program in VB to implement a simple calculator.
- 10) Create a simple database in MS Access Database /Oracle and a simple database application in VB that shows database connectivity through DAO and ADO.
- 11) Write a simple program that displays an appropriate message when the illegal operation is performed using error handling technique in VB.
- 12) Write a program in VB to create a notepad.
- 13) Create a DLL in VB.

**Bright students may do the following exercises:**

- 14) Write a program in VC++ to implement a simple calculator.
- 15) Write a program in VC++ to create a static link library and a dynamic link library.
- 16) Create a simple database in MS Access Database and a simple database application in VC++ that shows database connectivity through ADO model.
- 17) Make an Active X control of your own using VB.
- 18) With the help of VB, create an object of excel application and implement any action on it.

# Semester-8

**CSE-402 E**

**Distributed Operating System**

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Class Work:	50
Exam:	100
Total:	150
Duration of Exam: 3 Hrs.	

**Unit-1: Introduction:** Introduction to Distributed System, Goals of Distributed system, Hardware and Software concepts, Design issues. Communication in distributed system: Layered protocols, ATM networks, Client – Server model, Remote Procedure Calls and Group Communication. Middleware and Distributed Operating Systems.

**Unit-2: Synchronization in Distributed System:** Clock synchronization, Mutual Exclusion, Election algorithm, the Bully algorithm, a Ring algorithm, Atomic Transactions, Deadlock in Distributed Systems, Distributed Deadlock Prevention, Distributed Deadlock Detection .

**Unit-3: Processes and Processors in distributed systems:** Threads, System models, Processors Allocation, Scheduling in Distributed System, Real Time Distributed Systems.

**Unit-4: Distributed file systems:** Distributed file system Design, Distributed file system Implementation, Trends in Distributed file systems.

**Distributed Shared Memory:** What is shared memory, Consistency models, Page based distributed shared memory, shared variables distributed shared memory.

**Unit-5: Case study MACH:** Introduction to MACH, process management in MACH, communication in MACH, UNIX emulation in MACH.

## Text Book:

- Distributed Operating System – Andrew S. Tanenbaum, PHI.

**Note:** Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.



## ADVANCED JAVA

**CSE-404-E**

L T P

3 1 0

Class Work : 50

Exam. : 100

Total : 150

Duration of Exam. : 3 hrs.

### UNIT 1: CORE JAVA

Introduction to Java, Data types, variables, operators, Arrays, Control Statements, Classes & Methods, Inheritance, Exception Handling, Multithreading, Collections, I/O streams, AVVT & Aplet Programming.

### UNIT 2: NETWORKING

Connecting to a Server, Implementing Servers, Sending E-Mail, Making URL Connections, Advanced Socket Programming

### UNIT 3: DATABASE NETWORKING

The Design of JDBC. The Structured Query Language, JDBC Installation, Basic JDBC Programming Concepts, Query Execution, Scrollable and Updatable Result Sets, Metadata, Row Sets, Transactions, Advanced Connection Management, Introduction of LDAP

### UNIT 4: DISTRIBUTED OBJECTS

The Roles of Client and Server, Remote Method Invocations, Setup for Remote Method Invocation, Parameter Passing in Remote Methods Server Object Activation, Java IDL and CCRA, Remote Method Calls with SOAP

### UNIT 5: SWING

Lists, Trees, Tables, Styled Text Components, Progress Indicators, Component Organizers

### UNIT 6: AWT

The Rendering Pipeline, Shapes, Areas, Strokes, Paint, Coordinate Transformations, Clipping, Transparency and Composition, Rendering Hints, Readers and Writers for Images, Image Manipulation, Printing. The Clipboard, Drag and Drop

### UNIT 7: JAVABEANS COMPONENTS

Beans, The Bean-Writing Process, Using Beans to Build an Application, Naming Patterns for Bean Components and Events Bean Property Tubes Beaninfo Classes Property Editors Customizes

### UNIT 8: SECURITY

Class Loaders, Bytecode Verification, Security Managers and Permissions, Digital Signatures, Code Signing, Encryption

**TEXT BOOK:**

Core Java™ 2, Volume II-Advanced Features, 7<sup>th</sup> Edition by Cay Horstmann, Gary Cornell  
Pearson Publisher, 2004

**REFERENCE BOOKS:**

1. Professional Java Programming by Brett Spell, WROX Publication
2. Advanced Java 2 Platform, How to Program, 2<sup>nd</sup> Edition, Harvey. M. Dietel, Prentice Hall

**Note: Eight questions are to be set – at least one from each unit Students have to attempt any five.**

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Class Work:	50
Exam:	50
Total:	100
Duration of exam: 3 hrs.	

**Development of programs relating to :**

- **JDBC**
- **Servlets**
- **Beans**
- **RMI**
- **JSP**

**IT-465 E****Network Technology**

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Class Work: 50  
Exam: 100  
Total: 150  
Duration of Exam: 3 Hrs.

**Unit-1: Overview of Internet:** Address and domain Management, SNMP, Transport Layer issues, TCP/IP, FTP, WWW undergoing technology, E mail talent, FTP, Gateway, Dial-up, SLIP/PPP Dedicated lines, Internet searching tools, gopher, Archie, Veronica, WWW, Lynx, Mosaic, WAIS, Usenet.

**Unit-2:** Security issues, CGI, PERL, HTML, VRML, JAVA, VB script and other internet development tools, internet networking TCP/IP protocols . ) Network Security and Management.

**Unit-3:** Application Layer Services and protocols (RPC, NFC, SMTP, FTP, TELENET), Review of LAN, Principles of IBASE5 (Strain), Transmitter and receiver of IBASE5 (Starian), Node, LAN Manager, Software of IBASE5 Node, 10BASE5 Ethernet and 10BASE2 (Cheaper net), Twisted pair Ethernet, Serial Communication, Connecting LANs and WANS.

**Unit-4:** Serial Communication Circuits, Modems, USART-Processor Interface Data Buffer Block of 8251A, Control logic of USART, PROTOCOLS, Transmitter, Receiver, Synchronous Modems and Asynchronous Modems. SYNDET/BRKDET ion 8251A, Monitoring of 8251A, writing characters to be transmitted to 8251A, Monitoring of 8251A. Read status, ISDN: Technology, devices, Architecture Protocols, Flow Control Error detection and Correction, ATM, Technology, Inter Networking SDH/SONET.

**Text Book:**

- Computer Networks by Tanenbaum, 2003, PHI.
- Computer Networks by Black, 1995, PHI.

**Reference Books:**

- Data communication & Networking by Furouzan, 2000, TMH.
- Data and Network communications by Miller (Delmer)
- Communication Networks: Fundamentals Concepts & Key Architectures by Alberto Leon, TMH

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Class Work: 50  
Exam: 100  
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Duration of Exam: 3 Hrs.

**Unit-1:** Real time operating system overview, exposure to Windows CE, QNX, Micro kernels and  $\mu$ c/OS of introduction to process models. Interrupt routines in an RTOs environment, encapsulating semaphores and queues, hard real-time scheduling considerations, saving memory space.

**Unit-2:** 16 & 32 bit microprocessor and micro-controller and DSP hardware with reference to Embedded system.

**Unit-3:** Embedded software development tools and compilers – host and target machines, linker/ locators for embedded software, cross compilers, cross assemblers and tool chains, gcc compiler, basic concept of device drivers, serial communication interface device driver.

**Unit-4:** System synthesis of Hardware/ software co-emulation, simulation speed of emulators. JTAG OCD

**Unit-5:** Communication protocols with special reference to embedded system. TCP/IP, VDP wireless protocols, IRDA, Blue tooth IEEE 8.8.11.

**Text Books:**

- An embedded system primer by David E Simon, 1999, Addison-Wesley
- Programming for Embedded system by Dreamtech software team, John wiley, 2002

**Reference Books:**

- TCP/IP Lean: Web servers for embedded systems by Jeramy Bentham, 2002
- Real –time programming: A guide to 32 bit embedded development, Rick Grehan, 1999, AW.

**Note:** Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

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Class Work:	50
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Duration of Exam: 3 Hrs.	

**Unit-1: Crystal Growth:** MGS, EGS, Czochralski crystal Puller, Silicon shaping, Wafer Preparation. Epitaxy: Vapour Phase Epitaxy, Epitaxial Layer evaluation Molecular Beam Epitaxy.

**Unit-2: Oxidation:** Thermal Oxidation Kinetics, Oxidation techniques, Oxide Properties, Oxidation induced Defects. Lithography: Photolithography, e-beam lithography, X ray Lithography.

**Unit-3: Reactive Plasma Etching:** Plasma Properties, Feature Size control and anisotropic etching, Plasma etching techniques and equipment. Di-electric and Poly-Silicon Film Deposition: Deposition Processes for Poly-Si, SiO<sub>2</sub>, SiO<sub>3</sub>N<sub>4</sub>; Plasma assisted Depositions.

**Unit-4: Diffusion:** A Qualitative view of atomic diffusion in Solids, diffusion mechanisms, Fick's one dimensional diffusion equation, constant source and limited source diffusion, diffusion of Grp3 and 5 impurities in Silicon Impurity sources, diffusion apparatus, Characterization of diffused layers. Ion Implantation: Introduction, Range Theory, Implantation Equipment Annealing.

**Unit-5: Metallization:** Metallization applications, Choices, Physical Vapour Deposition. Sputtering, Metallization Problems. Assembly & Packaging: Package Types, design considerations, Package fabrication technologies, Future trends.

**Unit-6: Isolation techniques:** Bipolar IC fabrication Process Sequence. n MOS IC fabrication Process Sequence.

**Text Books:**

- VLSI Technology, S.M. Sze , 1998, MGH
- VLSI Fabrication Principles, S.K. Ghandhi

**Note:** Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

**IT-467 E****Computer Software Testing**

L	T	P
4	–	–

Class Work:	50
Exam:	100
Total:	150
Duration of Exam: 3 Hrs.	

**Unit-1: Fundamentals and Testing types:** First, second and later cycles of testing. Objectives and limits of testing. Overview of S/W development stages, Planning and Design stages and testing during these stages. Glass box code, Regression and Black box testing, Software errors, Categories of software error.

**Unit-2: Reporting and analyzing bugs:** Problem reports, Content and Characteristics of Problem Report, analysis and Tactics for analyzing a reproducible bug. Making a bug reproducible

**Unit-3: Problem Tracking System:** Objective of Problem Tracking System, tasks of the system, Problem tracking overview, users of the tracking system, mechanics of the database

**Unit-4: Test Case Design:** Characteristics of a good test, equivalence classes and boundary values, visible state transitions, Race conditions and other time dependencies, load testing. Error guessing, Function equivalence testing, Regression Testing, General issues in configuration testing, printer testing

**Unit-5: Localization and User Manuals testing:** Translated text expands, Character sets, Keyboards, Text filters, Loading, saving, importing, and exporting high and low ASCII, Operating system Language, Hot keys, Error message identifiers, Hyphenation rules, Spelling rules, Sorting Rules, Uppercase and Lowercase conversion, Printers, Sizes of paper, CPU's and video, Rodents, Data formats and setup options, Rulers and measurements, Culture-bound Graphics and output, European product compatibility, Memory availability, automated testing, Testing User Manuals, Effective documentation, documentation tester's objective, How testing documentation contributes to software reliability

**Unit-6: Testing Tools and Test Planning:** Fundamental tools, Automated acceptance and regression tests, standards, Translucent box testing Overall objective of the test plan: product or tool? Detailed objective, type of test, strategy for developing components of test planning documents, components of test planning documents, documenting test materials

**Unit-7:** S/W Development tradeoffs and models, Quality-related costs, The development time line, Product design, alpha, Pre-beta, Beta, User Interface freeze, Pre-final, Final integrity testing, Project post-mortems, Legal consequences of defective software, Managing and role of a testing group, independent test agencies

**Text Book:**

- Testing Computer Software, by Cem Kaner, Jack Falk, Hung Quoc Nguyen, 1999, Pub: Wiley, (Second Edition).

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Duration of Exam: 3 Hrs.	

**Unit-1: Information Architecture:** The role of the Information Architect, Collaboration and Communication, Organizing Information, Organizational Challenges, Organizing Web sites and Intranets, Creating Cohesive Organization Systems Designing Navigation Systems, Types of Navigation systems, Integrated Navigation Elements, Remote Navigation Elements, Designing Elegant Navigation Systems, Searching Systems, Searching your Web Site, Designing the Search Interface, Indexing the Right Stuff, To search or Not To Search, Grouping Content, Conceptual Design, High-Level Architecture Blueprints, Architectural Page Mockups, Design Sketches.

**Unit-2: Dynamic HTML and Web Designing:** HTML Basic Concepts, Good Web Design, Process of Web Publishing, Phases of Web Site development, Structure of HTML documents, HTML Elements-Core attributes, Language attributes, Core Events, Block Level Events, Text Level Events, Linking Basics, Linking in HTML, Images and Anchors, Anchor Attributes, Image maps, Semantic Linking Meta Information, Image Preliminaries, Image Download Issues, Image as Buttons, Introduction to Layout: Backgrounds, Colors and Text, Fonts, Layout with Tables. Advanced Layout: Frames and Layers, HTML and other media types. Audio Support in Browsers, Video Support, Other binary Formats. Style Sheets, Positioning with Style sheets. Basic Interactivity and HTML: FORMS, Form Control, New and emerging Form elements.

**Unit-3: Java Server Pages and Active Server Pages:** Basics, Integrating Script, JSP/ASP Objects and Components, configuring and troubleshooting,: Request and response objects, Retrieving the contents of a an HTML form, Retrieving a Query String, Cookies, Creating and Reading Cookies. Using application Objects and Events.

**Unit-4: Overview of advance features of XML**

**Text Books:**

- HTML The complete Reference, TMH
- CGI Programming with Perl 2/e, Scott Guelich, Shishir Gundavaram, Gunther Birzniek; O'Reilly
- Doug Tidwell, James Snell, Pavel Kulchenko; Programming Web Services with SOAP, O' Reilly
- Pardi, XML in Action, Web Technology, PHI

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**Unit-1:** Procedural and non-procedural lang., prolog vs LISP, Applications of LISP & PROLOG in designing expert system.

**Unit-2:** Syntax of PROLOG, Lists, Operators, Arithmetic, Structures, Controlling Back Tracking.

**Unit-3:** Input and Output, built-in predicates, Operation on Data Structures, Advanced Tree Representation.

**Unit-4:** Prolog in Artificial Intelligence: writing programs for search techniques, Constraint logic programming, Knowledge representation and expert system, Expert System Shell.

**Unit-5:** Planning, Machine Learning, Inductive Logic Programming, Qualitative Reasoning, Language Processing, Game Playing, Meta Programming.

**Text Book:**

- Prolog Programming for Artificial Intelligence by Ivan Bratko, 2001, Pearson Edu.

**Reference Books:**

- Symbolic Computing with Lisp & PROLOG - by Mueller, JW, 1998
- Programming in turbo PROLOG by Lee Teft - PHI.

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Class Work:	50
Exam:	100
Total:	150
Duration of Exam: 3 Hrs.	

**Unit-1:** Procedural and non-procedural lang., prolog vs LISP, Applications of LISP & PROLOG in designing expert system.

**Unit-2:** Syntax of PROLOG, Lists, Operators, Arithmetic, Structures, Controlling Back Tracking.

**Unit-3:** Input and Output, built-in predicates, Operation on Data Structures, Advanced Tree Representation.

**Unit-4:** Prolog in Artificial Intelligence: writing programs for search techniques, Constraint logic programming, Knowledge representation and expert system, Expert System Shell.

**Unit-5:** Planning, Machine Learning, Inductive Logic Programming, Qualitative Reasoning, Language Processing, Game Playing, Meta Programming.

**Text Book:**

- Prolog Programming for Artificial Intelligence by Ivan Bratko, 2001, Pearson Edu.

**Reference Books:**

- Symbolic Computing with Lisp & PROLOG - by Mueller, JW, 1998
- Programming in turbo PROLOG by Lee Teft - PHI.

**Note:** Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

**IT-467 E**

**Computer Software Testing**

L	T	P
4	–	–

Class Work:	50
Exam:	100
Total:	150
Duration of Exam: 3 Hrs.	

**Unit-1: Fundamentals and Testing types:** First, second and later cycles of testing. Objectives and limits of testing. Overview of S/W development stages, Planning and Design stages and testing during these stages. Glass box code, Regression and Black box testing, Software errors, Categories of software error.

**Unit-2: Reporting and analyzing bugs:** Problem reports, Content and Characteristics of Problem Report, analysis and Tactics for analyzing a reproducible bug. Making a bug reproducible

**Unit-3: Problem Tracking System:** Objective of Problem Tracking System, tasks of the system, Problem tracking overview, users of the tracking system, mechanics of the database

**Unit-4: Test Case Design:** Characteristics of a good test, equivalence classes and boundary values, visible state transitions, Race conditions and other time dependencies, load testing. Error guessing, Function equivalence testing, Regression Testing, General issues in configuration testing, printer testing

**Unit-5: Localization and User Manuals testing:** Translated text expands, Character sets, Keyboards, Text filters, Loading, saving, importing, and exporting high and low ASCII, Operating system Language, Hot keys, Error message identifiers, Hyphenation rules, Spelling rules, Sorting Rules, Uppercase and Lowercase conversion, Printers, Sizes of paper, CPU's and video, Rodents, Data formats and setup options, Rulers and measurements, Culture-bound Graphics and output, European product compatibility, Memory availability, automated testing, Testing User Manuals, Effective documentation, documentation tester's objective, How testing documentation contributes to software reliability

**Unit-6: Testing Tools and Test Planning:** Fundamental tools, Automated acceptance and regression tests, standards, Translucent box testing Overall objective of the test plan: product or tool? Detailed objective, type of test, strategy for developing components of test planning documents, components of test planning documents, documenting test materials

**Unit-7:** S/W Development tradeoffs and models, Quality-related costs, The development time line, Product design, alpha, Pre-beta, Beta, User Interface freeze, Pre-final, Final integrity testing, Project post-mortems, Legal consequences of defective software, Managing and role of a testing group, independent test agencies

**Text Book:**

- Testing Computer Software, by Cem Kaner, Jack Falk, Hung Quoc Nguyen, 1999, Pub: Wiley, (Second Edition).

**Note:** Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

