

M.D.UNIVERSITY, ROHTAK
Scheme of Studies & Examination
Bachelor of Technology (Information Technology)
SEMESTER VII
‘F’ Scheme effective from 2012-13

Sl. No	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam
			L	T	P	Total	Marks of Class work	Theory	Practical	Total	
1	IT-401 F	Data Warehousing & Data Mining	3	1	-	4	50	100	-	150	3
2	CSE-403F	Software Project Management (CSE,IT)	3	1	-	4	50	100	-	150	3
3	IT-403 F	System & Network Administration	3	1	-	4	50	100	-	150	3
4	IT-407 F	Web Engineering	3	1	-	4	50	100	-	150	3
5	CSE-409F	Advanced JAVA	3	1	-	4	50	100	-	150	3
6		ELECTIVE	3	1	-	4	50	100	-	150	3
7	IT-409 F	System & Network Administration Lab.	-	-	2	2	25	-	50	75	3
8	IT-411 F	Web Engineering Lab.	-	-	2	2	25	-	50	75	3
9	CSE 415 F	Advanced JAVA Lab	-	-	3	3	50	-	100	150	3
10	IT-415 F	Practical Training-II	-	-	-	-	-	-	-	-	-
TOTAL			18	6	7	31	400	600	200	1200	

List of Electives

1.	CSE-421 F	Real Time Systems
2.	CSE-423 F	Distributed Operating System
3.	IT-465F	Network Security & Management
4.	CSE-435 F	Advanced Database Management Systems
5.	IT-467 F	Computer Software Testing
6.	IT-473 F	High Speed Networks

Note:

- Students will be allowed to use non-programmable scientific calculator. However, sharing of calculator will not be permitted in the examination.
- Student will be permitted to opt for any one elective run by the department. However, the departments will offer only those electives for which they have expertise. The choice of the students for any elective shall not be a binding for the department to offer, if the department does not have expertise.
- Assessment of Practical Training-II, undergone at the end of VI semester, will be based on seminar, viva-voce, report and certificate of practical training obtained by the student from the industry. According to performance letter grades A, B, C, F are to be awarded. A student who is awarded ‘F’ grade is required to repeat Practical Training.

IT-401 F

DATA WAREHOUSING AND DATA MINING

L T P
3 1 -

Class Work: 50
Exam: 100
Total: 150

Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A

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

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.

Section B

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.

Data mining definition & task, KDD versus data mining, data mining techniques, tools and applications.

Section C

Data mining query languages, data specification, specifying knowledge, hierarchy specification, pattern presentation & visualisation specification, data mining languages and standardisation of data mining.

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

Section D

Mining complex data objects, Spatial databases, Multimedia databases, Time series and Sequence data mining Text Databases and mining Word Wide Web.

Text Books:

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

Reference Books:

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

CSE-403 F SOFTWARE PROJECT MANAGEMENT

L T P
3 1 -

Class Work: 50
Exam: 100
Total: 150

Duration of Exam: 3Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A

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.

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.

Section B

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.

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.

Section C

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..

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.

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..

Section D

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.

Study of Any Software Project Management software: viz Project 2000 or equivalent

Text Book:

1. Software Project Management (2nd Edition), by Bob Hughes and Mike Cotterell, 1999, TMH

Reference Books:

1. Software Engineering – A Practitioner’s approach, Roger S. Pressman (5th edi), 2001, MGH
2. Software Project Management, Walker Royce, 1998, Addison Wesley.
3. Project Management 2/c. Maylor
4. Managing Global software Projects, Ramesh, 2001, TMH.
5. Software Project Management, Bharat Bhusan Agarwal, Shivangi Dhall, University Science Press

IT- 403 F

SYSTEMS & NETWORK ADMINISTRATION

L T P
3 1 -

Class Work: 50
Exam: 100
Total: 150

Duration of Exam: 3Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A

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:

Section B

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.

Section C

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.

Section D

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

BOOKS RECOMMENDED

1. "Principles of Network and System Administration", Mark Burgess, 2000, John Wiley and Sons Ltd,
2. "TCP/IP Network Administration" (3rd Edition), Craig Hunt, O'Reilly and Associates Inc., 2002.
3. "Windows 2000 Administration", George Splading, 2000, McGraw-Hill.
4. "Linux Network Administrator's Guide", Olaf Kirch and Terry Dawson, (2nd Edition), O'Reilly and Associates Inc., 2000, (Shroff Publishers and Distributors, Culcutta),
5. Software Requirements : Microsoft Windows 2000, Linux, Perl/Python

IT-407 F

WEB ENGINEERING

L T P
3 1 -

Class Work: 50

Exam: 100

Total: 150

Duration of Exam: 3 Hrs.

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Section A

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.

Section B

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.

Section C

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.

Section D

Overview of advance features of XML

Text Books:

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

CSE-409-F**ADVANCED JAVA**

L T P
3 1 0

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

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Section A**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.

NETWORKING

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

Section B**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

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

Section C**SWING**

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

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

Section D**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

SECURITY

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

TEXT BOOK:

Core Java™ 2, Volume II-Advanced Features, 7th 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, 2nd Edition, Harvey. M. Dietal, Prentice Hall
3. Advanced Java, Gajendra Gupta, Firewall Media

CSE-415-F

ADVANCED JAVA LAB.

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-	-	3

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

Development of programs relating to :

1. JDBC
2. Servlets
3. Beans
4. RMI
5. JSP

IT 409-F**SYSTEM AND NETWORK ADMINISTRATION LAB.**

L T P
- - 2

Class Work: 25
Exam: 50
Total: 75
Duration of exam: 3 hrs.

1. Management of the users & the domain.
2. Configuring DHCP.
3. Setting up the local security policy.
4. Start and stop services from user window and command prompt.
5. Use of event viewer.
6. Use of the performance monitor.
7. Management of the IIS and FJP server.
8. Setting up of local area network.
9. Setting up of router in Window 2000 server.
10. Use of utilities (a) Ping (b) Trocert (c) netstat (d) net (e) IP configuration (f) Path ping
11. Use of network monitor.
12. Setting up of a DNS.
13. Setting up and use "Terminal Clinet Services".

IT-411 F

WEB ENGINEERING LAB.

L	T	P
-	-	2

Class Work:	25
Exam:	50
Total:	75
Duration of Exam:	3 Hrs.

Practical based on theory contents.

CSE-423 F

DISTRIBUTED OPERATING SYSTEM

L	T	P
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Class Work: 50

Exam: 100

Total: 150

Duration of Exam: 3 Hrs.

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Section A

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.

Section B

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.

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

Section C

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.

Section D

Case study MACH: Introduction to MACH, process management in MACH, communication in MACH, UNIX emulation in MACH.

Text Book:

1. Distributed Operating System – Andrew S. Tanenbaum, PHI.
2. Operating System Concepts , P.S.Gill, Firewall Media

L	T	P
3	1	-

Class Work: 50

Exam: 100

Total: 150

Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A

Introduction: Codes and Ciphers – Some Classical systems – Statistical theory of cipher systems- Complexity theory of crypto systems – Stream ciphers, Block ciphers.

Stream Ciphers: Rotor based system – shift register based systems – Design considerations for stream ciphers – Cryptanalysis of stream ciphers – Combined encryption and encoding. Block Ciphers – DES and variant, modes of use of DES.

Section B

Public key systems – Knacksack systems – RSK – Diffie Hellman Exchange – Authentication and Digital signatures, Elliptic curve based systems.

System Identification and clustering: Cryptology of speech signals – narrow band and wide band systems – Analogue & Digital Systems of speech encryption.

Section C

Security: Hash function – Authentication: Protocols – Digital Signature standards. Electronics Mail Security – PGP (Pretty Good Privacy) MIME, data Compression technique. IP Security: Architecture, Authentication Leader, Encapsulating security Payload – Key Management. Web security: Secure Socket Layer & Transport Layer security, Secure electronics transactions. Firewalls Design principle, established systems.

Section D

Telecommunication Network Architecture, TMN management layers, Management information Model, Management servicing and functions, Structure of management information and TMN information model, SNMP v1, SNMP2 & SNMP3, RMON1 & 2, Broadband Network Management (ATM, HFC, DSL), ASN

Text Books:

1. Cryptography and Network Security: Principal & Practices, 2nd Edition by Upper Saddle River, PHI
2. Network Management Principles & Practices by Subramanian, Mani (AWL)
3. SNMP, Stalling, Willian (AWL)

Reference Books:

1. SNMP: A Guide to Network Management (MGH)
2. Telecom Network Management by H.H. Wang (MGH)
3. Network Management by U. Dlack (MGH)

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Class Work: 50
 Exam: 100
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Unit I

Data Models: EER model and relationship to the OO model, Object Oriented Databases, Overview of concepts, object identity, object structure, type constructors, encapsulation of operations, methods and persistence, type hierarchies and inheritance, complex objects, overview of Object model of ODMG, object Relational databases, Databases design for an ORDBMS, Nested relational Model, storage and access method.

Query Optimisation: Query Execution Algorithms, Heuristics in Query Execution, Cost Estimation in Query Execution, Semantic Query Optimisation.

Unit II

Database Transactions and Recovery Procedures: Transaction Processing Concepts, Transaction and System Concepts, Desirable Properties of a Transaction, Schedules and Recoverability, Serializability of Schedules, Transaction Support in SQL, Recovery Techniques, Database Backup, Concurrency control, locking techniques for Concurrency Control, Concurrency Control Techniques, Granularity of Data Items.

Client Server Computing: Client Server Concepts, 2-Tier and 3-Tier Client Server Systems, Client/Server Architecture and the Internet, Client /Database Server Models, Technology Components of Client Server Systems, Application Development in Client Server Systems.

Unit III

Distributed and Parallel Databases: Reliability and Commit protocols, Fragmentation and Distribution, View Integration, Distributed database design, Distributed algorithms for data management, Heterogeneous and Federated Database Systems. Parallel database Architectures and their merits and demerits.

Deductive and Web Databases: Recursive Queries, Prolog/Datalog Notation, Basic inference Mechanism for Logic Programs, Deductive Database Systems, Deductive Object Oriented Database Systems; Web or Internet Databases: Introduction, uses, Building blocks of Web, tools, advantages and disadvantages.

Unit IV

Emerging Databases: Multimedia database: Definition, need of Multimedia databases, MDBMS, Multimedia database components and structure, Multimedia database queries and applications; Mobile database: definition, their need, Characteristics, architecture, uses and limitations of mobile databases; Digital libraries: Introduction, Objectives, types, components, myths, services, advantages, limitations, and comparison with traditional libraries; Spatial databases: Basic concepts, need, types and relationships, architecture, queries, indexing techniques, advantages and disadvantages of spatial databases; Temporal database: basic concepts, characteristics, components, merits and demerits,

Text Book:

- 1 Fundamentals of Database Systems (3 edition), Elmasri R. and Navathe S.B., 2000, Addison Wesley, Low Priced Edition.

Reference Book:

- 1 Database System Concepts by A. Silberschatz, H.F. Korth and S. Sudarshan, 3rd edition, 1997, McGraw-Hill, International Edition.

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Class Work: 50

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Section A

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.

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

Section B

Problem Tracking System: Objective of Problem Tracking System, tasks of the system, Problem tracking overview, users of the tracking system, mechanics of the database

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

Section C

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

Section D

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

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:

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

IT-473 F High Speed Networks

L	T	P
3	1	-

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

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

UNIT 1

Gigabit Ethernet → Overview of fast Ethernet, Gigabit Ethernet – overview, specifications, layered protocol architecture, network design using Gigabit Ethernet, applications, 10GB Ethernet – overview, layered protocol architecture, applications.

Wireless Networks → Existing and emerging standards, Wireless LAN(802.11), Broadband Wireless(802.16), Bluetooth(802.15) their layered protocol architecture and security. Mobile Networks – GSM, CDMA and GPRS

UNIT 2

Fibre Channel → Fibre channel physical characteristics – topologies & ports, layered protocol architecture, class of service, technology comparison, SAN overview and architecture.

Frame Relay → Protocol architecture, frame format, routing, congestion control.

UNIT 3

ISDN & B-ISDN → ISDN - Channels, interfaces, addressing, protocol architecture, services and B-ISDN

ATM → Virtual circuits, cell switching, reference model, traffic management.

UNIT 4

Internet Layer → IPV4 and IPV6, IP addressing, ARP, IP routing(OSPF & BGP), internet multicasting, mobile IP.

Transport Layer → UDP/TCP protocols & architecture, TCP connection management, wireless TCP.

Application Layer → DNS, FTP, Voice over IP, audio & video compression.

Reference & Text Books:

1. James P.G. Sterbenz and Joseph D. Touch, High-Speed Networking: A Systematic Approach to High-Bandwidth Low Latency Communication, Wiley, 2001
2. William-Stallings, High-Speed Networks TCP/IP and ATM Design Principles, Prentice Hall; 1st edition, 1998.

L T P
3 1 -

Class Work: 50

Exam: 100

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Duration of Exam: 3 Hrs.

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UNIT I

Introduction: Definition, Issues in Real Time Computing, Structure of a Real Time System. Task Classes and Timing Parameters, Common myths about real time systems, Characteristics and Applications of Real time Systems, Examples of Real time systems.

Performance measures for real time systems: Traditional performance measures, Performability, Cost functions and hard Deadlines

UNIT II

Task Assignment and Scheduling: Introduction, Various types of scheduling algorithms: Cyclic, Deterministic, Capacity based Dynamic Priority, Value Function etc. Scheduling Real time tasks in Multiprocessors, Fault tolerant Scheduling

UNIT III

Real Time Databases: Basic definitions, Real time Vs General Purpose databases,

Main Memory databases, concurrency control issues, databases for hard real time systems

Real Time Communication: Introduction, Basic Concepts, Real time Communication Applications, Real time Communication in LAN, Protocols: Contention based protocols, Token based protocols, Deadlines based protocols, Stop and Go Multihop protocol, The polled bus protocol, Hierarchical round robin protocol.

UNIT IV

Real Time operating System: Introduction, Features of RTOS, Unix and Windows NT as RTOS, Comparison of Unix and Windows NT as RTOS

Real Time Knowledge Based Systems and Programming Languages: Introduction, Why use real time expert systems, Requirements of real time expert system, Real time Expert system applications, Expert system tools, Characteristics of a Real time Language, Case study of ADA as a Real Time Language.

References:

1. Real Time Systems: Liu ; Pearson Education
2. Real Time Systems: C. M. Krishna and Kang G. Shin; McGraw Hill
3. Real Time Systems: Satinder Bal Gupta and Yudhvir Singh; University Science Press

MAHARSHI DAYANAND UNIVERSITY, ROHTAK

SCHEME OF STUDIES & EXAMINATIONS

B.Tech. 4th YEAR INFORMATION TECHNOLOGY, SEMESTER- VIII

F' Scheme effective from 2012-13

Sl. No	Course No.	Subject	Internal Marks	External Marks	Total Marks
1.	IT- 402-F	Industrial Training/Institutional Project Work	150	150	300

Note:

The students are required to undergo Industrial Training or Institutional Project Work of duration not less than 4 months in a reputed organization or concerned institute. The students who wish to undergo industrial training, the industry chosen for undergoing the training should be at least a private limited company. The students shall submit and present the mid-term progress report at the Institute. The presentation will be attended by a committee. Alternately, the teacher may visit the Industry to get the feedback of the students.

The final viva-voce of the Industrial Training or Institutional Project Work will be conducted by an external examiner and one internal examiner appointed by the Institute. External examiner will be from the panel of examiners submitted by the concerned institute approved by the Board of Studies in Engg. & Technology. Assessment of Industrial Training or Institutional Project Work will be based on seminar, viva-voce, report and certificate of Industrial Training or Institutional Project Work obtained by the student from the industry or Institute.

The internal marks distributions for the students who have undergone Industrial Training consist of 50 marks from the industry concern and 100 marks by the committee members consisting of faculty members of concerned department of the parent institute.

The teachers engaged for Institutional Project work shall have a workload of 2 hours per group (at least 4 students) per week.