



Shivaji University, Kolhapur
Revised Syllabus for B.E. (Information Technology)
Information Technology
T.E. (IT)-Part-I - Introduced from July 2004

Sr. No	Subject	Load / Week			Marking Scheme				
		L	Pr.	T	Paper	TW	POE	OE	Total
1	Computer Organization & Architecture	3	-	-	100	-	-	-	100
2	Operating System –I	4	2	-	100	25	50	-	175
3	Computer Networks-II	4	2	-	100	25	50	-	175
4	Software Engineering	4	-	-	100	-	-	-	100
5	Digital Communication	3	2	-	100	25	-	-	125
6	Application Development Tool-I	2	4	-	-	25	50	-	75
	Total	20	10	-	500	100	150	-	750

Information Technology
T.E. (IT)-Part-II

Sr. No.	Subject	Load / Week			Marking Scheme				
		L	Pr.	Tu.	Paper	TW	POE	OE	Total
1	Image processing	3	-	-	100	-	-	-	100
2	Operating System-II	4	2	-	100	25	-	25	150
3	Data Base Engineering	4	2	-	100	25	50	-	175
4	Organizational Management & Behavior	3	-	-	100	-	-	-	100
5	Internet Technology	4	4	-	100	25	50	-	175
6	Application Development Tools-II	2	2	-	-	-	-	25	25
7	Seminar	-	2	-	-	25	-	-	25
	TOTAL	20	10		500	100	100	50	750



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1.Computer Organization and Architecture

Lecture: 3 hrs/week

Theory:100 Marks

SECTION-I

- 1.Introduction to set principles:** 7
Classifying instruction set architectures, Memory addressing, Operation in the instruction set, Types and size of operands, encoding an instruction set, DLX architecture.
- 2. Pipelining:** 7
Basic principles of DLX, Major hurdle of pipelining, Data hazards, control hazards, pipeline implementation problems, Extending DLX pipeline to handle multi-cycle operation.
- 3. Advanced pipelining & instruction level parallelism:-I** 6
Concepts and challenges, overcoming data hazards with Dynamic scheduling, Reducing penalties with dynamic hardware prediction,

SECTION-II

- 4. Advanced pipelining & instruction level parallelism:-II** 4
Compiler support for exploiting ILP, hardware support for extracting more parallelism, studies of ILP.
- 5. Multiprocessors:** 8
Characteristics of Application domains, Centralized shared memory architectures, Distributed shared memory architecture, Synchronization Models of memory consistency.
- 6. Vector processors:** 7
Need for victor processing Basic vector architecture, vector length and stride, Effectiveness of compiler vectorization, enhancing vector performance.

Reference Books:

1. "Computer Architecture – A Quantitative approach" –J.L. Hennessy & D.A. Patterson, A Harcourt Publishers International company,
2. "Computer Architecture"- Michael J. Flynn Narosa Publishing house.
3. Computer Architecture and Parallel processing –Kai Hwang and Faye Briggs.

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TE (IT)-Part-I
2.Operating Systems-I

Lecture: 4 hrs/week
Practical: 2 hrs/week

Theory:100 Marks
T/W: 25 Marks
POE : 50 Marks

SECTION-I

- 1.Introduction: 4**
- A) Evolution of Operating system- Serial processing Multiprogramming
 - B) Types of Operating System- Batch operating systems, Multiprogramming operating system time sharing systems, Real time system.
 - C) Different views of operating systems- Command language use 's' view of operating system, system call user 's' view's of the operating system.
 - D) Function requirement of the operating system.

- 2.Unix Command & Utilities: 4**
- Display & alter status –cd, chgrp, chmod, date, df, du, file, kill, ps, umask, who, utilities that are programming tools-cc, touch. Miscellaneous utilities -echo tee.

- 3. Input/Output: 6**
- The input /output problem- asynchronous operation, speed gap: CPU v/s Peripherals, input –output interface –buffer register, command register, status I/O port examples, USART, PIT, Program controlled I/O – Controlling a single device and controlling multiple devices, Interrupt driven I/O- controlling a single device and multiple device concurrent I/O.

- 4. Process: 8**
- System programmer's view of process – a multi tasking example inter process synchronization operating system's view of process, operating system service for process management – CREATE, DELETE, ABROT, SUSPEND, RESUME, DELAY. etc. Scheduling –Types of scheduling Long terms medium term and short term scheduler, scheduling and performance Scheduling algorithms – first come first served scheduling shortest remaining time next scheduling time slice scheduling and multiple level quietie scheduling.

SECTION-II

- 5. Inter process synchronization: 8**
- Inter processing synchronization problem Mutual exclusion –first algorithm, second algorithm, third algorithm Semaphores – definitions and wait implementation, properties and characteristics of semaphores, Hardware support for mutual exclusion –Pessimistic and optimistic concurrency control, Disable / Enable interrupts, Test and set instruction Compare and swap instruction Classification problem concurrency programming – Producers / consumer problem producer and consumers with an unbounded buffer producer and consumer with a bounded buffer.

- 6. Inter process Communication: 4**
- Monitor Message – Issuer is message implementation naming Copying Buffering Length Inter process utilities.

- 7. Unix shell: 4**
- The command lime, standard input and out, Redirection, Running a program in the Background.

8. Unix System Administration: 4

The system Administrator Super user Overview of the login procedure. Detailed description of system, Important files and Directories, The file structure, Day-to Day System Administrator Problems Getting information to users.

Text Books:

1. Operating Systems – concepts and design –Milan Milenkovic (TMGH)
2. A practical Guide to Unix system V – Mark G. Sobell (Benjamin /cummings Pub.)

Reference Book:

1. Operating Systems – Madnick Domnovan (MGH)
2. Operating Systems concepts – James Peter.
3. Operating Systems Design and Implementation – Tanenbaum (PHI)
4. Unix system - B Morganm.

Term Work: It should consist to 10 experiment of implementation the above mentioned topics based on DOS window and Unix operating systems.

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TE (IT)-Part-I

3.Computer Network-II

Lecture: 4 hrs/week
Practical: 2 hrs/week

Theory:100 Marks
T/W: 25 Marks
POE : 50 Marks

SECTION-I

1. Introduction to Computer Network: 6

OSI layer Model, TCP/IP protocol model Addressing, Underlying technology for LANs WANs Switched WANs. Connecting devices, Bridge Router Switches,

2. Data Link Layer and Medium Access Control: 8

Design issues for Data Link Layers, Farming methods, Error control detection and correction, Flow control and Data link control protocols simplex, Sliding window, Go to n, Selective repeat, SLIP, PPP, protocol, Static and Dynamic channel allocation, Access protocol link ALHOA, CSMA, IEEE 802.3, IEEE 802.4, IEEE 802.5, standards.

3. Network Layer: 8

IP Address, Class, Addressing, sub-netting and super netting, Direct indirect delivery, Routing methods Link state and Distance vector routing, Broadcast routing.

SECTION -II

4. Internet Protocol: 8

IP Data gram format, Fragmentation and reassembly models ARP, RARP, ICMP, IGMP

5. Transport Layer: 8

Process to Process communication UDP, Flow and error control in UDP, TCP packet format TCP service Numbering bytes Flow and error control in TCP, Silly window syndrome, TCP timers, and congestion control methods Leakey bucket token algorithm.

6. Routing Protocols: 6

RIP, OSPF, BGP.

Reference Books:

1. TCP/IP protocol suit –by Forouzen (Tata Mag. Hill)
2. Computer Networks –by Tanenbaum (PHI)

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TE (IT)-Part-I
4. Software Engineering

Lecture: 4 hrs/week

Theory:100 Marks

SECTION-I

- 1. Introduction:** **3**
The S/W problem, S/W engg. problem, S/W Engg. approaches
- 2. S/W requirement analysis and specification** S/W requirement problem analysis
Requirement Specification valuation metrics. **4**
- 3. Function oriented designs:** **4**
Design principles, module level concepts, Design notation and specification Structured
Design methodology, Verification.
- 4. The project planning:** **5**
A) The project planning Infrastructure:- Process database, process capability
baseline process Assent and the body of knowledge system
B) Effort estimation and scheduling, Estimation and scheduling concepts Effort
estimation scheduling.
C) Quality Planning: - Quality concepts, Qualitative Quality management
planning, Defect prevention planning.
D) Risk Management: - Concepts of risk and risk management assessment Risk
control.
- 5. The project management plan:** **4**
Term management, customer communication and issue resolution. The structure of the
project management plan

SECTION-II

- 6. Object Oriented Design:** **4**
OO Analysis and OO Design Concepts, Design Notation and specification Design
methodology, module specification Detailed design.
- 7. Managing S/W projects:** **4**
Processes and project management and the CMM project management process, Tanning for
project managers, SEPG support to projects.
- 8. Measurement and tracking planning concept in measurement, measurements
project tracking.** **4**
- 9. Configuration management:** **4**
Concept in config. Management, The config. management process.
- 10. Project Execution and closure:**
Review the Reviews, the Review process Data collection Monitoring and control.
- 11. Project monitoring and control:** **6**
Project tracking, milestone analysis, Activity –level Analysis using SPC, Defect Analysis
and prevention Process monitoring and Audit'

Text Books:

1. Software Project Management in practice- Pankaj Jalote.
2. An integrated to S/W engineering . Second edition Narosa Publication house –
Pankaj Jalone.

References:

1. Software Engineering – Practioner Approach - Roger S. Pressman.

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TE (IT)-Part-I

5.Digital Communication

Lecture: 3 hrs/week
Practical: 2 hrs/week

Theory:100 Marks
T/W: 25 Marks

SECTION-I

- | | |
|---|----------|
| 1. Introduction to communication systems: | 3 |
| Modulation schemes, Bandwidth requirements and noise. | |
| 2. Information Theory: | 4 |
| Introduction to information theory, Average and mutual information, Entropy, Joint and conditional entropy. Rate of information, Redundancy, channel capacity, Shannon's theorem, Shannon- Harley theorem, S/ N trade off., Entropy coding. | |
| 3. Probability and Stochastic process: | 6 |
| Random variables, Probability distribution and densities, Random process, Stationary, Statistical averages, Ergodicity, Auto-correlation function. | |
| 4. Source Coding: | 6 |
| Uniform, non uniform quantization .PCM, APCM, DPCM, ADPCM, DM, ADM, CVSD, Performance of the above coding schemes (e.g. S/N etc.) | |

SECTION-II

- | | |
|--|----------|
| 5. Channel Encoding: | 4 |
| Block codes ,Cyclic codes, Convolution codes, Criteria for code selection, Practical consideration in the application of the code. | |
| 6. Carrier Modulation and Detection: | 6 |
| ASK, FSK, PSK, BPSK, DPSK, DEPSK, QAM, MSK, detection schemes. | |
| 7. Optimum Detection: | 7 |
| Matched filters, Decision theory, Bay's criterion, Minimum Error criterion, Neyman – Person criterion, Receiver operating characteristics. | |
| 8. Broadband communication system: | 3 |
| Multiplexing, TDM& FDM, Short and long haul systems, Coaxial cable, Fiber optic links, Microwave links. | |

Term Work:

1. Study of APCM, DPCM, ADCPM.
2. Study of DM, ADM, CVSD.
3. Measurement of quantization noise in PCM.
4. Design and realization of Hamming code using digital IC's
5. Study of ASK, FSK.
6. Study of BPSK, DPSK.
7. Study of FSK modem for 8 channel PCM.
8. Study of TDM and FDM.

References:

1. Principles of Digital Communications.- Das, Mullick, Chatterjee.
2. Digital Communication – Proakis.
3. Digital Communication System Design – Roden.
4. Principles of Digital and Analog Communications – J.D. Gibson.

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TE (IT)-Part-I
6.Application Development Tool-I

Lecture: 2 hrs/week
Practical: 4 hrs/week

Term work: 50 Marks
T/W: 25 Marks

1. Overview of JAVA, Data Types, Variables, Arrays, Operators & Control Statement.
2. Introduction to classes in JAVA, Operator, Overloading and nested & inner classes string class & command line argument.
3. Inheritance, Super class, Constructors, Multiplayer hierarchy, dynamic method dispatch using final with inheritance.
4. Package Handling & interface finding packages & class path, importing packages implementing & applying an inheritance.
5. Exception Handling & multithreaded programming, exception handling fundamentals types of exception uncaught exception nested try statement. JAVA built in exception, Java thread model priority's synchronization messaging creating multiple threads, Inter threaded communication suspending, resuming & stopping threads.
6. I/O Applets & other topics, I/O basics reading & writing to console I/P & O/P print writer class, reading writing files, Applet fundamentals string handling, string constructor string operation character extraction string comparison, string searching string buffer.

Reference Books:

1. Complete Reference JAVA 2 - TMGH - Herbet Schildt.

Note:

The mini project should be arranged as a part of I/O assignment

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1. IMAGE PROCESSING

Lectures : 3 Hrs/Week

Theory :100 Marks

SECTION – I

1. **Image , digitized image & it's properties :** **6**
Elements of visual perception & its attributes, Digitised Image - image function, mathematical representation. Image digitization - Sampling & Quantization, Properties - distance , pixel adjacency, region, background, holes, brightness, segmentation, border, edge , convex hull , histograms, color, Noise, Image analysis - Level of image data Representation Traditional & hierarchial data structure.
- 2) **Image pre – processing:** **6**
Brightness transformation, geometric transformation, Local Processing, Image smoothing and edge detection, Introduction to Image restoration.
- 3) **Image enhancement in special domain :** **6**
Threshold, Edge-based segmentation, Edge relaxation, Border tracing, Hough transform. Region-based segmentation, Region merging, Region splitting, Split & Merge.

SECTION – II

- 4) **Image Enhancement in frequency domain :** **6**
Fourier Transform, 1-D & 2-D, DFT, Handmard Transform , Discrete Cosine Transforms, Introduction to Wavelet Transform, Application of Image transform.
- 5) **Space reorientation and Detection:** **6**
Region Identification, Contour-based representation. Chain codes, B-Spline reorientation, Region –based representation, moments, Convex Hull.
- 6) **Image Compression :** **6**
Redundancy & fidelity criteria , Error free compression, Methods of compression, standards, Binary , continuous tone still, Video.
Text Book :
 - 1) Computer vision & Image processing - by Milan Sonaka.
 - 2) Digital Image Processing - by Gonzalez (Addison Wesley)**Reference:**
 - 3) Elements of Digital Image Processing & Computer Vision – by Andrew Low(MGH)
 - 4) Digital Image Processing - Pratt.
 - 5) Fundamentals of digital Image Processing – by A. K. Jain.

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T . E . (I T) – P A R T – I I
2. OPERATING SYSTEM – II

Lectures : 4 Hrs/Week
Practical : 2 Hrs/ Week

Theory : 100 Marks
Term work : 25 Marks
O.E. : 25 Marks

SECTION – I

- 1. Overview of the UNIX System. 2**
System structure , user perspective , Operating System services, assumption about H/W.
- 2. Introduction to kernel 3**
Architecture of UNIX operating system, introduction to system concepts, kernel data structure, system administration.
- 3. The Buffer Cache : 5**
Buffer headers, structure of the buffer pool, scenarios for retrieval of a buffer, reading and writing disk blocks, advantages and disadvantages of cache.
- 4. Internal Representation of Files : 5**
Inodes, structure of the regular file, directories, conversion of a pathname to inode, super block, inode assignment to a new file, allocation of disk blocks, other file types.
- 5. System calls for the file System : 8**
Open, Read, write, File and Record Locking, Adjusting the position of FILE I/O-LSEEK, Close, File Creation, Creation of Special File, Change Directory and Change Root, Change Owner and Change Mode, Stat and Fstat, Pipes, Dup, Mounting and Unmounting file systems, Link, Unlink, File System Abstractions, File system maintenance.

SECTION - II

- 6. The Structure of process : 5**
Process stages and transitions, layout of system memory, the context of a process, Saving context of a process, manipulation of the process address space.
- 7. Process Control & Scheduling : 8**
Process creation, signals, process termination, awaiting process termination, invoking other programs, the user id of a process, the shell, system Boot and the Init process. Process Scheduling, system call for time, clock.
- 8. Memory management policies : 4**
Swapping, Demand passing, a hybrid system with demand paging and swapping
- 9. The I/O Subsystem : 5**
Driver interfaces, disk drives, terminal drivers, Streams.
- 10 Inter Process communication 3**
Process tracing system-V ,IPC, Network Communication Sockets.

Text Book :

1. The design of Unix Operating System - Maurice J. Bach (PHI)
2. Unix Manuals.

Reference:

1. Unix concepts and administration – 3rd Edition – Sumitabha Das (TMGH).
2. Linux Kernel Programming - Garry Nut (For Laboratory)

Term Work : It should consist of minimum 8-10 experiments based on the above topics.

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T . E . (I T) - P A R T - I I

3. DATABASE ENGINEERING

Lectures : 4 Hrs/Week

Practicals : 2 Hrs/Week

Theory :100 Marks

T.W. : 25 Marks

POE : 50 Marks

SECTION – I

1. Introduction: Purpose of Database Systems, Data abstraction, Data Models, Entities and Entity sets, Mapping Constraints, E-R Diagram, Reducing E-R Diagrams to Tables, Generalization, Aggregation. (4)
2. Relational Model: Structure of Relational Databases, The Relational Algebra, The Tuple Relational Calculus, The Domain Relational Calculus, Structured Query Language(SQL). (7)
3. Integrity Constraints and Design: Domain Constraints, Referential Integrity, Functional Dependencies, Normalization using Functional Dependencies, -canonical cover. (7)
6. File and System Structure: Overall System Architecture, File Organization, Organization of Records into Blocks, Sequential Files, Mapping Relational Data to Files, Data Dictionary Storage, Buffer Management. (4)

SECTION - II

7. Indexing and Hashing : Basic Concepts, Indexing, B+ Tree Index Files, B-Tree Index Files, Static Hash Functions, Dynamic Hash Functions, Comparison of Indexing and Hashing, Multiple Key Access. (5)
8. Query Processing : Query Interpretation, Equivalence of Expressions, Estimation of Query Processing Cost, Estimation of Costs of Access using Indices. (5)
9. Crash Recovery: Failure Classification, The storage Hierarchy, Transactions Model, Log-Based Recovery, Buffer Management, Checkpoints, Shadow Paging, Failure with Loss of Non-Volatile Storage, Stable Storage Implementation. (5)
10. Concurrency Control : Schedules, Testing for Serializability, Log-Based Protocols, Time-Stamp Based Protocols, Validation Techniques. (7)

Text Book :

1. DataBase System Concept by Henry F. Korth, Abraham Silberschatz, Sudarshan (McGraw Hill Inc.) Fourth Edition
2. DataBase System Concept by Henry F. Korth, Abraham Silberschatz, (McGraw Hill Inc.)
3. Database Management System – Ram Krishnan

Reference Books :

1. Principles of DataBase Systems by J.D. Ullman (Galgotia Publications)
2. DataBase Design by Wiederhold (McGraw Hill Inc.)
3. Fundamentals of Database Systems – Masri and Navathe (Benjamin Cummings, 1989).
4. Database design, application development & administration – Michael V. Mannino (MGH- International Edition).

Term Work : It should consist of minimum 8 experiments based on above topics and should be implemented as per the note given bellow. All assignment must be executed using Software Engineering Principles.

Set of assignments is listed below:

1. Title : ER Diagrams & Normalization

Draw ER diagrams (around 10 in number) for college Student Activities & Convert them into tables. Apply normalization. Display constraints.

2. Title : Data Dictionary

Write program to create tables, along with constraints and store them in a file, which will work as DD for later assignments.

3. Title : Insert Data

Write program to Insert data in tables created in assignment 2. Store data in separate File / Table. Implement insert operation as transaction.

4. Title : Modify Data

Write program to modify data in tables, which is inserted in assignment 3. Implement modify operation as transaction.

5. Title : View Data

Write program to view table data. Accept table attribute for ordering dynamically.

6. Title : B+ Tree Indexing Technique

Write program to implement B+ Tree Index (n=3 or n = 5) on the data created until now.

7. Title : Dynamic Hashing Technique

Write program to implement Dynamic Hashing on the data created until now.

8. Title : Database Logs

Write program to create logs of the activities of assignment 3 & 4. Choose either Immediate Log OR Deferred Log.

9. Title : Concurrency Control

Write program to simulate any one concurrency control Protocol.

10. Title : Canonical cover & Closure

Given a set of functional dependencies Find canonical cover & closure.

**Note:- Experiment no. 1 to 5 should be implemented using RDBMS Package.
Experiment no. 5 to 10 should be implemented without using RDBMS Package.**

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T . E . (I T) - P A R T - I I

4. Organizational Management & Behavior

Lectures : 3 Hrs/Week

Theory :100 Marks

SECTION – I

- 1. Functions of Management: 6**
- Definition of Management , Management environment,
 - Planning – Need, Objectives, Strategy, Policies, Procedures, Levels of Planning, Decision making, Forecasting,
 - Organizing - Principles of Organization.
 - Departmentation.
 - Organizational relationship, Authority , responsibility, Delegation, Span of control.
 - Leading - Communication process, barriers, Remedies, Motivation Importance, Theories.
 - Herzbergs theory, Maslow’s theory, McGragers Theory.
 - Leadership Style .
 - Controlling – Process, Requirements for control.
- 2. Operation & financial Management: 6**
- Definition of operation management, nature & scope plant, location, layout and quality control, Sources of Finance, Financial Institutions, Financial Statements, Balance Sheet and P. & L. Account (Contents only) Use & Importance, Elements of Cost, Allocation of Overheads, Costing Techniques (Elementary treatment only) Break-even analysis and its applications.
- 3. Marketing & Material Management : 4**
- Marketing Concept - Objectives, types of markets,
 - Market segmentation, Marketing Strategies – 4 AP’s of Marketing.
 - Market Research, Salesmanship, Advertising.
 - Scope and Objectives of material management.
 - Purchasing – Procedure, Policies
 - Vender Selection and rating,
 - Stores Management.
 - Inventory Control- Nature of Scope, ABC Analysis, VED analysis, EOQ & Various Levels.
- 4. TQM & ISO. 4**
- Strategies, policies & Strategic MGT.

SECTION - II

- 5. Organization Behavior: 4**
- Managing self competency communication competency ethics and culture, team competency Preparation and attribution-perception process selection organization attributions, Motivation Process concept and process models of motivation performance goal setting and reward systems. Work Stress-nature source efforts Stress management.

6. Group And Impersonal Processes:**4**

Group and team behavior, development team effectiveness decision making power and behavior Managing human resources, Human resource planning Hiring and Training Performance Appraisal Conflict management, Levels of conflict, Conflict handling and Management.

7. Organizational Design :**4**

Key factors mechanistic and organic system types information processing factors functional design product, Matrix organization network organization, Communications.

8. Organizational Culture:**6**

Elements of a culture types of compact culture performance of organizational culture diversity organizational socialization organizational change resistance to change, change management ethical issues. Controlling and Evaluation in organization.

Text Books:

1. Essential of management –Koontz and O’Donell.
2. Organizational Behavior (9th Edition) –Don Helriegel, John slocum Richard Wodman South Western –Thomson Learning

Reference Books:

1. Organizational Behavior – Fred Luthans
2. Organizational Behavior- Staphen robbins
3. Marketing Management –Philip Kotler(PHI).
4. Industrial Engineering and Management.- O.P.Khanna
5. Total Quality Management H. Lal.
6. Management- Don Helriegel, Susan Jacson, John slocum Richard Wodman South Western –Thomson Learning
7. Personal And Material Management –Rama Swami
8. Operations And Production Management- Patel Chunnawala.
9. Human Resource Management Ashwathappa

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T . E . (I T) – P A R T – I I**5. Internet Technology**

Lecture : 4 hrs/week
Practicals: 4 hrs/week

Theory : 100
T/W : 25 Marks
POE : 50 Marks

SECTION-I**1. Client server model & socket interface:****7**

Client server model, concurrency, processes, sockets, byte ordering, address transformation. Socket system calls, connectionless iterative server , UDP client server programs, connection oriented concurrent server.TCP client server Programs.

2. BOOTP,DHCP & Domain name system:**7**

Name Space, Domain Name Space, distribution of name space, DNS in internet, Resolution, DNS messages, types of records, compression examples, encapsulation BOOTP, DHCP.

3. Telnet, Rlogin & FTP:

7

Concept, NVT, embedding ,options & options Negotiation, sub option negotiation, controlling the server , out of band signaling , escape charter , mode of options , examples & Rlogin . FTP: connections, communication command processing, file transfer, user interface Anonymous FTP.

Section-II

4. SMTP:

6

User agents, addresses, delayed delivery aliases , mail transfer agent , commands & responses , mail transfer phases , multipurpose internet mail extensions (MIME) mail delivery, mail access protocol , SNMP.

5. HTTP & WWW :

6

HTTP Transaction , Request & Response messages , header & examples .
WWW : Hyper text & Hypermedia Browser architecture , static documents, HTML
Types of web documents .

6. Internet Security :

5

Privacy, digital signature security in the internet, Application layer security, transport layer security, Firewalls.

7. IPV6, ICMPV6 :

4

IPV6 addresses , packet format , ICMPV6 , transaction from IPV4 to IPV6.

Text Books –

1. TCP/IP Protocaol suite - Forouzan B.A. (TMH)
2. Network Security Essentials (Application and standard) – Williams Stallings
3. Cryptography and Network Security- Atul Kahate.

Reference Book –

1. TCP/IP Illustrated Vol-1 and Vol-II by Richards Stevens
2. Unix Network Programming – Richards Stevens

Practical Assignments

The students are supposed to implement 8 to 10 assignments on Linux/Unix. Following is the minimum list of Practical Problems. The Teacher/student is supposed to choose 1 or 2 other new assignments based on the syllabus to fulfill the requirement. The Subject Teacher is supposed to explain the under mentioned tasks during his lecture time. He may use one hour per week for the same.

- 1) Study of various protocols at various layers in TCP/IP suite:
Understanding the contents of following files:
/etc/aliases, /etc/exports
/etc/networks, /etc/hosts
/etc/protocols, /etc/services
- 2) Using Internet Services:
Using Telnet, FTP, Rlogin:
Switches & their semantics for use.

- 3) Testing Basic Connectivity-
(Some Debugging tools with various switches & their semantics for use):
 - 1) Nmap
 - 2) Netstat
 - 3) Arp
 - 4) Route
 - 5) Nslookup
 - 6) Traceroute
 - 7) Ping
 - 8) Ifconfig
- 4) Study of sendmail utility tool;
 - 1) Structure of sendmail
 - 2) Configuration of sendmail.
 - 3) Using sendmail
 - 4) Modifying sendmail.cf & it's testing.Explain other mail related protocols like SMTP, IMAP, MIME, etc.
- 5) Implementation of client server applications using sockets (IPC).
- 6) Analysis of Header information prep ended by various Internet .layers by capturing TCP/IP packets.
 - 1) Filtering Internet Packets coming from undesirable hosts.
 - 2) Web store using XML
 - 3) Design & Deployment of WEB-SITE with database connectivity.

Note:- Stress on examples should be given on every chapter.

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T . E . (I T) - P A R T - I I

6. Application Development Tool - II

Lectures :2hrs/week

Practicals : 2hrs/week

OE : 25 marks.

1. Introduction to Windows Operating system. Developing window application in SDK.
2. Detail study of Windows messages.
3. Introduction to GDI –understanding DC, scrollbars, drawing lines, dots, GDI mapping modes, drawing filled areas.
4. Working with keyboard & mouse – understanding keyboard & mouse basics, keyboard messages, mouse messages, capturing mouse
5. Working with Window controls – study of various buttons, study of controls , edit box , scrollbars list box etc.
6. Working with menus – adding icons, cursor, custom resources ,adding menus to application, enabling disabling menu items.
7. Working with Dialog boxes – modal dialog box ,modeless dialog box, common dialog box
8. Working with clip board – standard data formats , memory allocation, transferring data to the clip board , getting data from clipboard.
9. Developing Multiple Document Interface (MDI)
10. Developing Dynamic Linked Libraries (DLL)
11. Introduction to MFC.
12. Study of Documents ,Views& frames- creating SDI application, understanding document template, using documents& views together

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Text Books :

1. Programming Windows fifth edition by Charles Petzold Microsoft press
2. Programming Visual C++ by david Kruglinski,shepherd,Wingo Microsoft press
3. Complete Reference VC++ 6 – Pappas Murray (TMGH).

Reference Books :

1. Teach yourself Visual C++ in 21days by Chapman Techmedia publications
2. Practical Visual C++ by Jon Bates & Tim Tompkins (PHI)
3. MFC Programming from the ground up by Herbert Schildt (TMH)
4. Visual c++ Progrrmming vol – I by Yashwant kanetkar
5. Visual c++ Progrrmming vol – II by Yashwant kanetkar

Term Work: The term work should consist of minimum 8-10 experiments based on above mentioned topics.

★★★★★ B+

T . E . (I T) - P A R T - I I
7. SEMINAR

Practicals : 2hrs/week

Term work : 25 marks

The groups of students of strength 4-6 should be formed by the end of T.E.-I. The projects for the group should be finalized by the end of 1st month of T.E.-II. Seminar should consist of a presentation of about 30-40 minutes by every individual student. The seminar should be based on topics in the area in which the students have carried on the literature survey and will work for their selected project in the final year. A report on the seminar should be submitted to the department. Assessment should be jointly done by panel of teachers consisting of respective guide and other teachers from the department.

★★★★★ B+

SPS

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