DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY LUCKNOW

STUDY, EVALUATION SCHEME & SYLLABUS

For

B. Voc.
Software Development(SD)
Branch Code:106

Based on

AICTE Model Curriculum

(EFFECTIVE FROM THE SESSION: 2019-20)

EVALUATION SCHEME

Software Development

NSFQ Level 5 SEMESTER- I											
S. No.	Subject Code	Subject	Total Teaching/ Training Hours	Evaluation Scheme				End Semester		Total	Credit
				CT	TA	AT	Total	TE	PE		
1	BSDV511	IT Foundations & Programming Concepts	30	10	5	5	20	30		50	2
2	BSDV512	Web Designing	30	10	5	5	20	30		50	2
3	BSDV513	Programming in C	30	10	5	5	20	30		50	2
4	BSDV514	Operating System (OS)	30	10	5	5	20	30		50	2
6	BSDP511	Web Designing Lab	30				20		30	50	1
7	BSDP512	C Programming Lab	30				20		30	50	1
8	BSDP513	Language Lab	30				20		30	50	2
9	BSDT511	Technical Writer (SSC/Q0505)						Any one Training 400 hrs / 8 weeks		150	12
	BSDT512	Infrastructure Engineer (SSC/Q0801)									
	BSDT513	Associate – CRM (SSC/Q2202)									
Total			610							500	24

NSFQ Level 5 SEMESTER- II											
S. No.	Subject Code	Subject	Total Teaching/ Training Hours	Evaluation Scheme				End Semester		Total	Credit
				CT	TA	AT	Total	TE	PE		
1	BSDV521	Data Structures	30	10	5	5	20	30		50	2
2	BSDV522	Concepts of Data Mining	30	10	5	5	20	30		50	2
3	BSDV523	OOPs with Java	30	10	5	5	20	30		50	2
4	BSDV524	Multimedia Tools & Applications	30	10	5	5	20	30		50	2
6	BSDP521	Data Structure Lab	30				20		30	50	1
7	BSDP522	Java Lab	30				20		30	50	1
8	BSDP523	IT Tool Lab	30				20		30	50	2
9	BSDT521	Web Developer (SSC/Q0503)						Any one Training 400 hrs / 8 weeks		150	12
	BSDT522	Test Engineer (SSC/Q1301)									
Total			610							500	24

NSFQ Level 6 SEMESTER- III											
S. No.	Subject Code	Subject	Total Teaching / Training Hours	Evaluation Scheme				End Semester		Total	Credit
				CT	TA	AT	Total	TE	PE		
1	BSDV631	Linux Operating System – Operations and Management	30	10	5	5	20	30		**50**	**2**
2	BSDV632	Software Engineering	30	10	5	5	20	30		**50**	**2**
3	BSDV633	Web Development using PHP	30	10	5	5	20	30		**50**	**2**
4	BSDV634	Windows Development Fundamental	30	10	5	5	20	30		**50**	**2**
5	BSDE631	Uni. Human Values & ethics/Env. &Eco.	30	10	5	5	20	30		**50**	**2**
6	BSDP631	Web Development using PHP Lab	30				20		30	**50**	**1**
7	BSDP632	Window Development Fundamentals Lab	30				20		30	**50**	**1**
8	BSDT631	Junior Data Associate (SSC/Q0401)						Any one Training 400 hrs/ 6 weeks		**150**	**12**
	BSDT632	IP Executive (SSC/Q6201)									
	BSDT633	Security Analyst (SSC/Q0901)									
Total			**610**							**500**	**24**

NSFQ Level 6 SEMESTER- IV											
S. No.	Subject Code	Subject	Total Teaching/ Training Hours	Evaluation Scheme				End Semester		Total	Credit
				CT	TA	AT	Total	TE	PE		
1	BSDV641	Software Testing and Project Management	30	10	5	5	20	30		**50**	**2**
2	BSDV642	Android Application Development	30	10	5	5	20	30		**50**	**2**
3	BSDV643	Window Configuration and Server Administration	30	10	5	5	20	30		**50**	**2**
4	BSDV644	Management Information Systems	30	10	5	5	20	30		**50**	**2**
5	BSDE641	Env. &Eco./Uni. Human Values & ethics	30	10	5	5	20	30		**50**	**2**
6	BSDP641	Android Application Development Lab	30				20		30	**50**	**1**
7	BSDP642	MIS Lab	30				20		30	**50**	**1**
8	BSDT641	QA Engineer (SSC/Q1302)						Any one Training 400 hrs/ 8 weeks		**150**	**12**
	BSDT642	Software Engineer (SSC/Q4601)									
Total			**610**							**500**	**24**

NSFQ Level 7 SEMESTER- V											
S. No.	Subject Code	Subject	Total Teaching/ Training Hours	Evaluation Scheme				End Semester		Total	Credit
				CT	TA	AT	Total	TE	PE		
1	BSDV751	Technology Trends in IT	30	10	5	5	20	30		**50**	**2**
2	BSDV752	Window Mobile Application Development	30	10	5	5	20	30		**50**	**2**
3	BSDV753	Introduction to Python Programming	30	10	5	5	20	30		**50**	**2**
4	BSDV754	Introduction to Microprocessors	30	10	5	5	20	30		**50**	**2**
6	BSDP751	Window Mobile Application Development Lab	30				20		30	**50**	**1**
7	BSDP752	Python Programming Lab	30				20		30	**50**	**1**
9	BSDT751	Management Trainee (SSC/Q6301)						Any one Training 400 hrs/ 6 weeks		**150**	**12**
	BSDT752	Associate - Transactional F&A (SSC/Q2301)									
	BSDT753	Consultant Network Security (SSC/Q0917)									
Total			**480**							**500**	**24**

NSFQ Level 7 SEMESTER- VI											
S. No.	Subject Code	Subject	Total Teaching/ Training Hours	Evaluation Scheme				End Semester		Total	Credit
				CT	TA	AT	Total	TE	PE		
1	BSDV761	Introduction to AI/ Computer Network Security	30	10	5	5	20	30		**50**	**2**
2	BSDV762	e-Commerce / Introduction to Biometrics	30	10	5	5	20	30		**50**	**2**
3	BSDE761	Essence of Indian Traditional Knowledge / Indian Constitution	30	10	5	5	20	30		**50**	**2**
4	BSDP761	Major Project based on AI or Computer Network Security	180						150	**150**	**6**
5	BSDT761	Master Trainer for Software Developer (SSC/Q0509)						Any one Training 400 hrs/ 6 weeks		**200**	**12**
	BSDT762	Hardware Engineer (SSC/Q4701)									
Total			**670**							**500**	**24**

Detailed Curriculum

Software Requirements

1. C Compiler(Turbo C/C++ etc)
2. WYSIWYG HTML editor (Eclipse, Netbeans etc)
3. Python
4. JDK
5. Apache Tomcat
6. PHP,WAMP/XAMPP
7. DBMS(ORACLE, MySQL etc)
8. .Net Framework
9. Android Studio

Level 5 (Semester I)

IT Foundations & Programming Concepts

Computer characteristics: Speed, storage, accuracy, diligence; Digital signals, BinarySystem, ASCII; Historic Evolution of Computers; Classification of computers: Microcomputer, Minicomputer, mainframes, Supercomputers; Personal computers: Desktop, Laptops, Palmtop, Tablet; Hardware & Software; Von Neumann model.

Hardware: CPU, Memory, Input devices, output devices. Memory units: RAM (SDRAM, DDR

RAM, RDRAM etc. feature wise comparison only); ROM-different types: Flash memory; Auxiliary storage: Magnetic devices, Optical Devices; Floppy, Hard disk, Memory stick, CD, DVD, CD/DVD-Writer; Input devices - keyboard, mouse, scanner, speech input devices, digital camera, Touch screen Voice Input, Joystick, Optical readers, bar code reader; Output devices: Display device, size and resolution; CRT, LCD, LED; Printers: Dot-matrix, Inkjet, Laser; Plotters, Sound cards & speaker.

Software: System software, Application software; concepts of files and folders,Introduction to Operating systems, Different types of operating systems: single user, multitasking, time-sharing multi-user; Booting, POST; Basic features of two GUI operating systems: Windows & Linux (Basic desk top management); Programming Languages, Compiler, Interpreter, Databases; Application software: Generic Features of Word processors, Spread sheets and Presentation software; Generic Introduction to Latex for scientific typesetting; Utilities and their use; Computer Viruses & Protection, Free software, open source.

Computer Networks and Internet: Connecting computers, Requirements for a network:Server, Workstation, switch, router, network operating systems; Internet: brief history, World Wide Web, Websites, URL, browsers, search engines, search tips; Internet connections: ISP, Dial-up, cable modem, WLL, DSL, leased line Wireless and Wi-Fi connectivity ; email, email software features (send receive, filter, attach, forward, copy, blind copy); characteristics of web-based systems, Web pages, Web Programming Languages.

Information Technology And Society: Indian IT Act, Intellectual Property Rights, issues.Application of information Technology in Railways, Airlines, Banking, Insurance, Inventory Control, Financial systems, Hotel management, Education, Video games, Telephone exchanges, Mobile phones, Information kiosks, special effects in Movies.

Programming Concepts & Techniques: Program Concept, Characteristics of Programme,Stages in Program Development, Tips for Program Designing, Programming Aids, Algorithms, Pseudo code, Notations, Design, Flowcharts, Symbols, Rules, compiler & Interpreter. Introduction to programming techniques, Top-down & Bottom-up approach, Unstructured, & Modular programming, Cohesion, Coupling, Debugging, Syntax & Logical Errors, Linking and Loading, Testing and Debugging, Documentation**.**

Reference Books:

1. Programming in C, R.S. Salaria, Khanna Publishing House
2. Computer Concepts and Programming in C, R.S. Salaria, Khanna Publishing House
3. Handbook of Computer Fundamentals, N.S. Gill, Khanna Publishing House

Web Designing

UNIT-I

Introduction to HTTP, HTML, Basic HTML Tags, Body Tags, Coding Style, Modifying & formatting Text, Lists – Unordered, Ordered, Definition, Insert Links -Linking to another Document, Internal Links, Email Links, Relative and Absolute Links, Insert Images - Referencing Images, Clickable Images, Image Placement and Alignment, Image Size, Image Margins, Image Formats, Image Maps- Defining an Image Map, Advanced Coloring Body Content, Working with tables - Basic Tables, Table Attributes, Table Cell Attributes, Table Row Attributes, Tables Inside of Tables, Invisible Spacers, Working with Frame-Based Pages- Creating Windows, Single Window Frames, Creating Column Frames, Creating Row Frames, Creating Complex Frames.

UNIT-II

Cascading Style Sheet (CSS) – Introduction, creating style, using inline and external CSS, Creating Divs with ID style, Creating Tag& Class style, creating borders, Navigation links, creating effects with CSS.

JavaScript – Introduction, use of JavaScript in webpages. Understand JavaScript event model, use some basic event and control webpage behavior.

UNIT-III

DESIGNING WEBSITES WITH DREAMWEAVER/EXPRESSION Web/AMAYA/COFEE CUP WYSIWYG HTML Editor - Introduction to WYSIWYG HTML editor, advantages of using HTML editors, Creating a New Site, Creating a New Page, Adding Images with Alternate Text, Inserting & Formatting Text, Aligning Images, Creating an Email Link, Linking to Other Websites, Testing & Targeting Links, Organizing Files & Folders

CREATING & INSERTING IMAGES - Optimizing Images for the Web, Saving GIFs & PNGs in Photoshop, Inserting GIFs, Adjusting Transparency Settings, Saving JPGs for the Web

UNIT-IV

DESIGNING ACCESSIBLE TABLES - Understanding Tables & Accessibility, Using Tables for Tabular Data, styling a Table, Editing Table Layouts, Adding Style to a Table Using CSS CREATING WEBSITES WITH FRAMES - Introducing Frames, creating a Frameset, Opening Pages into Frames, Controlling Scrollbars & Borders, Targeting Links in Frames CUSTOMIZING THE INTERFACE - Opening an Existing Site, Reviewing Menu Options & Preferences, Comparing the Macintosh & PC Interfaces, Previewing in Browsers & Device Central

Introduction to Responsive Web Designing – Introduction, advantages, creating and using responsive web pages.

UNIT-V

Web Hosting - What is Domain? Introduction to DNS, how to register a Domain? What is web hosting? How to get a web hosting? Host your website on web Server. FTP - FTP Introduction, FTP Commands Viewing Files and Directories, FTP Commands Transfer and Rename files, FTP with WS FTP/ CuteFTP, Filezilla on Windows.

Reference Books:

1. Internet & Web Development, Soma Das Gupta, Khanna Publishing House
2. Web Designing and Development, TanweerAlam, Khanna Publishing House

Programming in C

Introduction to 'C' Language - Character set, Variables and Identifiers, Built-in Data Types,Variable Definition, Arithmetic operators and Expressions, Constants and Literals, Simple assignment statement, Basic input/output statement, Simple 'C' programs.

Conditional Statements and Loops - Decision making within a program, Conditions,Relational Operators, Logical Connectives, if statement, if-else statement, Loops: while loop, do while, for loop, Nested loops, Infinite loops, Switch statement, structured Programming.

Arrays - One dimensional arrays: Array manipulation; Searching, Insertion, Deletion of anelement from an array; Finding the largest/smallest element in an array; Two dimensional arrays, Addition/Multiplication of two matrices, Transpose of a square matrix; Null terminated strings as array of characters, Standard library string functions

Functions - Top-down approach of problem solving, Modular programming and functions,Standard Library of C functions, Prototype of a function: Formal parameter list, Return Type, Function call, Block structure, Passing arguments to a Function: call by reference, call by value, Recursive Functions, arrays as function arguments.

Storage Classes - Scope and extent, Storage Classes in a single source file: auto, extern and static, register, Storage Classes in a multiple source files: extern and static

Structures and Unions - Structure variables, initialization, structure assignment, nestedstructure, structures and functions, structures and arrays: arrays of structures, structures containing arrays, unions

Pointers - Address operators, pointer type declaration, pointer assignment, pointerinitialization, pointer arithmetic, functions and pointers, Arrays and Pointers, pointer arrays, pointers and structures, dynamic memory allocation.

File Processing - Concept of Files, File opening in various modes and closing of a file,reading from a file, writing onto a file

Reference Books:

1. Programming in C, R.S. Salaria, Khanna Publishing House
2. Computer Concepts and Programming in C, R.S. Salaria, Khanna Publishing House
3. Test your Skills in C, R. S. Salaria, Khanna Publishing House

Operating System (OS)

System Software: Operating System, Compiler, Interpreter and Assembler;

Operating System: Need for Operating System, Functions of Operating System(Processor Management, Memory Management, File Management and Device Management), Types of Operating System-Interactive (GUI based), Time Sharing, Real Time and Distributed, commonly used Operating System: UNIX, LINUX, Windows, Solaris, BOSS (Bharat Operating System Solutions); Mobile OS – Android, Symbian, IOS.

Utility Software: Anti-Virus, File Management tools, Compression tools and DiskManagement tools (Disk Cleanup, Disk Defragmenter, Backup).

Reference Books:

1. Operating Systems, EktaWalia, Khanna Publishing House

Web Designing Lab

1. Generic awareness about Hyper Text s Language (HTML).
2. Designing of websites.
3. Basics of HTML tags.
4. Cascading Style Sheet (CSS).
5. Functional knowledge of web hosting

C Programming Lab

1 . Write a Program to find the area and circumference of circle
2 Write a Program to swap two numbers with or without third variable
3. Write a program to convert temperature from Fahrenheit to Celsius
4 . write a program to add two numbers
5 . Write a C program to input any alphabet and check whether it is vowel or consonant.
6 . Write a C program to input any character and check whether it is alphabet, digit or special character.
7 Calculator program with Basic operations using switch
8. Program to find factorial of a given number
9 . Program to find sum of Fibonacci series up to N Terms.
10. program to check whether the number is palindrome or not 1
1. Program to find the second largest number in an array.
12 2. Write a 'C' function to print reverse of a given number using return and parameter method.(call by value)
13 3. Write a 'C' function to calculate the sum of digits of a given number using return and parameter method.(call by value)
14 4. Program to insert element in an array.
15 5. Find the repeating elements in a given array
16. C program to delete duplicate element in an array. 1
7. C program to find multiplication of two matrices.
18 8. Program to store and access "id, name and percentage" for 3 students. Structure array is used in this program to store and display records for many students. You can store "n" number of students record by declaring structure variable as 'struct student record[n]", where n can be 1000 or 5000 etc.
19 9. Program to copy one file into another.
20 0. Program to count number of alphabet, number, spaces, newline characters from a file.

Level 5 (Semester II)

Data Structure

UNIT I

An Overview of Computers and Programming - Simple program logic, The steps involved in the program development cycle, Pseudo code statements and flowchart symbols, Using a sentinel value to end a program, Programming and user environments, The evolution of programming models.

UNIT–II

The concept of data structure, Abstract data structure, Analysis of Algorithm, The concept of List Introduction to stack & primitive operation on stack, Stack as an abstract data type, Multiple Stack, Stacks application: Infix, post fix, Prefix and Recursion, Introduction to queues, Primitive Operations on the Queues, Queue as an abstract data type, Circular queue, Dequeue, Priority queue, Applications of queue

UNIT–III

Introduction to the Linked List of Stacks, Basic operations on linked list, Stacks and queues as a circular linked list, Header nodes, Doubly Linked List, Circular Linked List, Stacks & Queues as a Circular Linked List, Application of Linked List.

UNIT–IV

TREES - Basic Terminology, Binary Trees, Tree Representations as Array & Linked List, Basic operation on Binary tree, Traversal of binary trees: - In order, Preorder & post order, Application of Binary tree, threaded binary tree, B-tree & Height balanced tree, B+ & B* trees, 2-3 trees, Binary tree representation of trees, Counting binary trees

UNIT–V

Sequential Searching, Binary search, Insertion sort, Selection sort, Quick sort, Bubble sort, Heap sort, Comparison of sorting methods

Hash Table, Collision resolution Techniques, Introduction to graphs, Definition, Terminology, Directed, Undirected & Weighted graph, Representation of graphs, Graph Traversal-Depth first & Breadth first search, Spanning Trees, minimum spanning Tree, Shortest path algorithm

Reference Books:

1. Data Structures, R.S. Salaria, Khanna Publishing House

Concepts of Data Mining

Unit-I

Introduction to Data warehousing, needs for developing data Warehouse, Data warehouse systems and its Components, Design of Data Warehouse, Dimension and Measures, Data Marts:-Dependent Data Marts, Independents Data Marts & Distributed Data Marts, Conceptual Modeling of Data Warehouses: -Star Schema, Snow flake Schema, Fact Constellations, Multidimensional Data Model & Aggregates.

Unit-II

OLAP, Characteristics of OLAP System, Motivation for using OLAP, Multidimensional View and Data Cube, Data Cube Implementations, Data Cube Operations, Guidelines for OLAP Implementation, Difference between OLAP & OLTP, OLAP Servers: -ROLAP, MOLAP, HOLAPQueries.

UNIT-III

Introduction to Data Mining, Knowledge Discovery, Data Mining Functionalities, Data Mining System categorization and its Issues. Data Processing:-Data Cleaning, Data Integration and Transformation. Data Reduction, Data Mining Statistics. Guidelines for Successful Data Mining.

Unit-IV

Association Rule Mining:-Introduction, Basic, The Task and a Naïve Algorithm, Apriori Algorithms, Improving the efficiency of the Apriori Algorithm, Apriori - Tid, Direct Hasing and Pruning (DHP), Dynamic Item set Counting (DIC), Mining Frequent Patterns without Candidate Generation (FP-Growth), Performance Evaluation of Algorithms,

Unit-V

Classification:-Introduction, Decision Tree, The Tree Induction Algorithm, Split Algorithms Basedon Information Theory, Split Algorithm Based on the Gini Index, Over fitting and Pruning, Decision Trees Rules, Naïve Bayes Method.

Cluster Analysis: -Introduction, Desired Features of Cluster Analysis, Types of Cluster Analysis Methods: -Partitioned Methods, Hierarchical Methods, Density-Based Methods, Dealing with Large Databases. Quality and Validity of Cluster Analysis Methods.

Reference Books:

1. Data Mining and Warehousing, Ikvinderpal Singh, Khanna Publishing House

Object Oriented Programming with JAVA

UNIT–I

C++ vs JAVA, JAVA and Internet and WWW, JAVA support systems, JAVA environment.

JAVA program structure, Tokens, Statements, JAVA virtual machine, Constant & Variables, Data Types, Declaration of Variables, Scope of Variables, Symbolic Constants, Type Casting.

Operators: Arithmetic, Relational, Logical Assignments, Increment and Decrement, Conditional, Bitwise, Special, Expressions & its evaluation**.**

If statement, if…else… statement, Nesting of if…else… statements, else…if Ladder, Switch, ?operators, Loops – While, Do, For, Jumps in Loops, Labelled Loops.

UNIT–II

Defining a Class, Adding Variables and Methods, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods.

Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalize Methods, Abstract methods and Classes, Visibility Control.

UNIT–III

Arrays: One Dimensional & two Dimensional, strings, Vectors, wrapper Classes, Defining Interface Extending Interface, Implementing Interface, Accessing Interface Variable, System Packages, Using System Package, Adding a Class to a Packages, Hiding Classes.

UNIT–IV

Creating Threads, Extending the Threads Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the Runnable Interface.

UNIT–V

Local and Remote Applets Vs Applications, Writing Applets, Applets Life Cycle, Creating an Executable Applet, Designing a Web Page, Applet Tag, Adding Applet to HTML File, Running the Applet, Passing Parameters to Applets, Aligning the Display, HTML Tags & Applets, Getting Input from the User.

Reference Books:

1. Object Oriented Systems with Java, TanweerAlam, Khanna Publishing House
2. Core Java, TanweerAlam, Khanna Publishing House

MULTIMEDIA – TOOLS & APPLICATIONS

UNIT -I

Introduction To Multimedia, Needs and Areas of use, Identifying Multimedia Elements - Text, Images, Sound, Animation and Video, Making Simple Multimedia With PowerPoint. TEXT - Concepts of Plain & Formatted Text, RTF & HTML Texts, Using Common Text Preparation Tools, Conversion to and from of Various Text Formats, Creating text using standard software.

UNIT-II

SOUND - Sound and its Attributes, Sound and Its Effects in Multimedia, Frequency, Sound Depth, Channels and its Effects on Quality and Storage, Size Estimation of Space of a Sound File, Sound Card Standard – FM Synthesis Cards, Waves Table Cards, MIDI and MP3 Files and Devices, 3D Sounds, Recording and editing sound using sound editors like Audacity, Sound forge etc.

UNIT-III

IMAGES - Importance of Images Graphics in Multimedia, Vector and Raster Graphics, Regular Graphics vs. Interlaced Graphics, Image Capturing Methods - Scanner, Digital Camera Etc. Color models-RGB, CYMK, Hue, Saturation, and Brightness, Various Attributes of Images Size, Color, Depth Etc, Various Image File Format BMP, DIB, CIF, PIC, and TIF Format Their Features And Limitations, Image format conversion, various effects on images. Create images using Photoshop, CorelDraw and apply various effects, Using Layers, Channels and Masks in images.

UNIT-IV

VIDEO- Basic of Video, Analog and Digital Video Type of Video, Digitization of Analog Video, Video Standard – NTSC, Pal, HDTV, Video Capturing Media /Instruments Videodisk Camcorder Compression Techniques, File Formats AVI, MJPG, MPEG, Video Editing and Movie Making Tools, converting formats of videos, recording and editing videos using video editing software like adobe premiere or Sony Vegas.

UNIT-V

ANIMATION- Concepts of animation, 2D and 3D animation, tools for creating animation, character and text animation, creating simple animation using GIF animator and flash, Morphing and Applications.

Authoring tools for Multimedia – Introduction to various types of multimedia authoring tools, CD/DVD based and web based tools, features and limitations, creating multimedia package using all components.

Reference Books:

1. Multimedia & Its Applications, V.K. Jain, Khanna Publishing House
2. Fundamentals of Multimedia, Ramesh Bangia, Khanna Publishing House

Data Structure Lab

.Implement stack. Write functions like push, pop, Initialize, Empty or Full. 2
.WAP to Convert the Infix expression into postfix using STACK.
.WAP to Convert the Infix expression into Prefix using STACK. 4
.Implement concept of queues
5. Implement circular Queue using Array.
6. WAP to implement STACK using
Link List 7WAP to implement Queue using
Link List
.Implement queues as a circular linked list. 9
.Implementing doubly linked list
10. Binary search tree to sort an array

Java Lab

1 . Write a Program to accept a String as a Command line argument and the program should print a
Welcome message.
2 . Create a class Box that uses a parameterized method to initialize the dimensions of a box.(dimensions are width, height, depth of double type). The class should have a method that can return volume. Obtain an object and print the corresponding volume in main() function.
3 Write a Program that will check whether a given String is Palindrome or not
4. Write a Java Program for Multiplication of two matrices.
5 . Write a program to check if given String is Palindrome or not.
6 . Given two strings, append them together (known as "concatenation") and return the result. However, if the concatenation creates a double-char, then omit one of the chars. If the inputs are "Mark" and "Kate" then the ouput should be "markate".
7 . Create an abstract class Instrument which is having the abstract function play.
Create three more sub classes from Instrument which is Piano, Flute, Guitar. Override the play method inside all three classes printing a message
"Piano is playing tantantantan " for Piano class
"Flute is playing toottoottoottoot" for Flute class
"Guitar is playing tintintin " for Guitar class
8 . Write a program that takes as input the size of the array and the elements in the array. The program then asks the user to enter a particular index and prints the element at that index.
This program may generate Array Index Out Of Bounds Exception. Use exception handling mechanisms to handle this exception. In the catch block, print the class name of the exception thrown.
9 . Create two threads and assign names 'Scooby' and 'Shaggy' to the two threads. Display both thread names.
10 0. Write an Applet program in Java to display "Welcome to Java".

Level 6 (Semester III)

Linux Operating System - Operations & Management

UNIT – I

Linux introduction and file system - Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell.

Linux File system-Boot block, super block, Inode table, data blocks, How Linux access files, storage files, Linux standard directories, Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, more, less, creating and viewing files, using cat, file comparisons, View files, disk related commands, checking disk free spaces, Partitioning the Hard drive for Linux, Installing the Linux system, System startup and shut-down.

UNIT–II

Essential Linux commands Understanding shells, Processes in Linux process fundamentals, connecting processes with pipes, redirecting input output, manual help, Background processing, managing multiple processes, changing process priority, scheduling of processes at command, batch commands, kill, ps, who, sleep, Printing commands, grape, fgrep, find, sort, Cal, banner, touch, file,file related commands-ws, sat, cut, grep, dd, etc.Mathematical commands- bc, expr, factor, units.vi, joe, vim editor

UNIT–III

Shell programming Basic of shell programming, Various types of shell, shell programming in bash, conditional and looping statements, case statements, parameter passing and arguments, Shell variables, shell keywords, Creating Shell programs for automate system tasks and report printing, use of grep in shell, awk programming.

UNIT–IV

System administration Common administrative tasks, identifying administrative files – configuration and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, checking and monitoring system performance file security & Permissions, becoming super user using su.Getting system information - host name, disk partitions & sizes, users, kernel.

Backup and restore files, linuxconf. utility in GUI, reconfiguration hardware with kudzu Configure desktop-X configurator, understanding XF86config file, starting & using X desktop. KDE & Gnome graphical interfaces, changing X settings.

UNIT–V

Basic networking administration Setting up a LAN using Linux, choosing peer to peer vs client/server model, setting up an Ethernet Lan, configuring host computers, checking Ethernet connecting, connecting to internet, administration in a networked environment, common networking administrative tasks, the network file system, configuring Ethernet, initializing Ethernet Interface, ifconfig, netstat and netconfig commands a TCP/IP networks, DNS services, routing using Linux, SLIP & PPP services, UUCP.Installation & Administration of mail server, ftp server and Apache web server.

Software Engineering

UNIT - I

SOFTWARE **:** Software Characteristics, Components & Applications, Software Engineering - A Layered Technology, Software Process Models - Linear Sequential Model, Prototype & Rad Model., Evolutionary Software Process Model – Incremental Model and Spiral Model.

SOFTWARE PROJECT MANAGEMENT: Project Management Concepts – People Problem and Process S/W process and Project Metrics : Metrics in The Process and Project Domains . Software Measurement –Size Oriented, Function Oriented Metrics, Extended Function

UNIT - II

SOFTWARE PROJECT PLANNING: Objectives, Scope, Project Estimation, Decomposition Techniques, Empirical Estimation Models.

ANALYSIS CONCEPT AND PRINCIPLES: Requirement Analysis, Communication Techniques, Analysis Principles, Software Prototyping, Specifications.

ANALYSIS MODELING: Elements of The Analysis Modeling, Data Modeling. Functional Modeling and Information Flow, Behavioral Modeling, Data Dictionary.

UNIT – III

DESIGN CONCEPTS AND PRINCIPLES: Design Process, Design Concepts, Design Principles, Effective Modular Design. DESIGN METHODS : Architectural Design Process, Transform Mapping and Transaction Mapping, Interface Design, - Internal and External Design, Human Computer Interface Design, Interface Design Guidelines, Procedural Design.

UNIT - IV

S/W Quality Assurance : Quality Concepts, Matrix for Software Quality, Quality Movement, S/W Q A, S/W Review, Formal Technical Reviews, Formal Approaches to SQA, S/W Reliability, ISO 9000 quality Standards S/W TESTING MODELS : S/W Testing Fundamentals, Test Case Design, White and Black Box Testing, Basic Path Testing, Control Structure

S/W TESTING STRATEGIES : Strategic Approach To S/W Testing, Unit Testing, Integration Testing, Validation Testing, System Testing, Debugging

UNIT - V

S/W REUSE : Reuse Process, Building Reuse Components, Classified And Retrieving Components, Economics Of S/W Reuse COMPUTER AIDED S/W ENGINEERING: Introducing of Case, Building Block For Case, Taxonomy Of Case Tools, Integrating Case Environment, Integrating Architecture, Case Repository.

Reference Books:

1. Software Engineering, N.S. Gill, Khanna Publishing House
2. Software Engineering, R.P. Mahapatra, Khanna Publishing House

Window Development Fundamentals

1. Programming web applications
2. Working with data and services
3. Troubleshooting and debugging web applications
4. Working with client-side scripting
5. Configuring and deploying web applications
6. Understanding core programming
7. Understanding object-oriented programming
8. Understanding general software development
9. Understanding web applications
10. Understanding desktop applications
11. Understanding databases

Reference Books:

1. Internet and Web Development, Soma Das Gupta, Khanna Publishing House

Web Development using PHP Lab

1 . Write a program to display “Hello World”.
2 . Write a program to print an array of Strings.
3 Write a program to print each element of an array using foreach().
4. Write a program to find number of elements in an array.
5. Write a program to sort elements in an array in ascending order.
6. Write a program to find the sum of elements in an array.
7 . Write a program to find the product of elements in an array.
8 . Write a program to split a string as array elements based on delimiter.
9 Write a program to combine the array elements into a string with given delimiter.
10. Write a program to join the array elements into a string.
11. Write a program to merge two arrays into a new array.
12. Write a program to remove the duplicated values from an array.
13. Write a programs to create simple Login and Logout using sessions.
14. Write a program to Upload a file to the Server.
15. Write a program to connect to the server and selecting database.
16. Write a program to Insert records to the table in Database.
17. Write a program to fetch records from the table in Database.
18. Write a program to Store and Read an image in Database.
19. Write a program to create a simple Registration form.
20. A simple CRUD operations using PHP and Mysql.

Window Development Fundamentals Lab

1. Client-side scripting Programs
2. Deploying web applications
3. Basic object-oriented programs
4. Understanding desktop applications
5. Basic SQL Queries

Level 6 (Semester IV)

Software Testing & Project Management

UNIT - I

Testing basics and Development Models: Principals and context of testing in software production, Usability and Accessibility Testing, Phases of Software Project, Process models to represents different phases, Software Quality Control and its relation with testing, validating and verification, Software Development life cycle models, various development models.

White Box Testing: White Box Testing - Static Testing, Structural Testing-Unit code functional testing, Code coverage testing, code complexity testing,

Black Box Testing- What? Why and when to do Black box testing, Requirements based testing, Positive and Negative Testing, Boundary value testing, Decision Tables, Equivalence Partitioning, State Based or Graph Based Testing, Compatibility Testing, User Documentation Testing, Domain Testing.

UNIT - II

Integration Testing: Introduction and types of integration testing, Scenario testing, defect bash. System and Acceptance Testing- Overview, functional and non-functional testing, Acceptance testing.

Overview of some software testing tools: WinRunner, LoadRunner, Test Director.

(Some practical should be conducted using these tools)

UNIT- III

Performance Testing- Introduction, factors related to performance testing, methodology for performing testing, Regression Testing,

Ad hoc Testing- Overview, Buddy & pair testing, Exploratory testing, Interactive testing, Agile and extreme testing.Testing of Object Oriented Testing – Introduction, Differences in OO testing.

UNIT – IV

Software Project Management: Overview, Software Project Management Framework, Software Development life cycle,

Organization Issues and Project Management, Managing Processes, Project Execution, Problems in Software Projects, Project Management Myths and its clarifications.

Software Project Scope: Need to scope a software project, scope management process, communication techniques and tools, communication methodology

Software Requirement Gathering and Resource allocation: Requirement specifications, SRS Document preparation, Resources types for a software projects, requirement for resources allocation.

UNIT – V

Software Project Estimation: Work Breakdown structure (WBS), steps in WBS, Measuring efforts for a project, techniques for estimation – SLOC, FP, COCOMO and Delphi methods.

Project Scheduling: Scheduling and its need, scheduling basics, Gannt Chart, Network scheduling techniques, Pert and CPM.Using a Project Management Tool: Introduction to MS Project 2000, Managing tasks in MS Project 2000, Tracing a project plan, creating and displaying project information reports.

Android Application Development

UNIT-I

Android Introduction, Smartphones future, Preparing the Environment, Installing the SDK, Creating Android Emulator, Installing and Using Eclipse, Installing Android Development Tools, Choosing which Android version to use Android Architecture, Android Stack, Android applications structure Creating a project, Working with the AndroidManifest.xml, Using the log system Activities Introduction to UI – Layouts, Fragments, Adapters, Action bar, Dialogs, Notifications , UI best practices

UI Architecture, Application context, Intents, Activity life cycle, Supporting multiple screen sizes

Unit – II

Designing User Interface Using Views – Basic Views- TextView, Button, Image Button, Check Box, Toggle Button, Radio Button etc., Progress Bar View and Auto Complete Text View, Time Picker and Date Picker View, List View,

Image View, Image Switcher and Grid View, Digital Clock & Analog Clock Views Notification and Toast, Parameters , on Intents, Pending intents, Status bar notifications Toast notifications.

UNIT-III

Menus, Localization, Options menu, Context menu Dialogs-Alert dialog, Custom dialog, Dialog as Activity Orientation and Movement- Pitch, roll and yaw, Natural device orientation, Reference frame remapping SMS - Sending and Receiving Working with Media –Playing audio and video, Recording audio and video.

UNIT-IV

Location and Maps - Google maps, Using GPS to find current location.

Working with data storage - Shared preferences, Preferences activity, Files access, Using External storage, SQLite database Animation-View animation, Drawable animation Working with Sensors - Finding sensors, Accelerometers, Gyroscopes, Other types Working with Camera – Controlling the camera, Preview and overlays, Taking pictures

UNIT-V

Content providers- Content provider introduction, Query providers

Network Communication - Web Services, HTTP Client, XML and JSON, Using e-mails.

Services - Service lifecycle, Foreground service, Creating own services

Publishing and Distributing Your App -Preparing for publishing, Google Play requirements, Signing and preparing the graphics, Publishing to the Android Market, Monetization, Tips on becoming a top app, Google analytics

Reference Books:

Learning Android, Ramesh Bangia, Khanna Publishing House

Windows Configuration and Server Administration

Understanding Windows Programming Basics: Identify Windows application types, Implementuser interface design.

Creating Windows Forms Applications: Create and handle events, Understand Windows Formsinheritance, understand how to create new controls and extend existing controls, Validate and
implement user input, Debug a Windows-based application.
Creating Windows Services Applications: Create a Windows Services application, InstallaWindows Services application.

Accessing Data in a Windows Forms Application: Understand data access methods for aWindows Application, Understand data bound controls.
Deploying a Windows Application: Understand windows application deployment methods,integrating data.
Network basics: Type of Networks, Topologies, Transmission media, Install UTP(Straight, Cross,Rollover Cables), IP Addressing, Subneting, OSI Model, TCP/IP Model, Wireless Network, Network Devices.

Installation: Installation Server, Drivers, Working with windows server Devices, TroubleshootingDevices & Drivers, Managing system updates.
Working With Disk Storage: Type of Disk Storage, Type of volumes, Implementing fault tolerance,Use disk management tools, Disk Quota, Troubleshooting disk management, Shadow copy**.Domain Controller**: Install Active Directory, Manage Active Directory Component, Working withOU Structure, Working with Domain User account, Working with Domain Groups, Troubleshooting Active Directory.

Domain Name Services (DNS): Define Name resolution, Install DNS, Configure DNS Client, Manageand Troubleshoot DNS.

Dynamic Host Configuration Protocol: Configure DNS Server, Working With Super Scope,Configure DHCP Client, Manage and Troubleshoot DHCP Server.

Backup and Restore: Requirement for Backup and Recovery AD, Issue for AD Backup andRecovery, Steps for Backup and Recovery AD.

Management Information System

Unit I

An introduction to information systems, Information systems in organizations, Information Technology Concepts, The IS Revolution; Information requirement for the different levels lf management, transaction processing system, Management information 34 system, Decision support system. Strategic Role of Information Systems.Business Processes; Information management, and Decision Making. Computers and Information Processing;

Unit II

Transaction processing system; hardware and software requirements, tools used, case studies, merits and demerits of transaction processing system.

Unit III

Managerial control, Information and tools required, difference between transactional system and managerial system. Frequency of taking outputs, Need for interconnected system, common database, Redundancy control, case studies. Decision support system, concept and tools, case studies, virtual organizations, strategic decisions-unstructured approach, cost and values of unstructured information.

Unit IV

Optimization techniques, difference between optimization tools and DSS tools expert system, difference between expert system and management information system. Role of chief Information officer.

Android Application Development Lab

1. Write a simple Application which will print "Hello World!”
2. Write a simple Application that uses UI Layout and Control.
3. Write a simple Application that makes use of Style & Themes.
4. Write a simple Application that uses Event Handling.
5. Write a simple Application that uses Alarm, Notification.
6. Make a location based app.
7. Write a program that shows the use animation.
8. Write a program that shows the use of Image Effects.
9. Write a program that shows the use Image Switcher.
10. Write a program that shows the use of database.

MIS Lab

Experiments to be covered based on the theory covered in class

Level 7 (Semester V)

Technology Trends in IT

Unit-I

Internet of Things (IoT) –Definition of IoT, History of IoT, IoT vs. similar concepts,Application/Segment overview, Technology overview

Unit-II

Big Data Analytics: Concepts, examples of big data analytics, benefits of big data analytics,Technologies, and Applications, requirements for being successful with big data analytics

Unit-III

Cloud Computing – Introduction, Why cloud services are popular, advantages, Characteristics,Service models, Deployment of cloud services, Potential privacy risks

Unit-IV

Cyber Security – Introduction, risks, Malicious code, Hacker, attacker or intruder, Cyber securityPrinciples, Information Security (IS) within Lifecycle Management, Risks & Vulnerabilities, Incident Response, Future Implications & Evolving Technologies

Unit-V

Wearable Technologies – Introduction, Applications of Wearable Technology, Challenges toWearable Technology, various Wearable devices.

Reference Books:

1. Computer Today, A. Ravichandran, Khanna Publishing House
2. Internet of Things, Jeeva Jose, Khanna Publishing House
3. Big Data and Hadoop, V.K. Jain, Khanna Publishing House
4. Data Sciences and Analytics, V.K. Jain, Khanna Publishing House

Windows Mobile Application Development

Unit-I

INTRODUCTION TO WINDOWS 8 APPLICATION DEVELOPMENT - brief history of windows application development, History of APIs and Tools, Operating System Input Methods

The Windows Charm Bar, Start Button, Search Button, Share Button, Devices Button, Settings Button, Windows Desktop, Switching between Desktop Programs

WINDOWS 8 ARCHITECTURE FROM A DEVELOPER'S POINT OF VIEW - Windows 8 Development Architecture, Desktop Application Layers, Understanding Windows Runtime: Windows Runtime Architecture Overview, Metadata in Windows Runtime, .NET Framework 4.5: The Installation Model of .NET Framework 4.5, Window Runtime Integration, Picking the Appropriate Technology for Your Project, Choosing a Programming Language

GETTING TO KNOW DEVELOPMENT ENVIRONMENT - Introducing the Toolset, Visual Studio IDE:

Creating a New Project, Lighting Up Your Applications with Expression Blend

UNIT-II

PRINCIPLES OF MODERN WINDOWS APPLICATION DEVELOPMENT - Windows 8 Style Application, Windows 8 Design Language, Introduction to Asynchronous Programming, Evolution of Asynchronous, Programming on the .NET Platform

CREATING WINDOWS 8 STYLE APPLICATIONS WITH HTML5, CSS, AND JAVASCRIPT - HTML5 and CSS on the Web, HTML5 Technologies, HTML5 Applications on Windows Runtime, The Windows Library for JavaScript (WinJS), Creating Windows 8 Style Applications with JavaScript, Accessing the Filesystem, Managing Data, Respecting the User's Device

UNIT-III

USING XAML TO CREATE WINDOWS 8 STYLE USER INTERFACES - Describing the User Interface Using XAML, Using Namespaces, Understanding the Layout Management System, Reusable Resources in XAML, Basic Controls in Windows 8 Style Applications: Controls with Simply Accessing the Internet: e Values, Content Controls, Working with Data: Data Binding Dependency Properties and Notifications, Binding Modes and Directions

WORKING WITH XAML CONTROLS - Using Animations in Application, Designing the Visual Look of a Control, Working with Complex Controls: Getting to Know the List View Base Controls, Using the Grid View Control, Binding to Data, Grouping Data, Defining Visual Groups

BUILDING WINDOWS 8 STYLE APPLICATIONS - The Lifecycle of a Windows 8 Application, Deploying Windows 8 Apps, Commanding Surfaces, Persisting Application Data, Applications and the Start Screen

UNIT-IV

CREATING MULTI-PAGE APPLICATIONS - Navigation Basics, working with Pages, Using the Split Application and Grid Application Templates

BUILDING CONNECTED APPLICATIONS - Integrating with the Operating System and Other Apps: Picker Unified Design to Access Data, Understanding the Concept of Contracts, Accessing the Internet: Detecting the Changes of Internet Connectivity, Using Feeds, Accessing Windows Live LEVERAGING TABLET FEATURES - Accommodating Tablet Devices, Building Location-Aware Applications, Using Sensors: Using Raw Sensor Data, Using Sensor Fusion Data

UNIT-V

ADVANCED PROGRAMMING CONCEPTS - Building Solutions with Multiple Languages: Hybrid Solutions, Background Tasks: Understanding Background Tasks, How Background Tasks Work,

Cancelling Background Tasks, Implementing Background Tasks, creating a Simple Background Task, Managing Task Progress and Cancelation, Input Devices

TESTING AND DEBUGGING WINDOWS 8 APPLICATIONS - The Quality of Software, Becoming Familiar with Debugging, Controlling the Program Flow in Debug Mode, Monitoring and Editing Variables, Changing the Code While Debugging, Windows 8 Style Application-Specific Scenarios, Introduction to Software Testing, Introduction to Unit Testing, Unit Testing Windows 8 Style Applications

INTRODUCING THE WINDOWS STORE - Getting to Know the Windows Store, How Customers See an App in the Windows Store, Application Details, Making Money with Your App, The Developer Registration Process: Submitting the Application, The Application Certification Process, The Windows App Certification Kit.

Introduction to Python Programming

- Familiarization with the basics of Python programming: a simple “hello world" program, process of writing a program, running it, and print statements; simple data-types: integer, float, string

- Introduce the notion of a variable, and methods to manipulate it (concept of L-value and R-value even if not taught explicitly)

- Knowledge of data types and operators: accepting input from the console, assignment statement, expressions, operators and their precedence.

- Conditional statements: if, if-else, if-elif-else; simple programs: e.g.: absolute value, sort numbers, and divisibility.

- Notion of iterative computation and control flow: for, while, flowcharts, decision trees

- and pseudo code; write a lot of programs: interest calculation, primarily testing, and factorials.

- Idea of debugging: errors and exceptions; debugging: pdb, break points.

- Lists, tuples and dictionary: finding the maximum, minimum, mean; linear search on list/tuple of numbers, and counting the frequency of elements in a list using a dictionary. Introduce the notion of accessing elements in a collection using numbers and names.

- Sorting algorithm: bubble and insertion sort; count the number of operations while sorting.

- Strings: compare, concat, substring; notion of states and transitions using state transition diagrams.

Reference Books:

1. Introduction to Computing and Problem Solving With Python, Jeeva Jose, Khanna Publishing House
2. Taming Python by Programming, Jeeva Jose, Khanna Publishing House

Introduction to Microprocessors

Digital Design and VHDL

Introduction
Combinational Logic
Structural Modeling
Sequential Logic
Finite State Machines
Parameterized Modules
Testbenches

Arithmetic Logic Unit (ALU)

1. Introduction
2. Arithmetic Circuits
3. ALU
4. Number Systems

Microprocessor I: Instruction Data Set. Machine Language

1. Introduction
2. Assembly Language
3. Machine Language
4. Programming
5. Addressing Modes
6. Lights, Camera, Action: Compiling, Assembling, and Loading
7. Odds and Ends

Microprocessor II: Control and Datapath Design. Single-Cycle Processor

1. Introduction
2. Performance Analysis
3. Single-Cycle Processor

Microprocessor III: Control and Datapath Design. Multi-cycle Processor

1. Introduction
2. Performance Analysis
3. Multicycle Processor
4. Pipelined Processor

Memory systems and I/O.

Introduction
Memory System
Caches
Virtual Memory
Memory-Mapped I/O
Memory map
I/O Devices
Buses and organization

Reference Books:

1. Fundamentals of Microprocessor, M.K. Ghodki, Khanna Publishing House
2. Advance Microprocessor, A.K. Gautam, Khanna Publishing House

Windows Mobile Application Development Lab

1. Working with J2ME Features
2. Threads & High level UI
3. Developing networked applications using the wireless toolkit
4. Authentication with a webserver
5. Study Windows API's. Find out their relationship with MFC classes. Appreciate how they are helpful in finding complexities of windows programming.

Python Programming Lab

1 . Python Program to Print Hello world!
2 . Python Program to Add Two Numbers
3 . Python Program to Check if a Number is Odd or Even
4. Python Program to Solve Quadratic Equation
5. Python Program to Check Armstrong Number
6 . Python Program to Find the Sum of Natural Numbers
7 Write a Python program to get unique values from a list
8. Python Program to Illustrate Different Tuple Operations
9. Python Program to Check Whether a String is Palindrome or Not
10. Write a Python program to remove duplicates from Dictionary
11. Write a Python program to sort a list alphabetically in a dictionary
12. Python Program to Illustrate Different Set Operations (Union, Intersection, Difference and Symmetric Difference)
13. Python Program to illustrate the concept of Binary Relations in Set.
14. Python Program to Generate a Random Number
15. Python Program to Convert Decimal to Binary, Octal and Hexadecimal
16. Python Program to Find HCF or GCD
17. Given two integers x and n, compute x^n.
18. Python Program to Find Factors of Number
19. Python Program to Make a Simple Calculator
20. Python Program to Find Factorial of Number Using Recursion

Level 7 (Semester VI)

Introduction to AI

UNIT – I

Overview of A.I: Introduction to AI, Importance of AI, AI and its related field, AI techniques, Criteria for success. Problems, problem space and search: Defining the problem as a state space search, Production system and its characteristics, Issues in the design of the search problem Heuristic search techniques : Generate and test, hill climbing, best first search technique, problem reduction, constraint satisfaction

UNIT - II

Knowledge Representation: Definition and importance of knowledge, Knowledge representation, Various approaches used in knowledge representation, Issues in knowledge representation. Using Predicate Logic: Represent ting Simple Facts in logic, Representing instances and is-a relationship, Computable function and predicate.

UNIT - III

Natural language processing: Introduction syntactic processing, Semantic processing, Discourse and pragmatic processing. Learning: Introduction learning, Rote learning, Learning by taking advice, Learning in problem solving, Learning from example-induction, Explanation based learning.

UNIT - IV

Expert System: Introduction, Representing using domain specific knowledge, Expert system shells. Knowledge acquisition: General concepts in knowledge acquisition, early work in Machine Learning, examples of Inductive Learners, computer vision, Robotics, overview of LISP- AI language.

Reference Books:

1. Artificial Intelligence, Munish Chandra Trivedi, Khanna Publishing House

OR

Computer Network Security

UNIT-I

Network Concept, Benefits of Network, Network classification (PAN, LAN, MAN, WAN), Peer to Peer, Client Server architecture, Transmission media: Guided & Unguided, Network Topologies. Networking terms: DNS, URL, client server architecture, TCP/IP, FTP, HTTP, HTTPS, SMTP, Telnet OSI and TCP/IP Models: Layers and their basic functions and Protocols, Comparison of OSI and TCP/IP. Networking Devices: Hubs, Switches, Routers, Bridges, Repeaters, Gateways and Modems, ADSL.

UNIT-II

Ethernet Networking: Half and Full-Duplex Ethernet, Ethernet at the Data Link Layer, Ethernet at the Physical Layer. Switching Technologies: layer-2 switching, address learning in layer-2 switches,

network loop problems in layer-2 switched networks, Spanning-Tree Protocol, LAN switch types and working with layer-2 switches, Wireless LAN

UNIT- III

Internet layer Protocol: Internet Protocol, ICMP, ARP, RARP. IP Addressing: Different classes of IP addresses, Sub-netting for an internet work, Classless Addressing. Comparative study of IPv4 & IPv6.Introduction to Router Configuration.Introduction to Virtual LAN.

UNIT- IV

Transport Layer: Functions of transport layer, Difference between working of TCP and UDP.
Application Layer: Domain Name System (DNS), Remote logging, Telnet, FTP, HTTP, HTTPS.
Introduction to Network Security.

Reference Books:

1. Information & Computer Security, Sarika Gupta, Khanna Publishing House
2. An Integrated Approach to Computer Networks, BhavneetSidhu, Khanna Publishing House

e-Commerce

Unit I

Introduction E-Business: Origin and Need of E-Commerce, Factors affecting E -Commerce, Business dimension and technological dimension of E-Commerce, E-Commerce frame work Electronic Commerce Models, Value Chains in Electronic Commerce.

Unit II

Internet and E-Business: Introduction to Internet and its application, Intranet and Extranets. World Wide Web, Internet Architectures, Internet Applications, Business Applications on Internet, E - Shopping, Electronic Data Interchange, Components of Electronic Data Interchange, Creating Web Pages using HTML.

Unit III

Technology for Online Business: Internet, IT Infrastructure, Middleware Contents, Text and Integrating E-Business Applications, Mechanism of Making Payment Through Internet, Online Payment Mechanism, Electronic Payment Systems, Payment Gateways, Visitors to
Software Development Website, Tools for Promoting Website, Plastic Money, Debit Card, Credit Card, Laws Relating to Online Transactions.

Unit IV

Applications in E-commerce: E-commerce Applications in Manufacturing, Wholesale, Retail and Service Sector.

Reference Books:

1. E-Commerce, Sarika Gupta, Khanna Publishing House

OR

Introduction to Biometrics

Unit I

Concepts - biometric recognition, biometrics, requirements for biometrics
Biometric systems, their modes and architectures, Biometric system errors and evaluation, Software Development

Unit II

Overview, comparison and evaluation of various biometrics
Unimodal biometric systems, their advantages, disadvantages and limits
Multimodal biometric systems, their modes of operation, levels of fusion

Unit III

Biometric pattern recognition methods
Privacy protection and social acceptance
Biometric standardization, data formats
Design and implementation of biometric systems, applications of biometric systems, biometric databases, security of biometric systems