

PANJAB UNIVERSITY CHANDIGARH- 160 014 (INDIA)

(Estded. under the Panjab University Act VII of 1947-enacted by the Govt. of India)



FACULTY OF SCIENCE

SYLLABI

FOR

**INFORMATION TECHNOLOGY
(ELECTIVE)**

FOR

B.A./B.Sc./B.COM.

EXAMINATIONS 2016 - 2017

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PANJAB UNIVERSITY, CHANDIGARH.

Information Technology (Elective) for B.A./B.Sc./B.Com. I,II,III w.e.f. Examination 2016-2017

Scheme of Examination

Sr. No.	Paper	Name of Paper	Lectures per		Max. Marks			Exam. Hours
			week		Ext.	Int.		
First Semester								
1	A	Computer Fundamentals	6		65	10	75	3
2	C	Practical on Paper – A	6		-	-	25	3
Second Semester								
3	B	Computer Programming using C	6		65	10	75	3
4	D	Practical on Paper – B	6		-	-	25	3
			EXT. + INT.					

Sr. No.	Paper	Name of Paper	Lectures per week	Max. Marks			Exam. Hours
Third Semester							
5	A	Computer Programming using C++	6	65	10	75	3
6	C	Practical on Paper – A	6	-	-	25	3
Fourth Semester							
7	B	Data Networks and Web Based Application	6	65	10	75	3
8	D	Practical on Paper – B	6	-	-	25	3

Sr. No.	Paper	Name of Paper	Lectures per week	Max. Marks			Exam. Hours
Fifth Semester							
9	A	Database System and VB .NET	6	65	10	75	3
10	C	Practical on Paper – A	6	-	-	25	3
Sixth Semester							
11	B	Linux Administration	6	65	10	75	3
12	D	Minor Project Based on VB.Net, Linux	6	-	-	25	3

Note :

The evaluation will be done by internal/external examiner on the basis of Project Report submitted by the candidate and viva-voce examination.

FIRST SEMESTER

Paper – A : Computer Fundamentals

Total Periods (6 Periods/week): 60

Max Marks: 65

Exam Hours: 3

Objective of Module: The objective of module is to familiarize the students with the developments in information Technology and use of computer systems at operating system level and application level.

Note:

- i. The Question Paper will consist of Four Sections.
- ii. Examiner will set total of NINE questions comprising TWO questions from each Section and ONE compulsory question of short answer type covering whole syllabi.
- iii. The students are required to attempt ONE question from each Section and the compulsory question.
- iv. All questions carry equal marks unless specified.

SECTION - A

1. Basics of Computers and Number Systems

Introduction: characteristics of computer; History of computers; classification of computers based on size, architecture and chronology; Applications of computers;

Commonly used terms–Hardware, Software, and Firmware. Types of software: System and Application software; Input, Process and Output, Block diagram of a computer

Representation of information: BIT, BYTE, Memory, Memory size; Units of measurement of storage; Primary Memory: RAM, ROM, PROM, EPROM, Cache

Removable and non-removable secondary memory: Tapes, Disks, CDROM, DVD, comparison of these devices based on technology and speed. Organization of data on disks: Tracks, sectors, cylinders, heads, access time, seek time and latency time.

Input/Output devices

Programming Languages: Generation of Languages; Translators - Interpreters, Compilers, Assemblers and their comparison

ASCII and EBCDIC Codes, Binary, Octal, Decimal and Hexadecimal Number Systems and their Conversion, Integer and Floating Point Representation.

SECTION - B

2. Operating Systems – DOS, Windows and UNIX

DOS: Booting sequence; Warm and Cold booting; Concept of File and directory, Redirecting command input and output pipes, Wildcard characters, Types of DOS commands: Internal and External; Internal Commands: DIR, MD, CD, CLS, COPY, DATE, DEL, PATH, PROMPT, REN, RD, TIME, TYPE, VER, VOL; External Commands: XCOPY, ATTRIB, BACKUP, RESTORE, FIND, SYS, FORMAT, CHKDSK, DISKCOPY, LABEL, MOVE, TREE, DELTREE, DEFRAG, SCANDISK, UNDELETE. Batch Files: Introduction to simple batch files; Introduction to CONFIG.SYS and AUTOEXEC.BAT files.

Windows: GUI, Icons, Toolbar, Control panel, Files and folder management under windows , Accessories, Network Neighborhood, System Tools, Recycle Bin

Overview of UNIX structure, general purpose UNIX commands such as date, echo, cal, bc, pwd, passwd; file and directory commands such as ls, mkdir, cp, mv, rm. Process management commands such as ps, kill, nohup, communication commands such as news, mesg, wall.

Comparison of main features of DOS, UNIX and Windows Operating Systems.

SECTION - C

3. Word Processing Software:

Basics of Word Processing: creating, opening, saving, and printing document, Menu Toolbars

Editing Text: Copy, Paste, Delete, Move etc., Finding and Replacing Text, Spell Check, Autocorrect feature, language setting and thesaurus

Formatting: Character, Paragraph and Page formatting, working with indents, Bulleted and numbered lists, adding Headers and Footers, setting up Multiple Columns

Working with tables: Inserting/creating table using toolbar and drawing, formatting table, adding/deleting rows/columns, Applying borders to tables

Clipart: Using clip art, Creating Word Art

Mail merge: Creating merged envelopes, creating merged mailing labels

Macros: Creating, naming and saving macros, running a macro, suspending a macro, deleting a macro.

SECTION – D

4. Spreadsheet Software:

Worksheet overview: Row, Column, Cells, Menus, creating, opening, saving, and printing worksheet; working with Range

Editing information: Entering text, numbers and formulae, AutoSum, AutoFill, spell checking

Working with Functions: Statistical, Mathematical and String functions, date and Time functions, Trigonometric functions

Working with charts: Line graphs, Pie charts, Bar graphs, adding Titles, Legends etc. to charts, Printing Charts

Presentation Software:

Basic features, selecting design templates, creating, saving and printing a simple presentation, various views, Adding multimedia.

References :

1.	Basandra, S.K.	:	Computers Today's by Galgotia Publications, N.Delhi, 2011.
2.	Sanders, N.Y.	:	Computers Today TMH, (Int. ed.), 1988.
3.	Sinha, P.K.	:	Computer Fundamentals N.D.: BPB., Pub. 2003.
4.	Rajaraman, V.	:	Fundamentals of Computers N.D.; PHI, 2010.
5.	Texali, R.K.,	:	PC Software made simple Tata McGraw Hill, N.D., 2001.
8.	Curtin, N.D,	:	Information Technology
9.	Mansfield, Ron	:	Compact Guide to Windows, Word and Excel BPBPublishers. N.D. BPB Pub. (Int. ed.)

Paper – C : Practical on Paper - A

Total Periods (6 Periods/week): 60

Max Marks: 25

Exam Hours: 3

Note for the Paper setter: Paper will be set at the time of examination. Due weightage may be given to the practical note-book and assignments.

SECOND SEMESTER

Paper – B : Computer Programming using C

Total Periods (6 Periods/week): 60

Max Marks: 65

Exam Hours: 3

Objective: This course enables the students to familiarize them with problem solving on computers using programming language 'C'.

Note:

- i. The Question Paper will consist of Four Sections.
- ii. Examiner will set total of NINE questions comprising TWO questions from each Section and ONE compulsory question of short answer type covering whole syllabi.
- iii. The students are required to attempt ONE question from each Section and the compulsory question.
- iv. All questions carry equal marks unless specified.

SECTION - A

1. Overview of Programming: Introduction to computer based problem solving: requirements of problem solving by the computer, Problem identification, Problem definition, Examples for problem solving, Problem solving strategies: Program Design and implementation issues: Programs and Algorithms, Top-down design and stepwise refinement (breaking a problem into sub-tasks, Construction of loops-basic programming, establishing initial conditions, terminating conditions, Implementation (use of procedures for Modular design, choice of variable names, documentation of programs, program testing); Programming Environment, Programming Language classification.

SECTION - B

2. C Language : History, Structure of a C program: Data types – (int, float, char, double, void), Data structures; Constants and variables, variable declaration (integer, float, character, logical variables, string variables), Constants; Operators and Expressions: Arithmetic operators, Relational Operators, logical operators, Expressions; Control constructs: if-else, for, while; Arrays: Array declaration, one and two dimensional arrays; Functions-Fundamentals: General form, function arguments, Return value, Basic I/O: Formatted input/ Output, Unformatted Input/Output; Program Design examples; Advanced features: Type modifiers and storage class specifiers for data types, Bit operators, ? Operator, & operator, * operator, Type casting. Type conversion; Advanced Programming Techniques: Control constructs: do-while, switch statements, break and continue, exit() function, goto and label; Scope Rules: Local and Global variables.

SECTION – C

3. Scope rule of functions; Functions: Parameter passing –call by value and call by reference, calling functions with Arrays, argc and argv; Recursion: Basic concepts, Design examples (Tower of Hanoi, Recursive quick sort); Dynamic Data structures in C: Pointers, the & and * operators, Pointer expression, Pointer assignments, Pointer arithmetic, Pointer comparison. The dynamic allocation functions – malloc and calloc.

Pointer Vs Arrays, Arrays of pointers, Pointers to Pointers, Initialising Pointers, Pointers to functions, function returning Pointer, Functions with variable number of Arguments.

SECTION - D

4. Structures: Basics of Structures, Declaring a structure, Referencing structure elements, Array of structures, Passing structures to functions, passing entire structure to functions, Structure Pointers, Declaring a structure pointer, Arrays and Structures within Structures; Unions: Declaration, Uses, Enumerated data types, typedef, Example algorithms: linked list: insertion, deletion and search; File Handling: The file Pointers, file accessing functions (fopen, fclose, putc, getc, fprintf); C preprocessor: # define, # include, #undef, #conditional compilation directives (#if, #else, #elif, #endif, #def and #ifndef); C Standard Library and Header files, Header files (stdlib.h), ctype.h, string.h, math.h, stlib.h, time.h) etc., Standard library functions, string functions, Mathematical functions, Date and time functions, Variable argument list functions, Utility functions, Character class test functions.

References :

1.	Kanetkar, Yashavant	:	Let us C, BPB Publications, N.D. BPB, 8 th Rev. ed.
2.	Gottfried, B	:	Theory and problem of Programming in C, Schaum Series. N.D.: TMH, 2 nd ed. (Ind.
3.	Kernighan & Ritchie	:	The C Programming Language PHI
4.	Kenneth A.	:	C Problem Solving and Programming, PHI

Paper – D : Practical on Paper - B

Total Periods (6 Periods/week): 60 Max Marks: 25 Exam Hours: 3
 Note for the Paper setter: Paper will be set at the time of examination. Due weightage may be given to the practical note-book

THIRD SEMESTER

Paper – A : C o m p u t e r Programming using C++

Total Periods (6 Periods/week): 60

Max Marks: 65

Exam Hours: 3

Objective: The objective of the paper is to familiarize the students with steps in problem solving on computers and create skills in programming using C++.

Note:

- i. The Question Paper will consist of Four Sections.
- ii. Examiner will set total of NINE questions comprising TWO questions from each Section and ONE compulsory question of short answer type covering whole syllabi.
- iii. The students are required to attempt ONE question from each Section and the compulsory question.
- iv. All questions carry equal marks unless specified.

SECTION - A

1. Concepts of Object Oriented Programming: Object, class Encapsulation, Data Hiding, Inheritance, Polymorphism, Analysis and design of system using Object oriented approach.

Structure of a C++ program: Include files, Declaration of an object, main function, I/O streams.

SECTION - B

2. Class and Objects:
Class declaration: Data members, Member Functions, Private and Public members, data hiding and encapsulation, arrays within a class.

Class function definition: Member function definition inside the class declaration and outside the class declaration, scope resolution operator, Private and public member function, nesting of member functions.

Creating objects, accessing class data members, accessing member functions, arrays of objects, objects as function arguments: Pass by value, pass by reference, pointers to objects.

Constructors and destructors:

Constructors : Declaration and definition, default constructors, parameterized constructors, copy constructors, destructors: Definition and use.

SECTION - C

3. Function overloading: declaration and definition.

Inheritance-Extending classes: Concept of inheritance, base class, derived class, defining derived classes, visibility modes, private, public, protected; Single inheritance: privately derived, publicly derived;

making a protected member inheritable, access control to private and protected members by member functions of a derived class, multilevel inheritance, nesting of classes.

SECTION - D

4. Data Structures: Linked Lists, Queues, Stacks and Trees, Sorting algorithms.

References :

1.	Stroustrup, Addison Wesley	:	The C++ Programming Language
2.	Lafore, Robert Galgotia, New Delhi.	:	Object Oriented Programming in Turbo C++
3.	Balagurusamy, E.	:	Object Oriented Programming with C++ / TMH, N. TMH
4.	Schildt, Herbert	:	Schildt's advanced Win95 Prog. in C & C++ / MH
5.	Schildt, Herbert	:	C++ The complete Reference, TMH, New Delhi: TMH

Paper – C : Practical on Paper - A

Total Periods (6 Periods/week): 60 Max Marks: 25 Exam Hours: 3

Note for the Paper setter: Paper will be set at the time of examination. Due weightage may be given to the practical note-book and assignments.

FOURTH SEMESTER

Paper – B : Data Networks and Web Based Application

Total Periods (6 Periods/week): 60 Max Marks: 65 Exam Hours: 3

Objective: The objective of the module is to familiarize the students with fundamentals of computer Networks.

Note:

- i. The Question Paper will consist of Four Sections.
- ii. Examiner will set total of NINE questions comprising TWO questions from each Section and ONE compulsory question of short answer type covering whole syllabi.
- iii. The students are required to attempt ONE question from each Section and the compulsory question.
- iv. All questions carry equal marks unless specified.

SECTION – A

1. Computer Networks

Introduction: Network definition, Network hardware and software, network topologies, uses of computer Networks, OSI reference model, TCP/IP reference model. Comparison of OSI & TCP/IP reference models.

Physical Layer: Transmission Media, Switching, ISDN and its service, Multiplexing, Modems.

Data Link Layer: Design issue, Error detection and correction codes, elementary data link protocols, static and dynamic channel allocation, Introduction to IEEE standards, sliding window protocol.

SECTION - B

2. Network Layer: Design issues, routing algorithms, shortest path routing, flooding, broadcast & Multicast routing congestion control and internet working.

Application Layer: Network security & privacy, data compression and cryptography. Electronic mail, The WWW, Multimedia, Audio, Video, Remote login, file transfer.

SECTION - C

3. Internet Programming

Internet: Evolution of Internet, Future of Internet, Services provided on the Internet, Internet Access Methods World Wide Web: Evolution of WWW, Future of WWW, Fundamentals of WWW.

Hypertext Markup Language: Introduction, Building Blocks of HTML, Lists, Links, Images in HTML

SECTION - D

4. Advanced HTML: Tables, Frames, Forms, Cascading Style Sheets: Introduction, CSS positioning Fundamentals of Java Programming: Java Vs. C++, Byte lode, Java virtual machine, constants, variables, data types, operators, expressions, control structures, defining class, creating objects, accessing class members, constructions, method overloading.

References :

1.	Kraynak & Hubraken,	:	Internet 6 in 1 , PHI, N.D. : PHI.
2.	Kasser,	:	Using the Internet By, PHI, N.D. : PHI.
3.	WALL,	:	Using the World Wide Web PHI,
4.	Phillips,	:	Using HTML PHI,
5.	Randall & Jones,	:	Special Edition using Front Page, PHI.
6.	Liang,	:	An Introduction to Java Programming PHI.
7.	Campbell, B., Techmedia,	:	Dynamic HTML N.D.: Techmedia,
8.	Frentzen, Jeff & Henry Sobotka,	:	JavaScript, Tata McGraw Hill.
9.	Tannenbaum, A.S.	:	Computer Networks PHI, N.D. : PHI,
10.	Stallings, William	:	Local Area Networks by Macmillian Pub. Co.
11.	Black,	:	Data Networks PHI
12.	Nance, Bary	:	Introduction to Networking PHI

Paper – D : Practical on Paper - B

Total Periods (6 Periods/week): 60

Max Marks: 25

Exam Hours: 3

Note for the Paper setter: Paper will be set at the time of examination. Due weightage may be given to the practical note-book and assignments.

FIFTH SEMESTER

Paper – A : Database System and VB .NET

Total Periods (6 Periods/week): 60

Max Marks: 65

Exam Hours: 3

Objective: The objective of the paper is to create skills in RDBMS and visual Basic. The students should be able to independently develop database projects.

Note:

- i. The Question Paper will consist of Four Sections.
- ii. Examiner will set total of NINE questions comprising TWO questions from each Section and ONE compulsory question of short answer type covering whole syllabi.
- iii. The students are required to attempt ONE question from each Section and the compulsory question.
- iv. All questions carry equal marks unless specified.

SECTION – A

1. **Overview of the visual Studio .NET IDE:** Menu Bar and Tool Bar, Solution Explorer, ToolBox, Properties, Displaying and printing Text, Displaying Image, Arithmetic, relational operators, Control structures (branching, looping) , assignment operators.
2. **Procedures :** Introduction, Modules, classes, sub Procedures, function procedures, passing arguments (pass by value Vs pass by reference), Recursion: factorial, Fibonacci series

SECTION - B

3. **Arrays and Strings:** declaring and allocating Arrays, passing Arrays to procedures. Sorting Arrays using Bubble Sort, searching Arrays using Linear Search, Binary Search, String functions
4. **Accessing Data with ADO.NET:** Understanding ADO.net Object model, architecture, and components, Database, Connecting to and querying an access data source, Creating Applications which can Insert, Delete, and Update information from a database using SQL statements, viewing data using DataGridView Control.

SECTION – C

5. Introduction to RDBMS: Approaches to Data Management, Database management - An Evolutionary Phenomenon, Introduction to DBMS, The 12 Rules (Codd's Rule) for an RDBMS, Relational Database Management System (RDBMS).
6. Introduction to SQL :
Introduction to SQL, Data Types, Querying database tables, Conditional retrieval of rows, Working with Null Values, Matching a pattern from a table, ordering the result of a Query Aggregate Functions, Grouping the Result of a Query, ROLLUP Operation: Getting Sub Totals, CUBE Operation: Getting Cross Tabs, Command Summary.

7. Querying Multiple Tables: Collating Information: Equi Joins, Cartesian Joins, Outer Joins, Self Joins, SET Operators: Union, Intersect, Minus; Nested Queries.
8. Functions:
Functions, Column Functions: Arithmetic Functions, Character Functions, Date Functions, General Functions, Group Functions.

SECTION - D

9. Data Manipulation and Control-I
Data Definition Language (DDL), Creating Tables, Creating a Table with data from Another table, Inserting Values into a Table, Updating Column(s) of a Table, Deleting Row(s) From a Table, Dropping a Column, Introduction to Views, Manipulating the Base table(s) through views, Rules of DML Statements on Join Views, Dropping a View , Inline Views, Materialized Views.
10. Data Manipulation and Control-II
Database Security and Privileges, Grant Command, Revoke Command, Application Privileges Management, Enhancing Performance, Sequences, Maintaining Database Objects, COMMIT and ROLLBACK.
11. PL/SQL-I
Introduction to PL/SQL, The Advantage of PL/SQL Block Structure, PL/SQL Architecture, Fundamentals of PL/SQL, PL/SQL Data Types, Variables and Constants, Scope and Visibility of a Variable, Assignments, and Expressions, Operator Precedence, Referencing Non-PL/SQL Variables, Built-in-Functions, Conditional and Iterative Control, SQL Within PL/SQL, Writing PL/SQL Code, Composite Datatypes.
12. PL/SQL-II
Cursor Management in PL /SQL, Cursor Manipulation, Implicit cursor Attributes, Exception Handling in PL/ SQL , Predefined Exceptions, User Defined Exception.

References :

1.	Harold Davis	:	Visual Basic Secrets.
2.	Natham Gurewich and Ori Gurewich	:	Visual Basic in 21 days
3.	Brierley, E.	:	Visual Basic 6 How To / Techmedia
4.	Cornell, G,	:	Visual Basic 6 from the Groundup/TMH, N.D.
5.	Evangelos, Petroustor:	:	Mastering VB 6.0, BPB
6.	Jerke, N.	:	The Complete Reference VB 6.0, TMH.
7.	Cornel, Gary	:	Visual Basic from the Ground up, TMH
8.	Perry, James T. & Lateer, Joseph G.	:	Understanding Oracle, BPB

Paper – C : Practical on Paper - A

Total Periods (6 Periods/week): 60 Max Marks: 25 Exam Hours: 3

Note for the Paper setter: Paper will be set at the time of examination. Due weightage may be given to the practical note-book and assignments.

SIXTH SEMESTER

Paper – B : Linux Administration

Total Periods (6 Periods/week): 60 Max Marks: 65 Exam Hours: 3

Objective: The objective of the paper is to familiarize the students with Linux Operating System.

Note:

- i. The Question Paper will consist of Four Sections.
- ii. Examiner will set total of NINE questions comprising TWO questions from each Section and ONE compulsory question of short answer type covering whole syllabi.
- iii. The students are required to attempt ONE question from each Section and the compulsory question.
- iv. All questions carry equal marks unless specified.

SECTION - A

1. Introduction to Operating Systems, its need and services, Simple Batch systems, Multi-programmed batched systems, Time sharing systems, Parallel systems, distributed systems and real time systems.
2. Introduction to Linux: What is Linux, Linux's History, Minimum System Requirements; Installing Linux : Working with Linux, Floppy-less Installation, Boot and Root Disks, Choosing Text or Graphics Installation, Setting up your Hard Drive, Formatting the Partitions, Setting up the Ethernet, Configuration X, Selecting packages to Install, Using LILO; Partitioning the Hard Disk : Linux Swap Space Partitions, Linux's fdisk, Enabling the Swap Space for Installation, Creating the Linux File-system partition, Using LILO
3. Using Linux: Starting and Stopping your Linux System, Linux Shutdown Commands, Login, Passwords, Creating a New Login, Logging Out; Trying out your new Login : Linux Error Messages, Search Paths; The who Command, Commands and Programs.

SECTION - B

4. Basic Linux Commands: How Linux Commands Work, Command Options, Other Parameters, Input and Output Redirection, National conventions used to Describe Linux commands, Online help available in Linux, The Linux Man pages, Finding keywords in Man pages, The bash shell help facility; Wildcards : * and ?, Environment Variables, Processes and How to Terminate them, The process status Command : ps, The process termination command : kill, Becoming someone else, the su command, the grep command.
5. Using the File System: Overview of files, Common types of files, filenames, Directories an Overview, Parent directories and sub-directories, The root directory, How directories are named, The home directory; Navigating the Linux file System :

pwd command, Absolute and relative filenames; cd command, Creating and Deleting files : Cat, Creating Directories, Moving and Copying files, Moving and Copying with Wildcards, Moving Directories, Removing files and directories, Fear of Compression: The Zipless file, Important directories in the Linux file System : / , /home, /bin, /usr, /usr/bin, /usr/spool, /dev, /usr/bin, /sbin, /etc.

6. File and Directory Permissions: File and Directory ownership, User and ownership, Groups, Changing group ownership, File Permissions, UMASK Setting, Changing File Permission, Changing directory permissions; Bash : What is Shell ? How the Shell gets Started, The most common Shells; The Bourne again shell (Bash): Command-line Completion, Wildcards, Command History, Aliases, Input Redirection, Output Redirection, Pipelines Shell, Prompts, Job control, Customizing bash, bash commands, bash variables.

SECTION – C

7. Linux - tcsh: An Introduction to tcsh, Command completion, Wildcards, Command History, Aliases, Input and Output Redirection, Pipelines, Prompts, Job Control; Key Bindings, Correcting Spelling Errors, Pre-commands, Change directory Commands, Monitoring Logins and Logouts, Customizing tcsh, tcsh Command Summary, tcsh variables.
8. Shell Programming: Creating and Running Shell Programs, Using variables : Assigning a value to a variable, Accessing the value of a variable, Positional Parameters and other Built-In Shell Variables; The Importance of Quotation Marks : The test Command, The tcsh Equivalent of the test command, Conditional Statements : if Statement , case Statement; Iteration Statements : for Statement, while Statement, until Statement, shift Command, select Statement, repeat Statement, Functions.
9. Editing and Typesetting: Text Editors vi, The vi Editor, Starting vi, vi modes, Inserting Text, Quitting vi, Moving the Cursor, Deleting Text, Copying and Moving Text, Searching and Replacing Text, Setting Preferences.

SECTION - D

10. Linux for System Administrators: System Administration Basics, The root Account, Starting and Stopping the System, Booting from a Floppy, Using LILO to Boot, Shutting Down Linux; Mounting File Systems : Mounting a Floppy, Creating a New file System, Un-mounting file Systems, Checking file Systems, Using a file as Swap Space; Compressing files with gzip and compress : Using tar, Backups, Setting up your System : Setting the System Name, Using a Maintenance Disk, how to reset forgotten root password, Setting the Login Message.
11. Networking & Network Services : What is TCP/IP ? Hardware Requirements, Configuring Linux Files, Setting up the Dummy Interface, Configuration Files, Testing and Troubleshooting, The netstat Command, ping, Mail, News, NFS, NIS, www, FTP, DNS.

References :

1.	Parker, Tim	:	Linux Unleashed Third Edition, Techmedia, New Delhi
2.	Tackett, J	:	Special Edition using LINUX, PHI, Delhi : PHI,
3.	Norton, P	:	Complete guide to LINUX, Techmedia. New Delhi. :

Paper – D : Minor Project Based on VB.Net, Linux

Total Period: 6 per week

Max. Marks: 25

Development of any application using VB.net (Front End) and Oracle (Back End). The evaluation of Project will be done on the basis of Project report submitted by the candidate and Viva Voce examination.

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