" A" Re-accredited By NAAC

(2014) with CGPA-3.16

Revised Syllabus For

Bachelor of Science(Computer Science)

(Sem. – V and VI)

Syllabus to be implemented from June 2015-16 onwards.

Shivaji University, Kolhapur

Revised Syllabus for the B.Sc.- III (Computer Science)

To be implemented from June-2015-16 onwards

TITLE : Subject—B.Sc. (COMPUTER SCIENCE)

Optional/Compulsory/Additional/IDS under the Faculty of Science

Semester - V

Paper - IX : Computer Networking

Paper – X : Visual Programming Using C#

Paper –XI : Linux Operating System

PAPER –XII : PHP and MySQL

Semester - VI

Paper - XIII : Network Technology and Windows Server 2008

Paper – XIV : Java Programming

Paper –XV : Advanced Linux Applications

PAPER –XVI: E-Commerce

YEAR OF IMPLEMENTATION: New/Revised Syllabi will be implemented from June 2015

Structure and Scheme of Teaching and Examination:

B.Sc.Part- III (Computer Science)						
Paper No.	Name of The subject	Teaching Scheme		Examination Scheme		
		Theory per week	Total Practical per week per batch	Theory Marks	Internal Marks	Total Marks
B.Sc.Part- III (Computer Science) Semester - V						
IX	Computer Networking	3	5	40	10	50
X	Visual Programming Using C#	3	5	40	10	50
XI	Linux Operating System	3	5	40	10	50
XII	PHP and MySQL	3	5	40	10	50
B.Sc.Part- III (Computer Science) Semester – VI						
XIII	Network Technology and Windows Server 2008	3	5	40	10	50
XIV	Java Programming	3	5	40	10	50
XV	Advanced Linux Applications	3	5	40	10	50
XVI	E-Commerce	3	5	40	10	50

*** Practical batch contains 12 students in a single batch.**

a)Theory: Three lectures per theory course per week.

b) Practicals: Five periods (4 hours) per week per batch of 12 students.

SCHEME OF EXAMINATION:

• The Theory examination shall be conducted at the end of each semester.

• The Theory paper shall carry 40 Marks.

• There will be 10 internal marks per paper per semester.

• The practical examination shall be conducted at the end of each year.

• The Practical paper shall carry 50 marks and project work shall carry 100 marks.

• The evaluation of the performance of the students in theory shall be on the basis of examination.

STANDARD OF PASSING:-

a) A student will have to secure 35% of marks in Theory, Internal and Practical examination separately in order to pass in those heads of passing. The student will have to score 14 marks out of 40 and 4 Marks out of 10 for each paper.

b) Internal Examination will be compulsory for all students which includes one seminar or tutorial of 10 marks each in fifth semester and sixth semester for each paper. If the student is absent/fail in internal examination then he/she will have to clear the internal Examination in subsequent attempts in following semester.

COMMON NATURE OF QUESTION FOR THEORY PAPER MENTIONED SEPARATELY.

B.Sc. – III(Computer Science) Semester V

Paper – IX : Computer Networks

Unit-1 Introduction to Computer Network (10)

Definition, Goals, Application, Basic Concept: Entities, Layers, Protocols, Computer Network. Classification Of Computer Network: Transmission Techniques, Scale, Connection Method, Functional Relationship, Network Topology, services provided Protocols, Network Architecture: Protocol Hierarchy, Information flow design issues for the layers, Merits and demerits of layer architecture, service primitives, standardization network.

Unit-2 Data Communication (10)

Objectives, four analysis, Band limited signal, Maximum data rate & channel. Transmission Impairments: Attenuation Distortion, Delay, Dispersion, Noise. Data Transmission modes: Serial & Parallel, Simplex, Half Duplex, Full Duplex & Simplex. Synchronous & Asynchronous Transmission.

Unit-3 Introduction to Windows Server 2008 (10)

Managing Windows Server 2008:

1. Working with administrative tool using control panel, Graphical administrative tool & command line utility.
2. Working with computer management: Computer management system tools, Computer management storage tools, computer management services and application tools.
3. Using system console.

Unit-4 Managing Active Directory (10)

Active Directory Physical Architecture: Top level view, Local security Authority, Directory service architecture, Data storage architecture. Logical Architecture: Object, Domain, Trees & forests Trust. Managing Users & Computers, Managing Domain user account, Types of user, User account policies, Password setting, User account capabilities, Properties & Rights, Create computer account, Organization Chart.

Reference Books:

1. Computer Networks By Tannenbaum
2. Windows Server 2008 By William R. Stanek(Prentice- Hall Publications)
3. Data Communications and Networking By Behrouz Forouzan

Practical experiments:

1. Installation of windows server 2008.
2. Create node and connect it to server including crimping.
3. Installation of active directory.
4. Create use after installation of active directory.
5. Study of properties of user account.
6. Time restriction for user login.
7. Password security policy experiment.
8. Create computer account.
9. Create organization unit and different experiment related to it.
10. Show demonstration of creation of new domain.

Paper – X Visual Programming Using C#

Unit -II Introduction (7)

1.1 Overview, Architecture, Features of .NET ,
1.2 Meta data, CLR, Managed and unmanaged code
1.3 CTS, CLS, .NET base classes, JIT Compiler
1.4 Introduction to Visual Studio .NET IDE

Unit -II Introduction To C# (10)

2.1 Introduction to C#, Entry point method, command line arguments
2.2 Compiling and building projects, Compiling a C# program using command line utility, CSC.EXE, Different valid forms of main.
2.3 Global stack and heap memory, reference type and data type, casting-implicit and explicit
2.4 Boxing and unboxing, pass by value and pass by reference and out parameters
2.5 Partial class, DLL, Difference between DLL and EXE

Unit-III Introduction to Web Programming (13)

3.1 Understanding role of WEB server and WEB browser, HTTP request and response structure.
3.2 Introduction to ASP, Types of path, FORM tag
3.3 Types of server controls
3.4 Validation controls-Base validator, compare validator, range validator, grouping control validator
3.5 Web forms life cycle.
3.6 Event handling in WEB forms, Response.Redirect, Server.Response, cross page, post back property of button.
3.7 ASP.NET state management
3.8 WEB.config, globalization and localization, AppDomain

Unit-IV ADO .NET (10)

4.1 Introduction to ADO.Net
4.2 ADO.NET Architecture- Connection, command, data reader, data adapter, data set
4.3 Understanding connected layer of ADO.NET and disconnected layer of ADO.NET

Reference Books-

1. Inside C# - By Tom Archer, Andrew Whitechapel (Microsoft Pub)
2. ASP.NET Black Book- By Steven Holzner
3. Professional ASP.NET 2 –Wrox Series- Wallace B. McClure

Practical Experiments:

Ques1. Write a console application for swapping of 2 numbers using Pass by value.

Ques2. Write a console application for swapping of 2 numbers using Pass by Reference.

Ques3. Write a C# program that uses explicit keyword.

Ques4. Write a C# program that uses implicit keyword.

Ques5. Write a C# program that print hello word using command line argument.

Ques6. Write a C# program to implement out parameter.

Ques7. Write an ASP.Net code to manipulate database as Inserting, Updating, and Deleting data.

Ques8. Write an ASP.Net code to design Homepage for college.

Ques9. Write an ASP.Net code to perform validations of form using all validation controls.

Ques10. Write an ASP.Net code that demonstrates cross page postback property.

Ques11. Create a web page using HTML Server Controls & Web Server Controls.

Ques12. Create an web page that shows navigations.

Ques13. Write an application that receives the following information from a set of students:

Student_Id,Student_Name,Course_Name,Date_of_Birth

The application should also display the information of all the students once the data is entered using ADO.Net.

Ques14. Write an ADO.Net application that demonstrates disconnected architecture.

Ques15. Write an ADO.Net application that demonstrates connected architecture.

Paper – XI Linux Operating System

Unit -1: Introduction (10)

Linux History and architecture of Linux system, shell, Types of shell's, Operating system services, Kernel, Kernel shell relationship, Login, Logout, Remote login, GPU(General Purpose Utilities) clear, script, cal, who, bc, wc, head, tail.

Unit -2: Handling Buffer Cache, File and Directories (10)

Buffer, headers, structure of the buffer pool, scenarios for retrieval of a buffer, advantage and disadvantage of the buffer cache, inodes, structure of regular file, change file access permissions with chmode command, directories, directory management commands- cd, mkdir, rmdir.

Unit -3: System calls and Process (10)

Open, read, write, process states and transitions, process creation, signals, process termination, a waiting process termination, process management- ps, kill, background processing, no hang up, job scheduling using at command.

Unit -4: VI Editor and simple shell programming (10)

Use and features of vi, modes of operation- a) Commamd mode- text management, repeat factor. b) Insert mode- insert, append, replace text. c) Ex mode- saving the text, global substitution etc. Writing and running the shell script, read, echo, decisions and loop control structure, file tests, exit etc.

Reference Books:

1. The design of Unix operating system – Maurice J. Bach.
2. Linux commands – Instant reference by Bryan PF affenberge
3. Unix concept and application – Sumitabha Das
4. Unix shell programming – Yashwant kanetkar

Practical Experiments:

1. Login, logout procedure (user/ login name and password)
2. Copy, move, delete files form different directories.
3. Change file access permissions using chmod and confirm using ls –l command
4. Creating text files using VI editor.

Paper – XII PHP and MySQL

Unit-1:Fundamental of PHP **(10)**

1.1 Concept of PHP
1.2 Constants, variables declaration
1.3 Comments
1.4 Data types
1.5 Operators
1.6 Command line arguments

Unit-2: Branching and Looping statements **(10)**

2.1 Conditional statements
    2.1.1 If-else
    2.1.2 Switch
    2.1.3 Ternary operators
2.2 Looping statements
    2.2.1 For loop
    2.2.2 While loop
    2.2.3 Do-while loop

Unit 3: Arrays in PHP **(8)**

3.1 Creating arrays
3.2 Inserting elements in arrays
3.3 Retrieving elements from array
3.4 Displaying arrays
3.5 Sorting array elements

Unit-4:Developing Applications in PHP using MySQL **(12)**

1.1 Introduction to Databases
    1.1.1 Creating database
    1.1.2 Creating tables
    1.1.3 Inserting values in table
    1.1.4 Displaying, changing, searching, deleting records from the table
4.2 Developing applications in PHP
    4.2.1 Arithmetic operators through GUI
    4.2.2 Web calculator
    4.2.3 SQL queries- insert, select, delete, update, where, order by.

Reference Books:

1. PHP and MySQL By Dreamtech Publications
2. PHP 5.1 for Beginners – By Ivan Bayross and Sharanam Shah(Shroff Publishers & Distributors)
3. Beginning PHP 6, Apache, MySQL Web Development- By Timothy Boronczyk, Elizabeth Naramore, Jason Gerner, Yann Le Scouarnec, Zeremy Stolz, Michael K. Glass
4. PHP and MySQL by Rajendra Salokhe(Aruta Publications)

Practical Experiments:-

I) Echo PHP Function, PHP Variables, If and Switch Statements

1. Create a web page evenodd.php into root directory of your local web server. Here, write a script for finding out whether it is an odd number or even number and display on the screen.
2. Create a web page for displaying message based on current time: Good Morning, Good Afternoon, Good Evening.
3.Accept user name and password from user and navigate to home page with suitable message.

II) PHP Operators

1. Write a PHP Script to declare 2 variables with specific numeric value of your choice and Perform the following operations: Addition, Subtraction, Multiplication and Division. Also display the Result on the screen.
2. Write a PHP Script to declare 2 variables with specific numeric value of your choice and find out the greater number between the two numbers.

IV) Loops

1. Write a PHP Script to print the following pattern on the Screen:

```
*****
****
***
**
*
```

2. Write a PHP script to print sum of digits of entered number
3. Write PHP script to display following pattern

```
A
A B
A B C
A B C D
A B C  D E
```

4. Write PHP script for displaying prime numbers from 1 to 100 numbers

B.Sc. – III(Computer Science) Semester VI

Paper – XIII Network Technology and Windows Server 2008

Unit-1 Reference Model (10)

ISO-OSI: principle of layers, data link, Network, Transport, Session, Presentation & Application (Each layer with its function, Protocol, Design issues, Components),TCP/IP: Concept, history, Layers: Host to network, Internetwork, Transport, Application. Comparative study of ISO-OSI & TCP/IP

Unit-2 Physical Layer: (10)

Objective, Network topology, Linear, Ring, Star, Hierarchical. Topology, comparison, consideration when choosing a topology. Switching- Circuit, message, Packet, Implementation of packet switching, Relation between packet size & transmission time. Comparison of switching techniques, Multiplexing: FDM- Frequency division multiplexing, WDM- Wavelength Division Multiplexing, TDM- Time Division Multiplexing,Guided and Unguided Media.

Unit-3 File Sharing and Security: (10)

File sharing essential: Understanding file sharing model, using and finding shares, Hiding & controlling share access, special & administrative shares, Creating and Publishing Shared Folders, Cresting shares by using: Windows explorer Computer Management, Publish shares in active directory

Managing Shares Permissions: Understand shares permission, Configuring share permission.

Managing File And Folder Permission: File & Folder ownership, permission inheritance for files & folders, Configuring files and folder permission, Auditing files & folder Access. Kerboes protocol.

Unit-4 Managing Group Policy

Managing Group: Understanding group, By default Group, Creating Group, Adding Member To Group, Delete Group, Modifying Group.

Understanding Group Policy: Local & Active Directory Group Policy, Group policy setting, Group policy architecture.

Implementation Group Policy: Working with local group policy, Group policy management console, Default group policy object, managing group policy inheritance & processing.

Group Policy Inheritance, Overriding inheritance, Blocking inheritance, Enforcing inheritance, Filtering group inheritance.

Practical experiments:

1. Create group
2. Create group and add user to group
3. Create folder and assign rights
4. Create folder and assign rights to user
5. Create group set its policy
6. Create orgnisation unit and assign rights for folder
7. Login user from node and access data from folder
8. Modify properties of group
9. Delete group

Reference Books:

1. Computer Networks By Tannenbaum

2. Windows Server 2008 By William R. Stanek(Prentice- Hall Publications)

3. Data Communications and Networking By Behrouz Forouzan

Paper – XIV Java Programming

Unit- I- Introduction To Java **(10)**

1.1 History and features of Java Programming
1.2 Difference between Java & C++
1.3 Java Environment
1.4 Java tokens, constants, variables, data types, type casting
1.5 Operators and Expressions
1.6 Implementing Java Program
1.7 Branching and looping statements
1.8 Class, objects, methods
1.9 Constructors and destructor

Unit-II- Inheritance and Packages **(10)**

2.1 Defining sub class, subclass constructor
2.2 Inheritance-Multiple and hierarchical
2.3 Defining packages, system packages
2.4 Creating & accessing packages
2.5 Adding a class to package
2.6 Polymorphism- function overloading and over ridding, its difference

Unit-III- Multithreading and Exception Handling **(10)**

3.1 Creating threads, extending a thread class- declaring the class, run() method
3.2 Stopping and blocking threads
3.3 Life cycle of thread
3.4 Using thread method
3.5 Thread priority
3.6 Introduction to exception
3.7 Syntax of exception handling code
3.8 Multiple catch statement
3.9 Using finally statement
3.10 Throwing exception

Unit-IV- Applets Programming & Introduction to AWT **(10)**

4.1 Introduction to applets
4.2 Building applet code
4.3 Applet life cycle
4.4 Adding applet code to HTML file
4.5 Introduction to Abstract Window Toolkit (AWT)

Reference Books:

1. Programming with JAVA, A Primer, 2nd Editions, E Balagurusamy
2. Java Programming- Rajendra Salokhe (Aruta Pub)
3. Core Java an integrated approach – Dr R. Nageshwara

Practical Sample programs

1. Java programs based on command line arguments
2. Java programs based Type Casting
3. Java programs based on branching and looping statements
4. Java programs based on constructors
5. Java programs based on method overloading
6. Java programs based on interfaces
7. Java programs based on inheritance
8. Java programs based on packages
9. Java programs based on multithreading
10. Java programs based on exception handling
11. Java programs with applets.

Paper – XV Advanced Linux Applications

Unit -1: Memory management and advanced VI (10)

Memory management- swapping, demand paging, deleting and moving text (d, p and P), yanking text (y), filtering the text (!), Ex mode- handling multiple files, inserting file and command outputs, moving text from one file to another.

Unit -2: Advanced Filters (10)

Sed – syntax, line addressing, multiple instructions (-e .-f) context addressing, internal commands used by sed –i, a, d, p, r, w, q, s etc., gawk- syntax, field level operations, formatted outputs, use of variables and expressions, BEGIN and END section, built-in variables, arrays, built-in functions- system, length, substr, split etc., types of meta characters.

Unit -3: Advanced shell programming (10)

Shell and subshell, set command, command line arguments, exporting shell variable, arrays, shell function, writing data entry script to create data files, data validations before storing on hard disk.

Unit -4: System administration (10)

Login with root, su, communicate with users-wall, news, booting and shutdown process, mangibg disk space- df, du, ulimit, find, backup- cpio, printer management- lpsched, lpstat, lpadmin, lpmove, reject, disable etc., mounting a file system, unmounting a file system.

Reference Books:

2. The design of UNIX operating system – Maurice J. Bach.
3. Linux commands – Instant reference by Bryan PF affenberge
4. Unix concept and application – Sumitabha Das
5. Unix shell programming – Yashwant kanetkar

Practical Experiments

1. Using vi -Handling multiple file, copy paste, cut paste and filtering the text .
2. Filtering text using sed, sed instructions for supplied applications, Use of filter commands
3. Gawk programs for generating formatted reports
4. Shell scripts using command line arguments, used defined functions , data validation and creating data files

Shell scripts-

1. Shell script to get any number and display its square , cube sum of its digits
2. Use of command line arguments in a script.
3. Script using if statement.
4. Script handling use of case structure.
5. Scripts with command substitution such as to count number of files, number of users working on Linux network etc,

Paper – XVI E-Commerce

Unit-I: Introduction **(10)**

1.1 E-Commerce- Concept, Definition, Goals
1.2 Components and functions
1.3 Advantages and Limitations
1.4 Challenges and opportunities
1.5 E-Commerce models-B2B, C2C, C2B, C2G, B2C, B2B
1.6 EDI- Concept, components,
1.7 Working mechanism of EDI
1.8 Advantages and disadvantages of EDI

Unit-II: Electronic payment System **(10)**

2.1 Concept of e-payment
2.2 Difference between traditional and electronics payment system
2.3 Digital cash, cyber cash, e-wallet
2.4 Credit and Debit card system, Smart Card
2.5 Prepaid, post paid and instant payment system
2.6 Electronic funds transfer, NEFT, RTGS

Unit-III: E-Security **(10)**

3.1 Concept of E-security
3.2 Security threats- concept and types
3.3 Malicious code
3.4 Phishing and identity theft
3.5 Hacking and cyber vandalism
3.6 Credit card fraud/Theft
3.7 Spoofing
3.8 Denial of service (DoS)
3.9 Firewall and proxy server

Unit-IV: Security Solutions **(10)**

4.1 Introduction to Cryptography
4.2 Concept of encryption and decryption
4.3 Symmetric and asymmetric key encryption
4.4 Cipher text
4.5 Digital Envelopes
4.6 Digital certificates
4.7 Security socket layer (SSL)
4.8 Limitations of encryption solutions.

References :

1. E-Commerce Concepts , Models , Strategies by -- G.S.V Murthy
2. Internet marketing and E-commerce-Ward Hanson and Kirthi Kalyanam
3. E-Commerce by --Kamlesh K Bajaj and Debjani Nag
4. Electronic Commerce by --Gary P. Schneider1.
5.E-Commerce- Kenneth C.Laudon and Carol Guercio Traver
6. E-Commerce A Managers Guide, Ravi Kalkota

III) Arrays –

1.Declare an array week and assign the value of the days to each index number in the order of occurrence and display the result on the screen.
2. Write a PHP script to display sum of 10 array elements.

V) PHP Special Variables and PHP and HTML

1. Create a php page and create a user form which asks for users information like: name, address, e-mail ID, mobile number and store this information in database.
2. Create a php page and create a user form which asks for marks in five subjects out of 100 and then displays the marksheet of the student. The format is as follows:
Name of Student*:
Marks in Each Subject : Subject 1*, Subject 2*,Subject 3*,Subject 4*,Subject 5*
Total Marks Obtained:
Total Marks:
Percentage:

Note: *All the entries marked (*) are to be input by the user. And use a submit button to post the entries in the form using the POST method.*

NATURE OF QUESTION PAPER AND SCHEME OF MARKING :-

The practical Paper – IV is based on Paper No. IX, X, XIII and XIV.

The practical Paper – V is based on Paper No. XI, XII, XV and XVI.

The practical Paper – VI is of Major Project work done by the student.

NATURE OF PRACTICAL QUESTION PAPER:

1. The practical question paper IV and V for B.Sc.-III(computer science) will be of maximum 50 marks each.
2. The practical paper IV having four questions out of which two questions are based on Paper –IX (Sem.-V) Paper-XIII (Sem.-VI) and two questions are based on Paper X (Sem.-V), Paper-XIV (Sem.-VI)
3. The practical paper V having Four questions out of which two questions are based on Paper – XI (Sem.-V), Paper XV (Sem.-VI) and two questions are based on Paper-XII (Sem.-V), Paper-XVI (Sem.- VI)
4. The Student has to attempt any TWO questions out of FOUR questions. Each question carries 20 marks.
5. 10 marks are for Viva and certified Journal.
6. The student appearing for the practical examination is expected to write paper work for TWO questions. Paper work is compulsory and it includes problem analysis, flowchart, source code and tracing.
7. It is expected to complete the paper work within 120 minutes. The student has to complete his/her actual practical experiment on machine within 90 minutes. The practical based viva will be of 30 minutes duration.
8. The duration of practical will be 4 hours.
9. Practical Paper VI is Project work of 100 marks.

Practical Paper VI : Project work - 100 marks

Project work Guidelines:

1. Institute is expected to conduct Industrial visit to any computerized industry and students are supposed to submit the report based on same.
2. Software development project is to be carried out by the candidate in actual consumer environment taking some real life problem.
3. The candidate is supposed to document and submit the project work according to norms of software engineering i.e. the project document should contain Introduction, detailed design, sample testing and conclusion(Guidelines and other details are mentioned at Appendix -1 and 2)
4. Project will have internal guide to supervise and monitor the progress of the same. The internal guide may assign the project to the student or within the group of student (maximum 2 candidates in group) depending upon the complexity of the problem preferably using access/oracle/MySQL server as a back end and Visual Programming Using C# or PHP or Java Programming.
5. There will be online demonstration of project work in the presence of the external examiner and it will be considered for the evaluation.

6. The mark distribution for Practical paper VI will be as follows:

Project documentation	: 30 marks
On-line Presentation	: 20 marks
Project Based Viva-voce	: 30 marks
Industrial Visit Report	: 20 marks
Total marks	: **100 marks**

Appendix- 1

Guidelines for Project:

Number of Copies: The student should submit two Hard-bound copies of the Project Report.

Acceptance/Rejection of Project Report:

The student must submit an outline of the project report to the college for approval. The college holds the right to accept the project or suggest modifications for resubmission. Only on acceptance of draft project report, the student should make the final copies.

Format of the Project Report:

The student must adhere strictly to the following format for the submission of the Project Report.

a. Paper:

The Report shall be typed on white paper, A4 size, for the final submission. The Report to be submitted to the must be original and subsequent copies may be photocopied on any paper.

b. Typing:

The typing shall be of standard letter size, 1.5 spaced and on one side of the paper only. (Normal text should have Arial Font size 11 or 12. Headings can have bigger size)

c. Margins:

The typing must be done in the following margins:

Left -----1.5 inch, Right ----- 1 inch

Top ----- 1 inch, Bottom ----- 1 inch

d. Front Cover:

The front cover should contain the following details:

TOP : The title in block capitals of 6mm to 15mm letters.

CENTRE: Full name in block capitals of 6mm to 10mm letters.

BOTTOM: Name of the University, Course, Year of submission -all in block capitals of 6mm to 10mm letters on separate lines with proper spacing and centering.

f. Blank Sheets:

At the beginning and end of the report, two white black bound papers should be provided, one for the purpose of binding and other to be left blank.

- Input Design
- Report Design
- Implementation
- Testing

Standard Project Report Documentation Format

a) Covering Page
b) Institute/College certificate
c) Guide Certificate
d) Student declaration
e) Acknowledgement
f) Index (Chapter Scheme)
g) Chapter Scheme (Index)

1) Introduction to Project
   -Introduction
   -Existing System
   -Need and scope of System
   -Organization Profile
2) Proposed System
   -Objectives
   -Requirement Engineering.
   • Requirement Gathering.
   • SRS
3) System Diagrams
   • DFD
   • ERD
   • UML(if applicable)
   System Requirements
   • Hardware
   • Software
4) System Design
   • Database Design
   • Input Design
   • Output Design
5) User Guideline
   - Installation process
6) Source Code
7) Outputs-
   Input screens and Reports (with valid Data)
7) Conclusion and Suggestions
   • Conclusion and suggestions
   • Future enhancement

Bibliography:

Note : Minimum 5 reports are essential as outputs of the project work done by the student..

EQUIVALENCE IN ACCORDANCE WITH TITLES AND CONTENTS OF PAPERS-
(FOR REVISED SYLLABUS)

B.Sc.Part- III (Computer Science) Semester - V			
Old Papers		**New Papers**	
Paper No.	**Titles of the old Papers**	**Paper No.**	**Titles of the New Papers**
IX	Computer Networks	IX	Computer Networks
X	VB.NET Programming Part-I	X	Visual Programming Using C#
XI	Linux Operating System	XI	Linux Operating System
XII	E-Commerce	XVI	E-Commerce
B.Sc.Part- III (Computer Science) Semester – VI			
Old Papers		**New Papers**	
Paper No.	**Titles of the old Papers**	**Paper No.**	**Titles of the New Papers**
XIII	Computer Networks	XIII	Network Technology and Windows Server 2008
XIV	VB.NET Programming Part-II	XIV	Java Programming
XV	Advanced Linux Applications	XV	Advanced Linux Applications
XVI	Web Technology	XII	MySQL and PHP