ETHIRAJ COLLEGE FOR WOMEN
(AUTONOMOUS)
CHENNAI 600008

Accredited with 'A' Grade by NAAC
College with Potential for Excellence

Syllabus

of

B.Sc Computer Science
(Self - Financing)

to be offered from the academic year 2015-16

under the

CHOICE BASED CREDIT SYSTEM

BY

DEPARTMENT OF COMPUTER SCIENCE
ETHIRAJ COLLEGE FOR WOMEN

CHENNAI -600 008

Comp. Sc.

Data Communication Networking:

1. Chapter 3.1, 10.1, 19.1, 19.2 to be included
   Analog and Digital
   Types of Errors, Redundancy
   IPv4 Addresses and IPv6 Addresses

Cloud Computing:

1. Unit – I AND Unit – II from CLOUD COMPUTING BY Kris Jamsa (First eight chapters)

Mobile Communications: Elaborate the main topics or subtopics to be given.

14-3-16

14-3-16

14-3-16

14-3-16

[SUGANYA K]

DEPARTMENT OF COMPUTER SCIENCE
MEMBERS OF BOARD OF STUDIES FOR THE YEAR 2016-2017

The Board of Studies meeting was held on [illegible] at [illegible] in the Department of Computer Science. The members of the Board were:

S.No.	NAME & ADDRESS	SIGNATURE
1	Mrs. Y. Jaya Priya (Chairperson) Head of the Department, Department of Computer Science, Ethiraj College for Women, Chennai.	[illegible]
2	Dr. Mrs. V. [illegible] (University Nominee) Associate Professor, Department of Computer Science, Women's Christian College, Chennai.	[illegible]
3	Mrs. Hannah [illegible] Assistant Professor, Department of Computer science, Anna Adarsh College, Chennai.	[illegible]
4	Dr. Mrs. [illegible] Assistant Professor, Department of Computer Science, Queen Mary's College, Chennai.	[illegible]
5	Mr. Clement [illegible] Chief Information Officer, [illegible], Chennai.	[illegible]
6	Mrs. K. Jane [illegible] Assistant Professor, Department of Computer Science, Ethiraj College for Women, Chennai.	[illegible]
7	Ms. [illegible] Assistant Professor, Department of Computer Science, Ethiraj College for Women, Chennai.	[illegible]
8	STUDENTS REPRESENTATIVES: a) Ms. [illegible] b) Ms. [illegible]	[illegible]

The meeting commenced at [illegible]

The meeting resolved to approve and ratify the syllabi followed by B.Sc Computer Science students admitted during the year 2016-2017.

DEPARTMENT OF COMPUTER SCIENCE

BOARD OF STUDIES

[illegible] APRIL 2024

MINUTES OF THE MEETING

CHANGES IN THE COURSE CURRICULUM:

Semester	Course Title
I	C
II	DATA STRUCTURES USING C
III	DBMS
IV	PYTHON
V	ASP.NET
VI	JAVA PROGRAMMING

ELECTIVE CHANGE

SEMESTER V - a) Data Mining and Data Ware housing

Or

b) Big Data Analytics

SEMESTER VI - a) Artificial Intelligence

Or

b) Information Security

[illegible]

DEPARTMENT OF COMPUTER SCIENCE [B.Sc.]

MEMBERS OF BOARD OF STUDIES FOR THE YEAR 2018-2019

The Board of Studies meeting was held on 20-04-2018 at 2.00 p.m. in the Department of Computer Science [B.Sc.]. The members of the Board were:

S.NO	NAME & ADDRESS	SIGNATURE
1	Mrs. P. [illegible] [Chairperson] Head of the Department, Department of Computer Science, [illegible] College for Women, Chennai.	[signature]
2	Dr. Mrs. PL. Chithra [University Nominee] Associate Professor, Dept of Computer Science, University of Madras, Chennai.	PL. Chithra 20/4/18
3	Dr. Mrs. Anandha [illegible] [Subject Expert] Associate Professor, Head, Dept of Computer Science PG and Research, Quaid-E-Millath Govt. college for women, Anna Salai, Chennai.	[signature]
4	Mrs. Sasi [Subject Expert] Assistant Professor, Dept of Information Technology, Women's Christian College, Chennai.	[signature] 20/4/18
5	Dr. Mrs. Vidhya Durai [Industrial Expert] Director, BNY Mellon Technology Private Limited, Chennai.	[signature]
6	Mrs. K. [illegible] Assistant Professor, Dept of Computer Science, [illegible] college for women, Chennai.	[signature]
7	Mrs. G. Thilagavathy Assistant Professor, Dept of Computer Science, [illegible] college for women, Chennai.	[signature] 20/4/18
8	**STUDENT REPRESENTATIVES:** 1. Ms. G. [illegible] 2. Ms. L. Thilagavathy	[signature] L. Thilagavathy

DEPARTMENT OF COMPUTER SCIENCE

BOARD OF STUDIES MEETING HELD ON 14/3/2016
RECOMMENDATIONS AND SUGGESTIONS OF BOARD MEMBERS

1. Semester IV :

The course title "PRACTICAL IV DBMS USING PL/SQL LAB" should be changed to "PRACTICAL IV DBMS LAB"

THEORY: SUB CODE: CP15/4C/DBS

COURSE TITLE: Database Management Systems

Stored Procedures should be included in Unit V

2. Semester V:

The course are shuffled

Subject Code	Subject Name
CP15/5C/ASP	ASP.Net
CP15/5C/CAR	Computer Architecture
CP15/5C/SOE	Software Engineering
CP15/5C/OPS	Operating Systems
CP15/5E/DMW CP15/5E/MUL	Elective -I: Data Mining and Data Warehousing OR Elective -I Multimedia

ASP.Net : Latest Book edition to be included
Data Mining and Data Warehousing: Introduction to Big DATA to be included
Multimedia: Elaborate the main topics ie., subtopics to be given.
Computer Architecture: Elaborate the main topics ie., subtopics to be given.

3. **Semester VI:**

The course are shuffled

Subject Code	Subject Name
CP15/6C/PHP	Open source software-PHP
CP15/6C/DCN	Data Communications and Networking
CP15/6E/CCP CP15/6E/MOC	Elective – II: Cloud Computing Or Elective – II Mobile Communications
CP15/6E/CGA CP15/6E/INS	Elective – III: Computer Graphics Or Elective – III: Information Security

DEPARTMENT OF COMPUTER SCIENCE

CHOICE BASED CREDIT SYSTEM (CBCS)

From 2015 – 2016 onwards

PREAMBLE

The Department of computer science submits changes and additions suggested in the UG curricula with the introduction to CBCS.

- Reorganization of Lab courses in the programme.
- Modification of course contents in few courses.

COURSE CODE	COURSE TITLE	CR	MARKS		
	SEMESTER I		**CA**	**SE**	**TOTAL**
Part I	Tamil/Hindi/French/Sanskrit	3	40	60	100
Part II	English	3	40	60	100
CP15/1C/PIC	Programming in C	4	40	60	100
	Allied – Mathematics I	5	40	60	100
CP15/1C/PR1	Practical – I C Lab	3	40	60	100
Part IV	1a/1b/1c	3	-	50	50
	Skill Based Subjects	3	-	50	50
	SEMESTER II				
Part I	Tamil/Hindi/French/Sanskrit	3	40	60	100
Part II	English	3	40	60	100
CP15/2C/DSC	Data Structures using C	4	40	60	100
	Allied – Mathematics II	5	40	60	100
CP15/2C/PR2	Data Structures Lab	3	40	60	100
Part IV	1a/1b/1c	3	-	50	50
	Skill Based Subjects	3	-	50	50
	SEMESTER III				
Part I	Tamil/Hindi/French/Sanskrit	3	40	60	100
Part II	English	3	40	60	100
CP15/3C/JAP	Java programming	4	40	60	100
CP15/3A/STA	Statistical Methods	5	40	60	100
CP15/3C/PR3	Java Lab	3	40	60	100
Part IV	Value Education / EVS	3	-	50	50
	Skill Based Subject	3	-	50	50
	SEMESTER IV				
Part I	Tamil/Hindi/French/Sanskrit	3	40	60	100
Part II	English	3	40	60	100

CP15/4C/VBD	VB 6.0 with RDBMS	4	40	60	100
CP15/4A/RMT	Resource Management Techniques	5	40	60	100
CP15/4C/PR4	Practical IV – VB with RDBMS lab	3	40	60	100
Part IV	Value Education / EVS	3	-	50	50
	Skill Based Subject	3	-	50	50
	SEMESTER V				
CP15/5C/OPS	Operating System	4	40	60	100
CP15/5C/PHP	PHP Programming	4	40	60	100
CP15/5C/MCA	Computer Architecture	4	40	60	100
CP15/5C/SWE	Software Engineering	4	40	60	100
CP15/5C/PR5	Practical V – PHP Programming Lab	3	40	60	100
CP15/5C/PR6	Practical VI – OS lab	3	40	60	100
			-	50	50
	SEMESTER VI				
CP15/6C/ASP	Asp.Net	4	40	60	100
CP15/6C/ISE	Information Security	4	40	60	100
CP15/6C/DCN	Data Communication and Networks	4	40	60	100
CP15/6C/DMW	DataMining and warehousing	4	40	60	100
CP15/6C/PR7	Practical VII – Asp.Net Lab	3	40	60	100
CP15/6C/PRO	Project Lab	3	40	60	100
			-	50	50

Skill Based Subjects

1. Front Office Management — CP15/1S/FOS
2. Macromedia Flash 8 — CP15/2S/FLA
3. Web Designing — CP15/3S/WBD
4. MS-Access — CP15/4S/MSA

CHOICE BASED CREDIT SYSTEM (CBCS)

From 2015-2016 onwards

PREAMBLE

The Department of Computer Science submits changes and additions suggested in the UG curricula with the introduction to CBCS.

- Reorganization of Lab courses in the programme.
- Modification of course contents in few courses.
- Introduction of new courses according to the IT sector

COURSE CODE	COURSE TITLE	CR	L	T	P	MARKS		
						CA	SE	TOTAL
SEMESTER III								
Part I	Tamil/Hindi/French/Sanskrit	3	5			40	60	100
Part II	English	3	5			40	60	100
CP15/3C/JAV	Programming In Java	5	4	2	-	40	60	100
CP15/3A/STA	Allied-Statistics	5	3	3	-	40	60	100
CP15/3C/PR3	Practical III - Java Lab	3	-	-	4	40	60	100
Part IV	Environmental Studies	2	2			-	50	50
Part IV	Soft Skills	3	2			-	50	50
SEMESTER IV								
Part I	Tamil/Hindi/French/Sanskrit	3	5			40	60	100
Part II	English	3	5			40	60	100
CP15/4C/DBS	Database Management Systems	5	4	2	-	40	60	100
CP15/4A/RMT	Allied-Resource Management Techniques	5	3	3	-	40	60	100
CP15/4C/PR4	Practical IV -DBMS Lab	2	-	-	4	40	60	100
Part IV	Value Education	2	2			-	50	50
Part IV	Soft Skills	3	2			-	50	50
SEMESTER V								
CP15/5C/ASP	ASP.Net	4	3	2	-	40	60	100
CP15/5C/CAR	Computer Architecture	4	3	2	-	40	60	100
CP15/5C/SOE	Software Engineering	4	3	2	-	40	60	100
CP15/5C/OPS	Operating Systems	4	3	2	-	40	60	100

COURSE CODE	COURSE TITLE	CR	L	T	P	MARKS		
						CA	SE	TOTAL
CP15/5E/DMW	Elective -I :Data Mining and Data Warehousing	5	3	3		40	60	100
	OR							
CP15/5E/MUL	Elective -I:Multimedia	5	3	3		40	60	100
CP15/5C/PR5	Practical V- ASP.NET Lab	3			4	40	60	100
	SEMESTER VI							
CP15/6C/PHP	Open Source Software – PHP	4	3	3	-	40	60	100
CP15/6C/DCN	Computer Networks	4	3	3	-	40	60	100
CP15/6E/CCP	Elective II-Cloud Computing	5	3	3	1	40	60	100
	Or							
CP15/6E/MOC	Elective II- Mobile Communications	5	3	3	1	40	60	100
CP15/6E/CGA	Elective III-Computer Graphics	5	3	3	1	40	60	100
	Or							
CP15/6E/INS	Elective III- Information Security	5	3	3	1	40	60	100
CP15/6C/PR6	PHP LAB	3	-	-	4	40	60	100

SEMESTER III

Paper Title: Programming in Java

Core : 3

Course code:CP15/3C/JAV

Teaching hours:90 hrs

Credits: 5

L TP: 4 2 0

Objectives:

To enable students

1. To learn java programming
2. To learn applet programming

Course outline

UNIT I : An overview of Java – Data Types Variables and Arrays- Operators - Control Statements. (15 **hrs)**

UNIT II : Introducing Classes –A closer look at methods at Classes- Inheritance (15 **hrs)**

UNIT III: Packages and Interfaces – packages- access protection- importing packages- Interfaces. Exception handling: Fundamentals-types-uncaught Exceptions-Using try and catch –Multiple catch-Nested try statements –Throw-Throws-finally-Java built-in exception. Multithreaded programming: The Java Thread model-Synchronization. **(20 hrs)**

UNIT IV: String handling- String constructors-Character Extraction-String Comparison-Searching Strings-Modifying strings- data conversion using value of( ) – changing the case of characters within a string - Joining Strings, additional string methods - StringBuffer: Methods and Constructors. Java.util: The Legacy classes and Interfaces – The enumeration interfaces – vector – stack – dictionary. Java-util Part 2: More Utility Classes-Calendar.

(20 hrs)

UNIT V: The Applet Class: Two Types of Applets-Applet Basic-Applet Architecture-An Applet Skeleton-Simple Applet Display Methods-Requesting Repainting-Using the Status Window-The HTML Applet Tag-Passing Parameters to Applets-getDocumentBase() and getCodeBase()-Event Handling-Introducing AWT-Working with Windows,Graphics and Text : AWT classes - Window Fundamentals-Working with Frame Windows-Creating a Frame window in an AWT-Based Applet-Creating a Windowed Program-Displaying Information Within a Window-Introducing Graphics-Working with Color-Setting the paint Mode-Working with Fonts-Using Awt controls,Layout Managers and Menus.

(20 **hrs)**

RECOMMENDED TEXT BOOKS:

1. P.Naughton and H.Schildt, Java (The Complete Reference), Ninth Edition.

Unit I	: Chapter 2 ,3,4,5[Fully]
Unit II	: Chapter 6 ,7 and 8[fully]
Unit III	: Chapter 9[till interfaces can be extended]
	: Chapter 10[till Java's Built-in exceptions]
	: Chapter 11[pg no : 233 to 236, pg no.247 to 249]
Unit IV	: Chapter 16[pg no :413 to 414,pg no :419 to437]
	:Chapter 18 [pg no :561 to 568]
	:Chapter 19 [pg no :588 to 591]
Unit V	: Chapter 23[pg.no :747 to 764]
	:Chapter 24[fully]
	:Chapter 25[pg no : 797 to 824]
	: Chapter 26 [pg no :833 to 880]

REFERENCE BOOKS:

1. K.Arnold and J.Gosling, The Java Programming Language, Second Edition.
2. Cay S.Horstmann, Gary Cornell, Core Java 2 Volume I – Fundamentals, Addison Wesley.
3. Deitel and Deitel, "Java – How to program", Addison Wesley Press.

WEBSITES AND e-LEARNING SOURCES:

1.http://java.sun.com/doc/book/tutorial/

2.http://www.sun.ocm/java

Question Paper Template

Duration : 3 Hours **Maximum Marks : 100**

Section A

Answer All the questions . (10*2=20)
Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)
At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)
At least one question from each unit

SEMESTER III

Paper Title: Statistics

Allied : 3

Course code:CP15/3A/STA

Teaching hours:90 hrs

Credits: 5

L TP: 330

Objective

To enable students

- To learn the fundamental concepts of statistical methods.
- To exercise the different methods in numerical analysis.

Course Outline

Unit I : Definition of Statistics – Classification – Meaning and Types of Classification – Types of Series – Frequency Distribution : Individual Observation – Discrete Frequency Distribution – Continuous and Cumulative Frequency distribution – Two way (Bivariate) Frequency Distribution. **(10 hrs)**

Unit II : Measures of Central Tendency – Arithmetic Mean, Median, Mode (Individual, Discrete, Continuous and Cumulative Series) – Quartiles, Deciles, Percentiles, Geometric Mean, Harmonic Mean (Discrete, Continuous and Cumulative Series). **(20 hrs)**

Unit III : Dispersion – Methods of measuring Dispersion – Range – Inter-quartile Range – Mean Deviation – Standard Deviation. **(20 hrs)**

Unit IV : Probability – Event – sample spaces – Classical Approach (Priori Probability) – axiomatic approach to probability – Theorems of Probability(Addition, Multiplication) – Baye's theorem. Binomial, Poisson, Fitting of Distributions (Binomial,Poisson, Normal). **(20 hrs)**

Unit V : Correlation and Regression (using direct method, deviation taken from arithmetic mean, deviation taken from assumed mean) – Rank Correlation. chi square test: chi square test of goodness of fit, chi square as a test of independence. **(20 hrs)**

RECOMMENDED TEXT BOOK :

1. RSN Pillai & Bhagavati, Statistics, S CHAND & Co.
   - Unit I : Chapter 1 (Pg. 3 to 7), Chapter 6 (Pg.51 to 65)
   - Unit II : Chapter 9
   - Unit III : Chapter 10
   - Unit IV : Chapter 18 and 19
   - Unit V : Chapter 12, 13and 21

REFERENCE BOOKS :

1. Elements Of Mathematical Statistics,S.C. Gupta & V.K. Kapoor, Sultan Chand Publications.
2. K.Manivachakan & P.R.Vittal, Engineering Mathematics.

3. Thilagavathy, Numerical Methods, S CHAND & Co.

WEBSITES AND e-LEARNING SOURCES:

1. www.statistics-help-online.com/node53...
2. *www.statsoft.com/textbook*

Question Paper Template

Duration : 3 Hours **Maximum Marks : 100**

Section A

Answer All the questions (10*2=20)

Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)

At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)

At least one question from each unit

SEMESTER III

PRACTICAL III - JAVA LAB

Teaching Hours: 60 hrs **Course Code : CP15/3C/PR3**

Credits: 3 **L T P: 0 0 4**

Objective:

To enable students to

1. Write simple programs and introduce all the concepts in it.

PRACTICAL LIST:

1. Write a java program to implement all Control statements

2. Write a java program to implement

a)Constructors overloading b)method overriding c)dynamic method dispatch 3. Write a java program to implement the concept of packages

4. Write a java program to implement the concept of interfaces.

5. Write a java program to implement exception handling (Hint: use five clauses)

6. Write a java program to implement thread synchronization and multithreading concept.

7. Write a java program to implement String Handling operations (Character extraction, string Comparison, searching strings, modifying strings)

8 Write a java program to implement String Buffer class (use any five 5 methods)

9.Write a java program to implement Calendar class.(Calculate age and display the current date details)

10. Write a applet program to create a bio data using frame controls.

Display the details at the end of the applet screen at the click of the button.

11 Write an applet program to implement any two Layouts.

12. Write a java program to implement Menus and submenus

13 Write an applet program to implement modal and modaless dialog box

14. Write an applet program to implement graphic controls, fonts and colors.

SEMESTER IV

Paper Title: Database Management Systems

Core : 4 **Course code:**CP15/4C/DBS

Teaching hours:90 hrs **Credits:** 5

L TP: 4 2 0

Objective

To enable students

1. Describe databases and database management systems.
2. Design simple database models using Entity-Relationship Modelling.
3. Normalize a table.
4. To learn and understand SQL, PL/SQL.

Course Outline

UNIT I: Database : Definition, Component of Database, Database Organisation, DATABASE SYSTEM, components ofdbms,Operations Performed on Database Systems, DA, DBA ,Function and responsibilities of DBA's. Data Base Language: DDL, DSDL, VDL, DML,4GL.**(15 hrs)**

UNIT II: Entity Relationship (ER) Model: Introduction, Basic E-R concepts (entities, relationship,Attributes, constraints), Normalization, Normal Forms: First Normal Form, second NormalForm, Third Normal Form, Boyce-codd Normal Forms (BCNF). **(20 hrs)**

UNIT III:History of SQL, Categories of SQL commands, Data Retrieval with SELECT: selectingall rows from table, filtering rows with WHERE clause, SQL operators, BooleanOperators, Using Parentheses in Logical Expressions, GROUP BY clause, HAVING clause, JOINS, ORDER BY Clause.**(15 hrs)**

UNIT IV: Expanding Queries with set Operations, Data Manipulation Language Commands: COMMIT andROLLBACK,INSERT,UPDATE, DELETE.SQL Functions: Scalar Character functions, Scalar Date functions, Scalar Mathematicalfunctions, Conversion and miscellaneous functions, Group functions. DUAL Table

(20 hrs)

UNIT V: Brief History of the PL/SQL Language, Procedural constructs of PL/SQL, ,Data types, Cursor in PL/SQL:Declaring explicit cursors, Methods and Attributes of Explicit Cursors, Using the For Loop with Explicit cursors, cursors variable, implicitcursors.**(20 hrs)**

RECOMMENDED TEXT BOOKS:

1. Database Systems(concepts,Design and Application),S.K.Singh.
   Unit I : Chapter 1 - 1.4 to 1.7 and 1.10

Unit II :Chapter 6 - 6.1 to 6.2
Chapter 10- 10.1 to 10.4

2. Oracle Forms Developer's Handbook,Albert Lulushi
Unit III:Chapter 9 - 9.1 to 9.4
Unit IV:Chapter 9 -9.5 to 9.8
Unit V :Chapter 10 -10.1 to 10.4

REFERENCE BOOKS :

1. Database Management System,Gerald V.Post III Edition.
2. Raghu Ramakrishnan - Database Management Systems - WCB/McGraw Hill - 1998.
3. SQL by Scott Urman.

WEBSITES AND e-LEARNING SOURCES:

1. http://www.sql-tutorial.com/rdbms-and-database-tables-sql-tutorial/
2. http://plsql-tutorial.com/index.htm
3. http://download.oracle.com/docs/cd/B10500_01/appdev.920/a96624/a_samps.htm

Question Paper Template

Duration : 3 Hours **Maximum Marks : 100**

Section A

Answer All the questions (10*2=20)

Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)

At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)

At least one question from each unit

SEMESTER IV

Paper Title: Resource Management Techniques

Allied : 4 **Course code:** CP15/4A/RMT

Teaching hours: 90 hrs **Credits:** 5

LTP: 3 3 0

Objective

To enable students

1. To learn the fundamental concepts of Resource Management Technique and apply these techniques in real life situations.
2. To develop logical thinking in handling business oriented problems.

Course Outline

UNIT I : Introduction to Resource Management Technique – Role of RMT - Introduction to Linear Programming – Formulation and Graphical Solution (2 Variables) – Canonical and Standard forms of LPP – Simplex Method – Big M Method – Two Phase Method. **(20 hrs)**

UNIT II : Introduction to Transportation Model – Methods for finding Initial Basic Feasible Solution : North West Corner Rule, Least Cost Method, Vogel's Approximation – MODI method (Test for Optimal Solution) - Degeneracy in Transportation problem – Unbalanced Transportation Problems – Maximization case in Transportation problems. **(20 hrs)**

UNIT III: Introduction to Assignment problem – Hungarian Method – Unbalanced Assignment models – Maximization case and Restrictions in Assignment problems – Travelling Salesman problem. **(20 hrs)**

UNIT IV : Introduction to Sequencing Problem – Processing n jobs through 2 machines – Processing n jobs through 3 machines – Procession n jobs through m machines. **(15 hrs)**

UNIT V : Introduction to Project Management Techniques : PERT and CPM – Network Construction – Critical Path Method with Floats – PERT Method. **(15 hrs)**

RECOMMENDED TEXT BOOK :

1. Resource Management Techniques, Prof.Sundaresan, K.S.Ganapathy Subramanian, K.Ganesan, A.R. Publications

Unit I	:	Chapter 1-1.1,1.2,1.3 and Chapter 2
Unit II	:	Chapter 7
Unit III	:	Chapter 8
Unit IV	:	Chapter 14
Unit V	:	Chapter 15

REFERENCE BOOKS :

1. P.R.Vittal & M.Malini, Problems In Operations Research.
2. S.D. Sharma, Operations Research, Kedar Nath Ram Nath Publications
3. V.K.Kapoor, Operations Research, Sultan Chand Publications.

4. Manmohan Kanthi, Swarup, Operations Research, Gupta Sultan Chand Publications.

WEBSITES AND e-LEARNING SOURCES:

1. http://www.eqwalk.ca/operationsresearch/lpsimplex.php
2. http://www.valuebasedmanagement.net/methods_operations_research.html

Question Paper Template

Duration : 3 Hours **Maximum Marks : 100**

Section A

Answer All the questions (10*2=20)

Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)

At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)

At least one question from each unit

SEMESTER IV

PRACTICAL IV – DBMS Lab

Teaching Hours: 60 hrs **Course Code : CP15/4C/PR4**

Credits: 3 **L T P: 0 0 4**

Objective:

To enable students to

1. Be familiar about the basic concepts of database
2. Input screen menu-driven query processing and pleasing reports
3. Create PL/SQL block

PRACTICAL LIST

1. Create a table name called Student with the field sno, sname, sex, mark1,mark2,mark3, total and perform the following:

   i) Display the table

   ii) Display the student name those obtain the total above 250

   iii) Update sno where sname= Aarthi

2.Create a Employee table and perform various operations using operators

3.Write a PL/SQL block to perform Basic Arithmetic operations (ADDITION, SUBTRACTION,MULTIPLICATION,DIVISION)

4.Write a PL/SQL block to display the reverse of numbers from one to hundred.

5.Write a PL/SQL block to display Greatest Number from the given 3 numbers.

6. (i) Write a PL/SQL block to find odd or even.

(ii)Write a PL/SQL block to check whether a student has passed or failed.

1. Write a PL/SQL block that will set the min price to 6999 when the product id is 111 and theCost is greater than 7000.
2. Write a PL/SQL block to display Employee Name Mobile number and Salary using Explicit CURSORS.
3. Create employee details table and payroll table and perform various operations by using the following method:

   i) Groupby clause ii) Having clause iii) Orderby clause iv) JOIN

4. Using any two tables establish relationship with the tables and perform normalization(first , second, third and BCNF normal forms.)

SEMESTER V

Paper Title:ASP.Net

Core : 5**Course code:**CP15/5C/ASP

Teaching hours:75 hrs **Credits:** 4

L TP: 3 2 0

Objective

To enable students

1. To learn the basic concepts of asp.net
2. To design web pages

Course Outline

UNIT I: ASP.NET language structure – Page structure, Page, Compiler Directives. HTML Server Controls – Anchor control, Table, Form and Form input, Input Control. Basic web server controls – Label, Textbox, Button, Link Button, Image Button Control, Checkbox Control, Radio Button control, Hyperlink Control, Image control. **(17 hrs)**

UNITII: Data list web server controls - Checkbox list control, Radio button list control, Dropdown list control, List box control, Data grid control and Repeater control.Other web server controls – Calendar control, Ad rotator control, and Validation controls. **(18 hrs)**

UNITIII: Request and Response Objects – Request Object, Response Object. System. Data & System.Data.OLEDB Namespace– OLEDB Connection class, Command class, Transaction class, Data Adapter class, Dataset class. **(15 hrs)**

UNITIV: Email - Error Handling. **(10 hrs)**

UNITV: Security. ASP.NET Mobile Web SDK- Developing mobile ASP.NET, Getting the ASP.NET mobile web SDK, Mobile Web controls. **(15 hrs)**

RECOMMENDED TEXT BOOKS:

1. "Asp.Net Developer's Guide", Greg Buczek, Tata Mc-Graw-Hill Edition 2002.
   UNIT 1: chapter 1 to chapter 3
   UNIT 2: chapter 4 and chapter 5.
   UNIT 3: chapter 8 and chapter 10
   UNIT 4: chapter 12 and chapter 15
   UNIT 5: chapter 18 and chapter 20

REFERENCE BOOKS:

1."Programming Microsoft Asp.Net 2.0", Dino Eposito, WP Publishers and Distributors Pvt.Limited.

2."ASP.NET 2.0 WEBSITE PROGRAMMING, PROBLEM-DESIGN-SOLUTION', MACRO BELLINARO WILEY – INDIA EDITION.

WEBSITES AND e-LEARNING SOURCES:

1. www.w3schools.com
2. www.remotecourse.com

QUESTION PAPER TEMPLATE

Duration : 3 Hours **Maximum Marks : 100**

Section A

Answer All the questions (10*2=20)

Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)

At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)

At least one question from each unit

SEMESTER VI

Paper Title: Computer Architecture

Core : 6

Course code:CP15/5C/CAR

Teaching hours:90 hrs

Credits: 4

L T P: 3 2 0

Objective

To enable students

1. To learn the data representation and the way arithmetic operations are performed.
2. To learn the architecture and the interfacing logic of the processor.

Course Outline:

UNITI: Digital Logic Circuits. Digital Components – Integrated Circuits, Decoders, multiplexers, registers. **(20 hrs)**

UNITII: Data Representation – Data Types, Complements, Other Binary Codes and Error Detection Codes. Computer Arithmetic – Addition and Subtraction, Multiplication and Division Algorithm. **(20 hrs)**

UNITIII: Central Processing Unit. Memory Organization: Memory Hierarchy **(15 hrs)**

UNITIV: Pipeline and Vector processing– Parallel Processing, Pipelining, Vector Processing, Array Processors. Multiprocessors- Characteristics of Multiprocessors, Interconnection Structures. **(15 hrs)**

UNITV: Input- Output Organization – Input-Output Interfaces, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, DMA.**(20 hrs)**

RECOMMENDED TEXT BOOKS:

1. "Computer System Architecture", M. Morris Mano, PEARSON Publication third Edition.
   UNIT 1: chapter 1 and chapter 2.1 to 2.4.
   UNIT 2: chapter 3.1, 3.2, 3.5 and 3.6 and chapter 10.1 to 10.4.
   UNIT 3: chapter 8 and chapter 12.
   UNIT 4: chapter 9.1, 9.2, 9.6, 9.7 and chapter 13.1 and 13.2.
   UNIT 5: chapter 11.2, 11.3, 11.4, 11.5, 11.6.

REFERENCE BOOKS:

1. "COMPUTER ARCHITECTURE", Nicholas P Carter, Schaum'S Outline 2nd Edition.
2. "COMPUTER ARCHITECTURE AND ORGANIZATION", B.Govindarajalu 2nd Edition.

WEBSITES AND e-LEARNING SOURCES:

1.www.techopedia.com

2. www.wikipedia.org

QUESTION PAPER TEMPLATE

Duration : 3 Hours **Maximum Marks : 100**

Section A

Answer All the questions (10*2=20)

Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)

At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)

At least one question from each unit

SEMESTER V

Paper Title: Software Engineering

Core : 7 **Course code:**CP15/5C/SOE

Teaching hours:75 hrs **Credits:** 4

LTP: 3 2 0

Objective

To enable students

1. Acquaint the students with the basic concepts and major issues of software engineering
2. Become an efficient software engineer

Course Outline:

UNIT I :Introduction to software engineering: Definitions –size factors-Quality & Productivity factors. Planning a software: defining the problem-developing a solution strategy-planning the development process-planning organization structure. **(15 hrs)**

UNIT II: Software cost estimation: software cost estimation techniques. Software Requirement Definition: software requirements specification-formal specification techniques. **(15 hrs)**

UNIT III: Software design: Fundamental design concepts-module and modularization criteria-design notations-design techniques-test plans.**(15 hrs)**

UNIT IV: Implementation issues: Structured coding techniques-coding style-standards & guidelines-documentation guidelines. **(15 hrs)**

UNIT V : Quality assurance-walkthroughs & inspection-Unit testing & debugging-system testing - managerial aspects of software.**(15 hrs)**

RECOMMENDED TEXT BOOKS:

1. Richard Fairley –Software Engineering concepts- TMH Edition 1997.

   UNIT I : Chapter 1and 2 : 1.1,1.2,1.3,2.1,2.2,2.3,2.4

   UNIT II : Chapter 3and 4 : 3.2, 4.1,4.2

   UNIT III: Chapter 5 : 5.1,5.2,5.3,5.4,5.7

   UNIT IV: Chapter 6 :6.1,6.2,6.3,6.4

   UNIT V : Chapter 8 :8.1,8.2,8.5,8.6,9.2

REFERENCE BOOKS:

1. Roger S. Pressman, Software Engineering – A practitioner's Approach- McGraw-Hill International, fourth edition.

WEBSITES AND e-LEARNING SOURCES:

1. http://en.wikipedia.org/wiki/Software_engineering
2. http://www.onesmartclick.com/engineering/software-engineering.html

QUESTION PAPER TEMPLATE

Duration : 3 Hours **Maximum Marks : 100**

Section A

Answer All the questions (10*2=20)

Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)

At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)

At least one question from each unit

SEMESTER V

Paper Title: Operating Systems

Core : 8Course code:CP15/5C/OPS

Teaching hours:75 hrs **Credits:** 4

LTP: 3 2 0

Objective

To enable students

2. To Know how OS works.
3. To learn about Processes and Scheduling algorithms
4. To Study Computer Security issues and Operating Tools
5. To understand the Principle of Deadlock

Course Outline

UNIT I : Introduction: Definition - What operating systems do? : User View, System View– Computing Environments: Traditional Computing, Mobile Computing, Distributed Systems, Client-Server Computing, Peer-to-Peer Computing, Virtualization, Cloud Computing, Real-Time Embedded Systems – OS structure: Services. Process Concept –Process scheduling– Inter-process communication. Process Scheduling: Basic Concepts, scheduling criteria – Scheduling Algorithms.**(15 hrs)**

UNIT II: Synchronization: Background,the Critical-section problem – Semaphores – classical problems of synchronization. Deadlock: System Model- Characterization- Deadlock prevention- Deadlock Avoidance-Detection- Recovery.**(15 hrs)**

UNIT III: Memory Management: Background: Basic Hardware, Address Binding, Logical Versus Physical Address Space, Dynamic Loading, Dynamic Linking and Shared Libraries– Swapping- Contiguous MemoryAllocation –Segmentation- Paging. **(15 hrs)**

UNIT IV:Virtual Memory: Background - Demand paging – Page Replacement – Thrashing. File System: File concepts.**(15 hrs)**

UNIT V: The Linux System–Linux History- Design Principles – Kernel Modules– Process Management – Scheduling –File Systems. **(15hrs)**

RECOMMENDED TEXT BOOKS:

1. Abraham Silberschatz, Peter.B.Galvin, Gerg Gagne, "Operating system concepts", 9th Edition, John Wiley & sons, 2015.
   UNIT I : Chapter 1 : 1 and 1.1 and 1.11,

   Chapter 2 :2.1 and

   Chapter 3 : 3.1,3.2,3.4and

   Chapter 5 : 5.1,5.2,5.3

UNIT II : Chapter 6 : 6.1, 6.2, 6.6, 6.7. and

Chapter 7 : 7.1,7.2,7.4,7.5,7.6,7,7.

UNIT III : Chapter 8 : 8.1,8.2,8.3,8.4,8.5.

UNIT IV : Chapter 9 : 9.1,9.2,9.4,9.6 and

Chapter 10: 10.1.

UNIT V : Chapter 16: 16.1,16.2,16.3,16.4,16.5,16.7.

REFERENCE BOOKS:

1. H.M.Deitel, An Introduction to operating system, 2nd Edition, Addison Wesley, 1990.

WEBSITES AND e-LEARNING SOURCES:

1. http://computer.howstuffworks.com/operating-system.htm
2. http://williamstallings.com/OS4e.html

QUESTION PAPER TEMPLATE

Duration : 3 Hours **Maximum Marks : 100**

Section A

Answer All the questions (10*2=20)

Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)

At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)

At least one question from each unit

SEMESTER V

Paper Title: Elective I - Data Mining and Data Warehousing

Course code: CP15/5E/DMW

Teaching hours: 75 hrs **Credits:** 5

L T P: 3 3 0

Objective

To enable students

1. Develop Strategic Decision Making Skill
2. Formulate appropriate algorithm

Course Outline

UNIT I: Data Warehousing: Introduction- Definition- Multidimensional Data Model- OLAP Operations-Warehouse Schema- Data Warehousing Architecture- Warehouse Server- OLAP Engine- Data Warehouse Backend Process.**(15 hrs)**

UNIT II: Data mining: Introduction- Definition- KDD vs. Data Mining- DBMS vs. DM-Data mining Techniques-Issues and Challenges in DM-Data mining Application Areas. **(15 hrs)**

UNIT III: Association Rule :Introduction- Definition- Apriori algorithm- Partition Algorithm-Pincer Search algorithm- Dynamic Itemset Counting algorithm-FP – Tree Growth Algorithm.**(15 hrs)**

UNIT IV: Clustering Techniques: Introduction-Partition clustering: PAM-CLARA-CLARANS-Hierarchical clustering: BIRCH-DBSCAN-CURE-ROCK-Decision Tree: Introduction-Definition-Tree construction principle-Advantages and Disadvantages-Decision Tree Construction Algorithm.**(15 hrs)**

UNIT V: Web Mining:Content-Structure-Usage mining-Text Mining-Temporal Data mining: Definition-Types of Temporal Data-Temporal Data Mining Tasks-Temporal Association Rules-Spatial Data mining: Definition-Spatial Mining Tasks.**(15 hrs)**

RECOMMENDED TEXT BOOK:

1.Arun k Pujari, "Data Mining Techniques",2004,University Press.
Unit I: Chapter 2
Unit II: Chapter 3
Unit III: Chapter 4
Unit IV: Chapter 5, 6
Unit V: Chapter 9, 10

REFERENCE BOOKS:

1. Paulraj Ponniah, "Data Warehousing Fundamentals", John Wiley.
2. M.H. Dunham, "Data Mining Introductory and Advanced Topics", Pearson Education.
3. Han, Kamber, "Data Mining Concepts and Techniques", Morgan Kaufmann

4. R. Kimball, "The Data Warehouse Toolkit", John Wiley.
5. E.G. Mallach, "Decision Support and Data Warehouse systems", TMH.

WEBSITES AND e-LEARNING SOURCES

1.http://www.mydatamine.com
2.http://www.outsourcingrwebresearch.com

Question Paper Template

Duration: 3 Hours **Maximum Marks: 100**

Section A

Answer All the questions (10*2=20)

Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)

At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)

At least one question from each unit

SEMESTER V

Paper Title: Elective I –Multimedia

Course code:CP15/5E/MUL

Teaching hours:90 hrs **Credits:** 5

L T P: 3 3 0

OBJECTIVE:

To enable students

- To Learn the concepts of multimedia tools.
- To Learn the basic concepts of Graphics.

Course Outline

Unit I :

Components of Multimedia: Draw of the Digital Age-What is Multimedia?-scope of Multimedia-Digital medias that make up Multimedia-Our approach to understanding Multimedia-Mediums for Delivery-Various types of Multimedia Applications-Interactive multimedia and non interactive multimedia. **Multimedia Hardware Essentials**:Introduction-Multimedia hardware evolution-Basic types of multimedia hardware-Multimedia add on peripherals-External multimedia equipments-How to choose the right multimedia peripherals and equipments?-Installation Tips-Finding the multimedia peripherals installed on your computer-Plug and Play-A typical multimedia system configuration-Multimedia upgrade kits. **MultimediaSetting up the Software:**Introduction-Multimedia software categories- Device drivers-Media players-Media conversion tools-Media editing tools-Multimedia authoring Tools-Multimedia Applications. **Understanding Digital Data Digital:** Introduction-Meeting the analog signal-The World of digits-Secrets of digital recording.(20 hours)

Unit II :

Digital Audio: Introduction-Digital audio definition-Why going digital?-Audio sampling-Audio sampling parameters-Digital audio recording pitfalls-Digital audio file sizes-Digital audio playback-Digital audio file formats. **The Sound Cards:** Introduction-Basic composition of a sound card-Sound card connectivity-Sound cards as CD drive interfaces-Music synthesis-Motherboard integrated audio peripherals-Configuring sound cards under Windows 2000-Audio codes-Capabilities of sound card. **Audio Recording and Editing Techniques**: Introduction-Capabilities of a sound card-Digital audio playback-Windows media player-Apple's Quick Time-Media One+Player-Digital audio recording techniques-Audio recording software-Recording options-Setting up the recording environment-Various steps in audio recording process-Recording sounds with windows sound recorder-Professional multi track recording-Digital audio editing process-Need for audio editing-Audio editing terminology-Basic audio editing with windows sound recorder-Advanced audio editing with cool edit-Cool edit core features-Audio playback-Audio recording-Audio analysis-Audio editing-Audio transformation-Audio file format conversions. (20 hours)

Unit III :.

MIDI Fundamentals: Introduction-The Concept of MIDI-Comparing MIDI with digital audio-The general MIDI standards-Polyphony-General MIDI channel assignments-General MIDI instrument assignments-The preferred MIDI device on your system. **Working with MDI:**Introduction-MIDI recording vs.MIDI gallery files-Setting up a MIDI music studio-Recording MIDI music-Editing MIDI music files-Music sculptor-Pitch correction.**Designing Texts:**Introduction-Text as a part of multimedia project-Text design basics-Effects of poor text content design-Effect of poor text display design-Parameters that control text design-Fonts-definition-Types of font families-True type fonts-Selecting the right font-Designer's tips-Font installation issues-Titling- Jaggies and anti aliasing-Anti aliasing texts-Editing anti aliased texts-special effects for titles-Drop shadows-Bevel effects-Three dimensional texts-How to create three dimensional titles?-Text animations-Content design-Qualitative aspects of content-Controlling quantitative aspects-Hypermedia-Hypertexts-How to embed hyperlinks in multimedia projects?-Designing a hypermedia system-Text editing software tools. **Digital Imaging:** Introduction-Graphics in multimedia projects-Graphics for interface design-Graphics for contents-Types of graphic imagery-Photographic images-Clip arts-3 Dimensional graphic images-Types of graphics storage-Rastor graphics-Vector graphics-Multimedia graphic tools-Class-I:Image editing tools-Class-II: Digital artistry tools-Class-III:3 Dimensional graphic tools-Class-IV: Miscellaneous utilities.
(15 hours)

Unit IV :

Graphics Editing: Introduction-Need for graphics editing and manipulation-Basic attributes of an image-size, resolution and number of colours-Number of colours in an image-Graphics editing concepts-Anti-aliasing-Layering-Selections-Masking-Image Filters-Basic Editing Operations-Advanced editing and image manipulations. **Fundamentals of Computer Animation:** Introduction-Animations in Multimedia Projects-Need for animations in multimedia projects-Computer animations-classification-Classification I:cel animation-object animation-Classification II: Two dimensional animation-Three dimensional animation-Classification III: Animation for movies-Animation for television shows-Animation for multimedia application and games-Animation for the Internet-Classification IV: Animation by programming-Morphing-Precompiled animation-understanding two dimensional animation planes-understanding three dimensional worlds-Animation tools. **Developing Animation forMultimedia Projects:**Introduction-Animation Process workflow-Conceptualizing-Story boarding –Identifying key frames-Decision between two dimensional and three dimensional animations-Process planning-Animation development-2D Animation development-3D Animation development-Cyclic animation.
(15 hours)

Unit V :

Project Conceptualization, Design and Development: Introduction-Multimedia Project definition-Project Conceptualization-Project Development (various stages) - Data gathering-Navigation maps - Developing media contents –Designing interfaces-Storyboarding-Multimedia Programming(authoring)-Delivery. **Multimedia Authoring:** Introduction-Multimedia authoring-definition-Multimedia Programming Versus Multimedia authoring-Authoring Methodologies-Characteristics of Authoring tools-Tips for selecting the right authoring tool-Commercial authoring tools.
(20 hours)

RECOMMENDED TEXT BOOK :

1. S.Gokul,Multimedia Magic,Second Edition,BPB Publications

Unit I	:	Chapter 1 to 4
Unit II	:	Chapter 5 to 7
Unit III	:	Chapter 9 to 11 and 13
Unit IV	:	Chapter 15 to 17
Unit V	:	Chapter 20 and 21

REFERENREFERENCE BOOKS :

1. Ze-Nian Li and Mark S. Drew, Fundamentals of Multimedia, 1st edition, Pearson Education Taiwan and Gah Lih Book Co. Ltd.
2. Ranjan Parekh,Ranjan, Principles of Multimedia,Tata McGraw-Hill Education, 2006.

WEBSITES AND e-LEARNING SOURCES:

1. *http://www.cs.sfu.ca/mmbook/*
2. *https://en.wikipedia.org/wiki/Multimedia*

QUESTION PAPER TEMPLATE

Duration : 3 Hours **Maximum Marks : 100**

Section A

Answer All the questions (10*2=20)

Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)

At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)

At least one question from each unit

SEMESTER V

PRACTICAL V – ASP.NET Lab

Teaching Hours: 75 hrs **Course Code : CP15/5C/PR5**

Credits: 3 **L T P: 0 0 4**

Objective:

To enable students to

1.To learn the basic concepts of asp.net
2.To design web pages.

PRACTICAL LIST

1. Write ASP.NET program using basic HTML controls.
2. Write ASP.NET program using basic Web server controls.
3. Write ASP.NET program using data list Web server controls.
4. Write ASP.NET program using calendar control.
5. Write ASP.NET program using Ad rotator control.
6. Write ASP.NET program to display your college details and register an application form using validation controls.
7. Write ASP.NET program to read two integer values from the user and check for error handling.
8. Write ASP.NET program to manage the library information.
9. Write ASP.NET program to create an electricity bill for a customer. The customer detail includes the customer id, name, address, previous reading and current reading, and calculate the amount to be paid.
10. Write ASP.NET program to display the personal details of five employees and on selection to display each employee information.

SEMESTER VI

Paper Title: Open Source Software-PHP

Core : 9 **Course code:**CP15/6C/PHP

Teaching hours:90 hrs **Credits:** 4

L T P: 3 3 0

Objective

To enable students

1. To learn the basic concepts of PHP
2. To know how to process the survey data using PHP

Course Outline

UNIT I: Introduction: history – features –Basic development concepts – creating first PHP script - mixing PHP with HTML. Using variables and operators: variables – data types – constants – manipulating variables with operators- Validating User input. **(20 hrs)**

UNIT II: Controlling Program Flow: Simple and complex conditional statements – loops – String and numeric functions. Working with arrays: Storing data in arrays - processing with loops and iterators – using arrays with forms, array functions, date and time.**(20 hrs)**

UNIT III: Functions and classes: User defined functions – creating classes – advanced OOP concepts. **(15hrs)**

UNIT IV: Files and directories : reading and writing files – file and processing directories – performing with directory operations.**(15 hrs)**

UNIT V: Introduction to databases and SQL – addition or modifying data – handling errors: Script errors – using exceptions – logging errors and debugging errors.**(20 hrs)**

RECOMMENDED TEXT BOOK:

1. "PHP- a beginner's guide", VikramVaswani, Tata McGraw Hill Education Private Limited.

UNIT 1: Chapter 1,2, 11(Pg no:356-367)
UNIT 2: Chapter 3 and Chapter 4
UNIT 3: Chapter 5
UNIT 4: Chapter 6
UNIT 5: Chapter 7

REFERENCE BOOKS:

1. "PHP5 and MySQL Bible",Tim Converse and Joyce Parl with Clark Morgan, Wiley India Pvt. Limited,2008.

WEBSITES AND e-LEARNING SOURCES:

1. www.easyphpwebsites.com.
2. www.php.net.

Question Paper Template

Duration : 3 Hours **Maximum Marks : 100**

Section A

Answer All the questions (10*2=20)

Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)

At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)

At least one question from each unit

SEMESTER VI

Paper Title: Data Communication Networking

Core : 10 **Course code:** CP15/6E/DCN

Teaching hours: 90 hrs **Credits:** 4

LTP: 3 3 0

Objective

To enable students

1. To study about the physical arrangement of networks, types and modes of networks,data conversions and transmission medium.
2. To know about the inter-connection andtypes of devices and network security.

Course Outline

UNIT I: Introduction:Data Communications - Networks - Protocol and Standards - The OSI Model – Layers in the OSI Model – Digital and Analog Transmission: Analog-to-digital conversion – Digital-to-Analog conversion. **(20 hrs)**

UNIT II: The Physical Layer and Media: Transmission Media – Guided Media – Unguided Media: Wireless –Transmission impairment – Performance – Multiplexing –TDM-FDM – Switching –Circuit Switched Networks – Structure of a switch. **(20 hrs)**

UNIT III: Data Link Layer –Error Detection and Error Correction: Block Coding –Cyclic Redundancy Check – Checksum – Flow and Error Control – Channelization – Bluetooth – Architecture. **(15 hrs)**

UNIT IV: Frame Relay: Architecture – Frame Relay Layers – Congestion Control and Quality of service: Data Traffic – Congestion Control – Quality of Service – Network Layer Delivery, Forwarding and Routing: Unicast Routing Protocols – Distance Vector Routing – Link State Routing. **(15 hrs)**

UNIT V: Transport Layer: TCP – TCP Services – TCP Features – Segment – TCP Connection – Application Layer – Domain Name System: Name space – Domain Name Space – TELNET –Electronic Mail – File Transfer Protocol (FTP). **(20 hrs)**

RECOMMENDED TEXT BOOK:

1. Behrouz A Forouzan , 'Data Communications and Networking', Fourth Edition, Tata McGraw Hill, 2006.

UNIT I: Chapter 1(1.1,1.2,1.4),Chapter 2(2.2,2.3),Chapter 4(4.2), Chapter 5(5.1)

UNIT II : Chapter3(3.4,3.6),Chapter 6(6.1), Chapter 7(7.1,7.2),Chapter 8(8.1,8.4)

UNIT III : Chapter 10(10.2,10.4(pg no.284),10.5), Chapter 11(11.2), Chapter 12(12.3), Chapter 14(14.2(pg no.435))

UNIT IV :Chapter18(18.1),Chapter22(22.3(pgno.660-674)),Chapter24

(24.1,24.3,24.5)

UNIT V: Chapter 23(23.3(pg no.715-728),Chapter25(25.1,25.2),

Chapter 26,(26.1(pg no.817-824),26.2,26.3)

REFERENCE BOOKS:

1. William Stallings, 'Data and Computer Communication', 8th Edition, Pearson Education,2003 / PHI.
2. Andrew Tannenbaum,'Computer Networks', Pearson Education, 4th Edition,2003/PHI.

WEBSITES AND E-LEARNING SOURCES:

1. http://en.wikipedia.org/wiki/Computer_network
2. http://www.networktutorials.info/

QUESTION PAPER TEMPLATE

Duration : 3 Hours **Maximum Marks : 100**

Section A

Answer All the questions (10*2=20)

Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)

At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)

At least one question from each unit

SEMESTER VI

Paper Title: Elective II - CLOUD COMPUTING

Teaching Hours : 90 hrs

Course Code : CP15/6E/CCP
Credits: 5
L T P : 3 3 1

OBJECTIVE:

To enable students

1. To know the basic concepts of cloud computing.
2. To know the services of cloud computing.

Course Outline

Unit I :

Introducing Cloud Computing: Web 2.0 and the Cloud-Distinguishing Cloud Types-Exploring Uses of the Cloud-Introducing Scalability-Introducing Virtualization-Collecting Processing Power Through Grid Computing.**Software as a Service(SaaS)** –Getting Started with SaaS-Understanding the Multitenant Nature of SaaS Solutions-Understanding OpenSaaS Solutions-Understanding Service Oriented Architecture(SOA). **Platform as a Service(PaaS):**IT Evolution Leading to the Cloud-Benefits of PaaS Solutions-Disadvantages of PaaS Solutions.**Infrastructure as a Service(IaaS):**Understanding IaaS-Improving Performance Through Load Balancing-System and Storage Redundancy-Utilizing Cloud-Based NAS Devices-Advantages of IaaS Solutions-Server Types Within an IaaS Solution.(20 Hrs)

Unit II :

Identity as a Service(IDaaS): Understanding Single Sign-On(SSO)-Understanding OpenID-Mobile ID Management.**Data Storage in the Cloud:**Examining the Evolution of Network Storage-Understanding Cloud Based Data Storage-Advantages and Disadvantages of Cloud Based Data Storage-Getting Past the Fear of Cloud Based Data-Cloud Based Backup Systems-Understanding File Systems-Industry Specific Cloud Based Data Storage-Cloud Based Database Solutions-Cloud Based Block Storage.**Collaboration in the Cloud:**Collaborating in the Clouds-Questions to Ask About Collaborative Tools-Web Based Collaboration Began with Web Mail-Instant Messaging Isn't What it used to be-Cloud-Based Phone and Fax Systems-Revisiting File Sharing-Collaborating via Web Logs(Blogs)-Collaborative Meetings in the Cloud-Virtual Presentations and Lectures-Using Social Media for Collaboration-Using Cloud Based Calendar Management-Using Streaming Video Content to Collaborate.**Virtualization:**Understanding Virtualization-The History of Virtualization-Leveraging Blade Servers-Server Virtualization-Desktop Virtualization-Desktop Solutions on Demand-Virtual Networks-Data Storage Virtualization-Not All Applications Are Well Suited for Virtualization-Why Virtualize?(20 Hrs)

Unit III :.

Cloud Offerings: Introduction-Information Storage, Retrieval, Archive and Protection –Cloud Analytics-Testing Under Cloud-Information Security-Virtual Desktop Infrastructure-Storage Cloud. (15 Hrs)

Unit IV :

Cloud Infrastructure: Introduction-Storage Virtualization-Storage Area Networks-Network Attached Storage-Cloud Server Virtualization-Networking Essential to Cloud. (15 Hrs)

Unit V :

Cloud and SOA: Introduction-SOA Journey to Infrastructure-SOA and Cloud-SOA Defined-SOA and IAAS-SOA Based Cloud Infrastructure Steps-SOA Business and IT Services. (20 Hrs)

RECOMMENDED TEXT BOOK :

1.Kris Jamsa,Cloud ComputingSaaS,PaaS IaaS,Virtualization, Business Models,Mobile, Security, and More,Jones and Bartlett India Pvt Ltd.

Unit I	:	Chapter 1 to 4
Unit II	:	Chapter 5 to 8

2.Dr.Kumar Saurabh,Cloud Computing,Second Edition,Wiley India Pvt Ltd.

Unit III	:	Chapter 5
Unit IV	:	Chapter 8
Unit V	:	Chapter 9

REFERENCE BOOKS :

1. Anthony T.Velte, Toby J.Velte Robert Elsenpeter ,"Cloud Computing-A Practical Appraoach",Tata McGraw Hill Education Pvt. Ltd, 2013.
2. RajkumarBuyya, James Broberg,AndrzejGoscinski,"Cloud Computing- Principles and Paradigms",Wiley Publications, 2014.

WEBSITES AND e-LEARNING SOURCES:

1. *https://en.wikipedia.org/wiki/Cloud_computing.*
2. *http://www.tutorialspoint.com/cloud_computing/*

QUESTION PAPER TEMPLATE

Duration : 3 Hours **Maximum Marks : 100**

Section A

Answer All the questions (10*2=20)

Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)

At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)

At least one question from each unit

SEMESTER VI

Paper Title: Elective II –Mobile Communications

Course code:CP15/6E/MOC

Teaching hours:90 hrs **Credits:** 5

L T P: 33 1

Objective

To enable students

1. To learn the concept of mobile communication.
2. To learn the role of protocol in mobile communication

Course Outline

UNIT I : Introduction:Applications-A short history of wireless communication,Wireless Transmission:Frequencies for radio transmission-Signals-Antennas-Signal Propagation-Multiplexing-Modulation-Spread Spectrum-Cellular System. **(20 hrs)**

UNIT II : Medium Access Control:Motivation for a specialized MAC-SDMA-FDMA-TDMA-CDMA.-Comparison of S/T/F/CDMA. **(20 hrs)**

UNIT III : Satellite Systems:History-Applications-Basics-Routing-Localization-Handover-Broadcsast systems:Overview-Cyclical repetition of data-Digital audio broadcasting-Digital video broadcasting-Convergence of broadcasting andmobile communications. **(15 hrs)**

UNIT IV : Mobile network Layer: Mobile IP-Dynamic host configuration protocol-Mobile ad-hoc networks. **(15 hrs)**

UNIT V : Mobile transport layer:Traditional TCP-Classical TCP improvements**(20 hrs)**

RECOMMENDED TEXT BOOK :

1. Jochen H.Schiller,Mobile Communicatin,Second Edition,Pearson Pvt Ltd.
   - Unit I : Chapter 1 and 2
   - Unit II : Chapter 3
   - Unit III : Chapter 5 and 6
   - Unit IV : Chapter 8
   - Unit V : Chapter 9

REFERENCE BOOKS:

1.Jochen Schiller,Mobile Communications (2nd Edition) 2nd Edition,Pearson.
2. Andreas F. Molisch, Wireless Communications 2nd Edition ,Wiley.

WEBSITES AND e-LEARNING SOURCES:

1. http://www.wirelesscommunication.nl/contents.htm
2. http://www.sciencedirect.com/science/book/9780123735805

Question Paper Template

Duration : 3 Hours **Maximum Marks : 100**

Section A

Answer All the questions (10*2=20)

Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)

At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)

At least one question from each unit

SEMESTER VI

Paper Title: Elective III –Computer Graphics

Course code:CP15/6E/CGA

Teaching hours:90 hrs

Credits: 5

LTP: 3 3 1

Objective:

To enable students to

1. Gain basic idea about graphics.
2. Develop graphical packages.

Course Outline

UNIT I: Overview of Graphics Systems: Video Display Devices-Refresh Cathode ray Tubes-Raster Scan displays-Random scan displays-Input Devices-Hard copy Devices-Output Primitives: Points and Lines- Line -drawing algorithms-DDA-Breshanham's Algorithms-Circle Generating Algorithms-Line Attributes -Color and Gray Scale levels-Character Attributes.
(20 hrs)

UNIT II: Two –dimensionalGeometric Transformations-Basicdimensional Geometric Transformations-composite transformations-translations-rotations-scalings-other transformations.
(20 hrs)

UNITIII: Two dimensional viewing – point clipping - line clipping – cohen-sutherland line Clipping – polygon clipping –curve clipping – text clipping – exterior clipping.
(15 hrs)

UNIT IV: Graphical user interfaces and interactive input methods-input of graphical data – Input functions – interactive picture –construction techniques.
(15 hrs)

UNIT V: Color models and color applications – properties of light – intuitive color concepts – RGB color model – YIQ color model. Computer animation – design of animation sequences – general computer –animation functions-key frame systems – motion specifications.
(20 hrs)

RECOMMENDED TEXT BOOKS

1. Donald Hearn and M.Pauline Baker, Computer Graphics, Third Edition

   UNIT I : Chapter 2:2.1[First 4], 2.5, 2.6, chapter 3:3.1, 3.2, 3.5chapter 4:4.1, 4.3, 4.5
   UNIT II : Chapter5:5.1, 5.3, 5.4
   UNIT III : Chapter 6:6.6, 6.7, 6.8, 6.9, 6.10, 6.11
   UNIT IV : chapter 8; 8.2,8.3,8.5.
   UNIT V : Chapter 15 :15.1,15.3,15.4,15.5,chapter 16 : 16.1, 16.2,16.5,16.6

REFERENCE BOOKS:

1 .Newmann and Sproul, Principles of Interactive Computer Graphics.

2.Steve Harrington, Computer Graphics.

WEBSITES AND e-LEARNING SOURCES

1.http://www.graphics.cornell.edu/online/tutorial
2.http://en.wikipedia.org/wiki/Computer Graphics

QUESTION PAPER TEMPLATE

Duration : 3 Hours **Maximum Marks : 100**

Section A

Answer All the questions (10*2=20)

Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)

At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)

At least one question from each unit

SEMESTER VI

Paper Title: Elective III - Information Security

Course code:CP15/6E/INS

Teaching hours:90 hrs

Credits: 5

LTP: 3 3 1

Objective

To enable students

1. To evaluate an Organization's Security policy.
2. To create a basic security policy.

Course Outline

UNIT I : Why Information Security? : Introduction – Growing IT Security Importance and New Career - Opportunities – Becoming and Information Security Specialist – Contextualizing Information Security – Information Security Principles of Success: Introduction – Twelve Principles. **(20hrs)**

UNIT II :Security Management : Introduction – Security Policies Set the stage for Success – Four Types of Policies – Development and Management of Security Policies – Policy Support Documents –Suggested Standards Taxonomy – Security Architecture and Models : Introduction – Defining the Trusted Computing Base-Protection Mechanisms in a Trusted Computing Base – System Security Assurance Concepts – Trusted Computer Security Evaluation Critieria. **(20hrs)**

UNIT III :Information Technology Security Evaluation Criteria – Federal Criteria for Information Technology Security – The Common Criteria – Confidentiality and Integrity Models –Law, Investigations and Ethics : Introduction – Types of Computer Crime – How Cyber Criminals Commit Crimes – The Computer and the Law – Intellectual Property Law – Privacy and the Law – Computer Forensics-The Information Security Professionals Code of Ethics –Other Ethics Standards. **(15hrs)**

UNIT IV : Physical Security Control : Introduction – Understanding the Physical Security Domain –Physical Security Threats – Providing Physical Security – Operations Security : Introduction –Operations Security Principles – Operations Security Process Controls – Operations Security Controls in Action. **(15hrs)**

UNIT V : Access Control Systems and Methodology : Introduction – Terms and Concepts – Principles of Authentication – Biometrics – Single Sign-On – Remote User Access and Authentication –Cryptography : Introduction – Applying Cryptography to Information Systems – Basic Terms and Concepts – Strength of Cryptosystems – Putting the Pieces to Work – Examining Digital Cryptography. **(20hrs)**

RECOMMENDED TEXT BOOKS:

1. Information Security : Principles and Practices by Mark Merkow and Jim Breithaupt, PearsonEducation, 2007. Tata McGraw Hill, 2006.
   UNIT I : Chapter 1 andChapter 2

UNIT II : Chapter 4 andChapter 5(pg no.117-129)

UNIT III : Chapter 5(pg no.129-131,pg no.132-142) toChapter 7

UNIT IV : Chapter 8 andChapter 9

UNIT V : Chapter 10 and Chapter 11.

REFERENCE BOOKS:

1. Computer Security : Art and Science by Matt Bishop, Pearson Education, 2006.

WEBSITES AND e-LEARNING SOURCES:

1. https://en.wikipedia.org/wiki/Information_security
2. http://www.iwar.org.uk/comsec/

QUESTION PAPER TEMPLATE

Duration : 3 Hours **Maximum Marks : 100**

Section A

Answer All the questions. (10*2=20)

Ten questions two questions from each Unit

Section B

Answer Any FIVE out of Eight Questions (5*8=40)

At least one question from each unit

Section C

Answer Any FOUR out of Six Questions (4*10=40)

At least one question from each unit

SEMESTER VI

PRACTICAL VI – PHP Lab

Teaching Hours: 75 hrs **Course Code : CP15/6C/PR6**

Credits: 3

L T P: 0 0 4

Objective:

To enable students to

1 Learn the concepts of PHP programming
1. Know the basics in using database with PHP.

PRACTICAL LIST:

1. Write a PHP script that accepts a temperature value in Celsius through a Web form and converts it to the Fahrenheit scale. F=(9/5)*c+32.
2. Write a PHP script to create an application to accept the values entered into a web form that contains: One text input field , One text area, one hidden field, one password field, one selection list, two radio buttons, two checkboxes. The script should check that all the fields are filled in. If not script should display a message as to be filled.
3. Write a PHP script using any ten string functions.
4. Using only an array and a for each loop, write a program that prints the days of the week.
5. Write a PHP script using any ten array functions.
6. Write a PHP script to count the number of lines in a file.
7. Write a PHP script to read a file, reverse its contents and write the result back to a new file.
8. Write a PHP script to create a telephone directory and retrieve the data. The database contains name, address and phone number. Count the number of records and sort according to name.
9. Write a PHP script to create an employee file. The database contains employee id, employee name, designation and basic pay. D.A. is 10% of basic pay, H.R.A is 5%of basic pay and deduction is 10% of basic pay. Net pay has to be calculated. Create the necessary reports for the employee.
10. Create a webpage that asks details for an electricity bill which includes customer name, customer number, phone number, address, type of customer, previous reading and current reading. Calculate the bill amount for the customer.