

Gondwana University, Gadchiroli



Choice Based Credit System (CBCS)

Syllabus of Master of Computer Application (MCA)

**Faculty of Science
(Three Years Degree Course)**

Computer Science Board

2016-2017

MCA I (Semester I)								
Subject	Paper Code	Paper Name	Total Period /Week	Credit	% of Assessment			
					IA	UE	Total	Min. Passing (40%)
Core	PSMCAT101	Java Concepts	4	4	20	80	100	40
	PSMCAT102	Operating System and Linux	4	4	20	80	100	40
	PSMCAT103	Project Management	4	4	20	80	100	40
Discipline Specific Elective (DSE)	PSMCAT104.1 PSMCAT104.2	<u>Elective</u> 1. Discrete Mathematical Structure 2. Numerical Methods	4	4	20	80	100	40
Skill Enhancement Elective (SEE)	PSMCAT105.1 PSMCAT105.2	<u>Elective</u> 1. Digital Electronics 2.PC-Maintenance	4	4	20	80	100	40
Core Lab*	PSMCAP106	Lab on PSMCAT101, 102 & 103	6	2	50	50	100	40
SEE based Lab	PSMCAP107	Lab on PSMCAT105.1 or PSMCAT105.2	6	2	50	50	100	40
Ability Enhancement	PSMCAS108	Seminar	1	1	25	-	25	10
Total			33	25	255	470	725	290

- **Core:** Major theory papers in the concerned subject.
- **Discipline Specific Elective:** These papers will be specialization in the concerned subject.
- **Skill Enhancement course:** Student can choose this paper from any subject.
- From Elective Courses (Either Skill based and Discipline Specific), students need to select one paper form each.
- **IA**(Internal Assessment) :It will be evaluated by Internal Examiner appointed by College in consultation with the University. (Refer Appendix 1)
- **UE**(University Examination): It will be evaluated by External Examiner appointed by University. (Refer Appendix 1 & 3)

- **Period:** Each period is of 48 minutes or as per Government direction from time to time.
- In Paper Code
 - 1st Letter (P) : Represent it a Post Graduate Course.
 - 2nd Letter (S) : Represent it is Science Faculty
 - Next 3 Letter (MCA) : Represent the Master of Computer Application)
 - Next Letter (T/P) : T : Represent Theory Paper (Refer Appendix 1)
P : Represent Practical/Project (Refer Appendix 1 & 2)
S : Represent Seminar (Refer Appendix 1)
 - Last two letter : Represent Paper No. for Ex. 01 Represent Paper no. 1
- **Lab* :**
 - 1)Not more than two students should be allowed to do practical on one machine.
 - 2)Wherever possible Practical's should be perform using Open Source Software.

Note: Student must appear for University Practical Examination.

Note :Direction and Scheme of course is available in the website of Gondwana University, Gadchiroli(www.gondwana.digitaluniversity.ac)

MCA I (Semester II)

Subject	Paper Code	Paper Name	Total Period /Week	Credit	% of Assessment			
					IA	UE	Total	Min. Passing (40%)
Core	PSMCAT201	Advanced Java	4	4	20	80	100	40
	PSMCAT202	Data Structures	4	4	20	80	100	40
	PSMCAT203	Software Testing	4	4	20	80	100	40
Discipline Specific Elective (DSE)	PSMCAT204.1 PSMCAT204.2	<u>Elective</u> 1.Data Warehousing 2. Client and Server Technologies	4	4	20	80	100	40
Skill Enhancement	PSMCAP205	Project	4	4	20	80	100	40
Core Lab	PSMCAP206	Lab on PSMCAT201&PSMCAT202	6	2	50	50	100	40
DSE based Lab	PSMCAP207	Lab on PSMCAT204.1 Or PSMCAT204.2	6	2	50	50	100	40
Ability Enhancement	PSMCAS208	Seminar	1	1	25	-	25	10
Total			33	25	255	470	725	290

Pattern of Question Paper

General Rules and Regulations regarding pattern of question paper for the semester end examination is as given below:

1. There will be four units in each paper.
2. Maximum marks of each theory paper will be 80.
3. Question paper will consist of five questions, each of 16 marks.
4. Four questions will be based on four units with internal choice.
5. Fifth question will be compulsory with questions from each of the four units having equal weightage and there will be no internal choice.

Master of Computer Application	
MCA – [I / II / III]	Semester – [I / II/ III / IV / V]
Paper Code :	Paper : Name of Paper
Time: 3 Hours]	[Max. Marks: 80
Note: 1) All questions are compulsory and carry equal marks.	
2) Draw Neat and Labeled diagram and use supporting data wherever necessary.	
3) Avoid vague answers and write specific points/answer related to questions.	
Q1 Either (From Unit 1)	
a)	8
b)	8
Or	
c)	8
d)	8
Q2 Either (From Unit 2)	
a)	8
b)	8
Or	
c)	8
d)	8
Q3 Either (From Unit 3)	
a)	8
b)	8
Or	
c)	8
d)	8
Q4 Either (From Unit 4)	
a)	8
b)	8
Or	
c)	8
d)	8
Q5 Solveall questions	
a)(From Unit 1)	4
b) (From Unit 2)	4
c)(From Unit 3)	4
d)(From Unit 4)	4

Master of Computer Application – I

(Semester I)

Master of Computer Application – I (Semester I)

Paper Code: PSMCAT101

Paper 1: JAVA CONCEPTS

Credit : 4]

[Max. Marks: 80

Unit - I : Problem Solving Techniques

Problem Analysis, Process Analysis, Conceptual Development of Solution. Development Tools:

Algorithm: Types of Algorithm, Analysis of Algorithm, Advantage and Disadvantage of Algorithm, Complexity of an Algorithm, Big-O Notation **Flowcharts:** Types of Flowcharts, Advantage and Disadvantage of Flowchart. **Pseudo Code:** Definition and Its Characteristics

Unit - II : Basic Programming concepts of Java

Java Tokens: Identifiers, Keywords, Expressions in Java, Operators; Data Types in Java, Implementing Java Programs, Java Virtual Machine, Type Casting, Control Structures, Looping statements, Arrays and its methods, String.

Unit -III : Classes, Objects and Methods

Object Fundamentals and Features, Scope rules, Static data, Static methods, Static blocks, Data Members and Variable, Abstract Methods and Classes, Overloading, Overriding Methods, Constructors, Subclasses (Inheritance), Interfaces, Packages, Importing Packages and Classes, User define packages, Multithreading, Exception Handling.

Unit - IV :Applet &AWT

Applet: Applet Class, Architecture, Life Cycle, Display Methods, <Applet Tag>, and Passing Parameter to Applet.

AWT: Working with Windows (Frames and Panel), Controls (Label, TextField, Button, Checkbox, ScrollBar, List, Choice)**Layout Managers:**Border Layout, Flow Layout, Grid Layout, Menu.

Text Books:

1. Dr. S. B. Kishor, “PROGRAMMING LOGIC AND TECHNIQUES”, BlackSwan (University Press) Hyderabad, Sep. 2012, ISBN 978 81 7371 822 9
2. E. Balguruswamy, “Programming with Java - A Primer 3/e”, Tata McGraw-Hill, New Delhi, Third Edition, ISBN 0-07-061713-9
3. Cay S Horstmann Gary Cornell, “Core JAVA 2 Vol -1, 2”, The Sun Micro Systems Press, New Delhi, ISBN- 978-0470105559

Reference Books :

1. Herbert Schildt, “Java2 Complete Reference”, Tata McGraw Hill, 7th Edition, Year-2007, ISBN No- 0-07-063677-X

- Deitel and Deitel, "Java How to Program", Prentice Hall Upper Saddle River, New Jersey 07458 (US). ISBN 0-13-034151-7

Master of Computer Application – I (Semester – I)

Paper Code : PSMCAT102

Paper 2: OPERATING SYSTEM AND LINUX

Credit : 4]

[Max. Marks: 80

Unit – I: Introduction to Operating System and CPU Scheduling

Introductory Concepts: Operating System Functions and Characteristics, Historical Evolution of Operating Systems, Real Time Systems, Distributed Systems, Methodologies for Implementation of O/S Service System Calls, System Programs, and Interrupt Mechanisms. CPU Scheduling: Levels of Scheduling, Comparative Study of Scheduling Algorithms.

Unit – II: Deadlock Management

Deadlocks: Deadlock Characterization, Deadlock Prevention and Avoidance, Deadlock Detection and Recovery, Practical Considerations. Concurrent Processes: Critical Section Problem, Semaphores, Classical Process Co-Ordination Problems and their Solutions, Interprocess Communications.

Unit–III: Introduction to Linux

Structure of Linux Operating System, Exploring the directory structure, Naming files and directories. **Shell:** Bourne, Korn and C-Shells

File system Commands: ls, mkdir, rmdir, cd, cat, mv, cp, rm, ln, pwd, more.

Text editing with vi editor

Unit- IV: Shell Scripts

Pipe and Filters: sort, grep, egrep **Permission modes:** chmod, chown, chgrp **Process:** ps, kill
Communication

Shell Scripts: Variables, Arithmetic in Shell Script, Control flow statements, Shell Parameters.

Text Books:

- Peterson Richard, "The Complete References Linux", Tata McGraw Hill, "4th Edition", Year- 2000, ISBN No.- 978-0072129403
- Dr. S. B. Kishor, "Introduction to Operating System", Das Ganu Prakashan, 2nd Edition,
- Cox K, "Red Hat Linux Administrator's Guide", PHI Publication, Year- 2001, ISBN 13: 9780761521570
- Tannenbaum, "Operating Systems", PHI Publication, "4th Edition", Year- 2000

Reference Books:

- Tackett, Burnett, "Using Linux", PHI, Fifth Edition, 2001, ISBN 81-203-1653
- Stuart E. Madnick, John Donavan, "Operating System, TMH, ISBN-0-07-463273-6

Master of Computer Application– I (Semester I)

Paper Code :PSMCAT103

Paper 3: PROJECT MANAGEMENT

Credit : 4]

[Max. Marks: 80

Unit - I : Introduction to Project Management

Introduction to Project Management, Project Process, Importance of a Project Management Process, Project Context, Interpersonal and Behavioral Context, Organizational Context, Success, Role of Project Manager, Common challenges associated with project manager, skill requirements, and functional competencies of project manager.

Unit - II : Initiation of Project Management

Strategic Management and Project Selection- Project Management Maturity, Project Selection and Criteria of Choice, Nature of Project Selection Models, Types of Project Selection Models, Analysis under uncertainty, Project Portfolio Process. **The Project Manager**, Negotiation and the Management of Conflict, The Project in the Organizational Structure,

Unit - III : Project Planning

Project Activity Planning-Initial Project coordination and the project plan, systems integration, the action plan, WBS, Budgeting and Cost Estimation, **Scheduling-** Background, Network Techniques: PERT (ADM) and CPM (PDM), Risk Analysis using Simulation with Crystal Ball

Resource Allocation- Critical Path Method-Crashing a Project, Resource Allocation Problem, Resource Loading & Levelling, Resource Scheduling.

Unit - IV : Execution, Control & Report

Execution: Conflicts, Managing Changes in Projects, Resistance to change **Control & Report-** Communication, Listening, Reporting, Managing Delays, Escalation, Negotiating Rational Delays, Team Meetings. **Project or Phase Close**

Text Books:

1. Jack R. Meredith, Samuel J. Mantel, Jr., Project Management – A Managerial Approach, John Wiley & Sons, Inc., 7th Edition, 2009, ISBN-13 978-0-470-22621-6.
2. Christine Petersen, The Practical Guide to Project Management, PMP Publication, 1st Edition, 2013, ISBN-13 978-0-470-22621-6.

Reference Books :

1. Carl Chatfield, Timothy Johnson, Step by Step, MS Project 2013, Microsoft Press, 1th Edition, 2013, ISBN: 978-0-7356-6911-6

Master of Computer Application – I (Semester I)

Paper Code : PSMCAT104.1

Paper 4: DISCRETE MATHEMATICAL STRUCTURE

Credit : 4]

[Max. Marks: 80

Unit – I: Mathematical Logic

Mathematical Logic- Statements and Notation, Equivalence of Formulas, Duality, Connectives, Normal Forms, Principle Disjunctive Normal Form, Principle Conjunctive Normal Form, Theory of Inference for the Statement Calculus, Inference Theory of the Predicate Calculus.

Unit – II: Relation and Digraph

Relational and Digraphs- Product Sets and Partitions, Relations and Digraphs, The Matrix of a Relation, Paths in Relations and Digraphs, Properties of Relations, Equivalence Relations, Computer Representation of Relations and Digraph, Manipulation of Relations, Transitive Closure and Warshall's Algorithm.

Unit – III: Lattices and Boolean-Algebra

Additional Relations and Structure- Partially Ordered Sets, Lattices, Hasse Diagram, Principle of Duality, Distributive Lattice, Sub Lattice, Complemented Lattice

Boolean-Algebra: Introduction, Functions of Boolean algebra's, Boolean Function as Boolean Polynomials

Unit – IV: Groups, Languages and Finite State Machines

Groups: Binary Operations, Products and Quotients of Groups, Subgroup, Abelian Group, Normal Subgroup, Semi Groups, Products and Quotients of Semi Groups.

Languages: Definition, Languages of Machine, Grammar, Derivation Trees

Finite-State Machines: Introduction to Finite State Machine, Moore Machines

Text Books:

1. Bernard Kolman, Robert C. Busby, Sharon C. Ross, "Discrete Mathematical Structures", Prentice Hall Publication, "6th Edition", Year-2008, ISBN No.-0132297515.
2. Discrete Mathematical Structures with Application to computer science, Publication Tata McGraw –Hill, Year-2003, ISBN-0-07-065142-6,
3. Dr. S.B. Kishor, "Discrete Mathematics", Das Ganu Prakashan, 2014, ISBN-978-93-81660-21-8

Reference Books:

1. Goodaire, "Discrete Mathematics with Graph Theory", PHI Publication, Year-1997, ISBN No- 0136020798.
2. J.K.Sharma, "Discrete Mathematics", McMillan Publication, Copyright Year-2011, ISBN No- 9780230322301.
3. Rajendra Akerkar, "Discrete Mathematics", Publication Pearson

Master of Computer Application-I (Semester-I)

Paper Code :PSMCAT104.2

Paper 4: Numerical Methods

Credit : 4]

[Max. Marks: 80

UNIT –I:Roots of Non-Linear Equations

Algebraic equation, Polynomial equation, Transcendental equation, Iterative method, Starting & Stopping Iterative method, Bisection Method, False Position method, Newton Raphson Method: Secant Method, Determining all possible roots, Multiple roots of polynomial, Complex Roots using Muller's Method.

UNIT –II: Linear Equations

Solution to Linear Equations, Existence of solution, Gauss Elimination Method, Gauss elimination with pivoting, Gauss Jordan Method, Round off errors and refinement, m Conditioned system, Matrix inversion method.

UNIT –III: Interpolation

Linear interpolation, Lagrange Interpolation, Spline Interpolation, Interpolation with equidistant points, Least Square regression Fitting, Transcendental equations, Multiple linear regression, m conditioning in Least square

UNIT - IV: Integration and Differentiation

Trapezoidal Rule, Simpson 1/3 Rule, Simpson 3/8 rule, Gaussian Integration, Solution to differential equation (using Runge-Kutta second and fourth order methods, Multistep method for differential equations Milne-Simpson method, Adams-bashforth--Moulten Method).

Text Books:

- 1.Y. Rajaraman, Computer Oriented Numerical Methods - Prentice Hall Publication
- 2.Gupta and Kapoor Fundamental of Mathematical Statistics
- 3.Brian Flowers Introduction to Numerical Methods in C++ By. (Oxford)
- 4 .E. Balaguruswamy, Numerical Methods - Tata McGraw Hill Publication

Reference Books:

- 1.SSastry Introduction to Numerical Analysis
- 2.Srimanta Pal Numerical Methods (Oxford)
- 3.KSankaraRao Numerical Methods for Scientists & Engineers.
- 4.ManishGoyal Computer Based Numerical And Statistical Techniques (Laxmi)

Master of Computer Application-I (Semester-I)

Paper Code :PSMCAT105.1

Paper 5:DIGITAL ELECTRONICS

Credit : 4]

[Max. Marks: 80

Unit –I: Number System and Data Representation

Number System: Binary, Octal, Decimal and Hexadecimal Number System and their Inter Conversion. **Binary Codes:**BCD , Excess3, Parity, Gray, ASCII, EBCDIC Codes and their Advantages and Disadvantages. **Data Representation :**Positive,Negative, Maximum and Minimum Number Representation (Related to 8 bit Number), Real Number Representation, Underflow, Overflow, Range and Accuracy.

Unit – II: Binary Arithmetic

Binary Arithmetic: Binary Addition, Decimal Subtraction Using 9's and 10's Complement, Binary Subtraction Using 1's and 2's Complement, Multiplication and Division.

Logic Gates:Truth Table, Properties and Symbolic Representation of NOT, AND, OR, NOR, NAND, EX-OR, EX-NOR Gates. NOR and NAND Gates as Universal Gates.

Unit - III : Boolean Algebra and Combinational Circuits

Boolean Algebra:Laws and Identities of Boolean Algebra, Demorgan's Theorem, Use of Boolean Algebra for Simplification of Logic Expression, K-Map for 2,3,4 Variables, Simplification of SOP and POS Logic Expression Using K-Map.

Combinational Circuits: Half Adder, Full Adder, Parallel Adder, Half Subtractor, Full Subtractor, 4-Bit Binary Adder Subtractor, Multiplexer, Demultiplexer, Decoder, Encoder, Parity Detector.

Unit – IV: Sequential Circuits and Counters

Sequential Circuits: Flip-Flops Construction and Working of RSFF, JKRSFF, DFF, TFF, JKFF and JKMSFF. **Counters:**Construction and Working of Asynchronous, Synchronous, Up-Down Counter, Shift Registers and Their Types, Ring Counter , Johnson Counter with their Time Diagram.

Text Books:

1. Gothman, "Digital Electronics", PHI.
2. Navaneeth, Kale and Gokhale,"Digital and Analog Technique".ISBN-81-225-0153-2

Reference Books:

1. SoumitraMandal, "Digital Electronics", TMH, ISBN 0-07015382-5
2. A. P. Malvino, Jerald A. Brown," Digital Computer Electronics", Tata McGraw – Hill Publishing, 3 rdEdition , 1995, ISBN 13:978-0- 0-462235- 3
3. R. P. Jain," Modern Digital Electronics", Tata McGraw- Hill Publishing, 3 rd Edition, 2003, ISBN 0-07- 049492-4

Master of Computer Application - I (Semester - I)

Paper Code : PSMCAT105.2

Paper 5: PC MAINTENANCE

Credit : 4]

[Max. Marks: 80

Unit - I : Preventive Maintenance

Introduction, Need, Tools, Materials. Procedures: Active Hardware Maintenance, Active Software Maintenance, Passive Maintenance Procedure, Heat and Temperature Control, Dust and Pollution Control, Ventilation Control, EMI Electrostatic Discharge Control, Humidity and Corrosion Control, Shock and Vibration Control. Preventive Maintenance Schedule. BIOS and CMOS, Working with the BIOS Setup Program.

Unit – II: CPU and Monitor

History and Study of Different Types of CPUs, Terminology Used with CPU, Data Processing Inside CPU, RAM & ROM, Different Types of ROM, Virtual Memory, Installing and Removing Memory. Video Cards and Monitors, Display Resolution, Feature, Video Driver, CTs Working, LCDs Working, Monitor Resolution, Interfacing, Refresh Rate, Monitor Driver, Adjusting Display Settings in Windows.

Unit –III: Study of Drives

Study of Different Types of Drives, Hard Drive Interfaces- IDE, SCSI, SATA Hard Drive Performance, Installing Hard Drives, Partitioning, Disk Formatting, Common Hard Drive Problems. Installation of Operating System and Software: Installing Video Card, Testing, plug in the Video Card, Providing Power to Motherboard, Testing. Installing the CD ROM Drive, Installing Keyboard and Mouse, Installing Sound Card, Installing Modem, Installing the Motherboard, Installing the Power Supply, Attaching Add-on Cards, Installing the Drives Testing, Parallel and Serial Port Connection, Front Panel Indicators and Speakers.

Unit – IV: Study of Printer, Formatting and Trouble Shooting

Printer Features, Printer Performance, Print Quality, Print Speed, Printer Types, Printer Working, Installation of Printer Driver, Cleaning a Printer, Common Printer Problems. **Formatting:** Formatting PC, Backup of Data Before Formatting, System Restore, Precautions for Formatting, Role of Technician.

Trouble Shooting: Introduction, Types of PC Faults: Solid Faults, Intermittent Faults, Developing Strategy. Diagnostic and Repair Tools – Diagnostic Software Tools, Diagnostic Hardware Tools, Advanced Testing Tools, Hand Tools for Service Engineers, Disassembling PC, Troubleshooting Display Problems, Memory Troubleshooting, Power Supply Testing and Problems Troubleshooting. Cleaning and Trouble Shooting of Keyboards, Mouse, Front Panel Indicators and Speakers Troubleshooting.

Text Books:

1. Fundamentals of Computers – Raja Raman (Prentice Hall Of India), ISBN 81-203-2581-8
2. Basics of Computer Hardware –BPB Publication
3. Troubleshooting Your PC's for Dummies 3rd Edition – Dan Gooin, Willey Publishing Inc. ISBN:9780470230770

Reference books:

1. Microprocessor and Interfacing by Douglas Hall.
2. Inside the IBM PC by Peter Norton.

3. IBM PC/XT Hardware: Reference Manual.

Master of Computer Application – I (Semester – I)
Practical

Paper Code :PSMCAP106

Credit : 2]

[Max. Marks: 100

Practical List on JAVA Concepts

1. Write a java program to find largest among three numbers.
2. Write a java program to check whether seller made or loss, if sales price and purchase price is inputted through keyboard.
3. Write a program to accept two numbers and display result using command Line argument.
4. Write a program for sorting a list of number using Array.
5. Write a java program to print following output.

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

6. Write a java program to no. of evens and no. odd numbers in an array of size 10. Also calculate sum of evens and sum of odds.
7. Write a java program to find sum of prime numbers ranges from 1 to 100.
8. Write a program to calculate multiplication and division using static method.
9. Write a program of Constructor Overloading to calculate Area of Room.
 - i. Default constructor
 - ii. Constructor with one argument.
 - iii. Constructor with three arguments.
10. Write a program to demonstrate Single Inheritance.
11. Write a java program to create a class “ Student” with rollno,sub1,sub2,sub3 as data members and get Data() and print Data() as member functions.
12. Write a program to calculate Area of rectangle and circle using Interface.
13. Design a Interface “MyInter” and add two methods sum() and mult() for two integers in it.
14. Write a java program to demonstrate the try...catch mechanism.
15. Write a java program to show use of throw, throws and finally keyword.
16. Write a program which throws IO Exception.(Accept student Name and age from keyboard and display.
17. Write a program to demonstrate user defined exception (use division of two no's & throw user define exception if result is smaller than 0.01)
18. Write a java program to demonstrate Threads using Thread class and also with Runnable interface.
19. Write a java program which shows the use of synchronization.

20. Write an AWT program to accept user's details.
21. Write a Swing Program to create Student Admission Form using various controls.
22. Write a program to demonstrate Event Handling.
23. Write an Applet program to create Login page having Username and Password.
24. Design a user interface using applet which accepts a number and program will calculate square and cube of given number and also display in respective textbox.
25. Design a user interface using applet to accept two values and calculate sum of these numbers.

Practical List Based on LINUX

- 1) Perform the following Directory Commands
 - a) pwd b) ls c) mkdir d) cd e) rmdir
- 2) Perform the following File management Commands
 - a. Cat b) cp c) ln d) rm e)more f) mv
- 3) A Shell Script to perform various arithmetic operations.
- 4) A Shell Script that takes two numbers from keyboard and display their average as an output.
- 5) A Shell Script to display current date, users who have logged in , process status and calendar of the month.

Practical List of Project Management

(Note: Practical's can be performed either in MS Project 2013 or Wrike (Open Source Software) can be used by Student's)

ABOUT PRACTICALS

This practical has two objectives:

- To give you basic practice in using MS-Project/Wrike, by planning simple projects that you are already familiar with; and
- To provide an introduction to MS-Project/Wrike so that you may use it “in anger” to support your main assignment.

There are 2 main tasks:

1. Using the examples, you can use MS-Project/Wrike to conduct basic tasks in project planning.
2. Based on what you have done so far in manually planning it is used in MS-Project/Wrike to:
 - construct a project plan, then
 - produce a Gantt Chart and network diagram, and
 - estimate the total project duration, taking account of resource constraints, etc.
1. Write the steps to create new project with global settings.

2. Create a Project in MS Project/Write for building home construction.
3. Create a Project in MS Project/Write for creating project management life cycle.
4. Create a Project in MS Project/Write for creating activities (tasks) in system testing plan.
5. Create a project using MS Project/Write to relate small set of tasks related to the initial phases of a system testing plan.
6. Create a project to show linking of tasks with each other.
7. Create a project to assign the resources to tasks in MS Project/Write.
8. Create a project to show all the phases of SDLC with linking of tasks.
9. Create a project in MS Project/Write to show milestones in project.
10. Create a project in MS Project/Write to assign the resources and cost estimation.

Master of Computer Application – I (Semester – I)
Practical

Paper Code : PSMCAP107

Credit : 2]

[Max. Marks: 100

Practical list of DIGITAL ELECTRONICS

- 1) To Study and Design the characteristics of basic gates (AND, OR, NOT).
- 2) To Study and Design the characteristics of Universal gates (NAND, NOR).
- 3) To Study and Design the Derived gates (EX-OR, EX-NOR)
- 4) To Study and Design the basic gates (AND, OR, NOT) using Universal NAND gate.
- 5) To Study and Design the basic gates (AND, OR, NOT) using Universal NOR gate.
- 6) To Study and Design the basic gates (EX-OR, EX-NOR) using Universal NAND gate.
- 7) To Study and Design the derived gates (EX-OR, EX-NOR) using Universal NOR gate.
- 8) To Study and Design NOR gate using NAND gate.
- 9) To Study and Design NAND gate using NOR gate.
- 10) To Study and Design RS FLIP FLOP using NAND gate.
- 11) To Study and Design RS FLIP FLOP using NOR gate.
- 12) To Study and Design JK FLIP FLOP.
- 13) To Study and Design JKMS FLIP FLOP.
- 14) To Study and Design the Half-adder.
- 15) To Study and Design the Full-adder.
- 16) To Study and Design the Half subtractor.

Practical list PC Maintenance and Troubleshooting

- 1) Study of various Input devices.
- 2) To study and Installation of Keyboard.
- 3) To study and Installation of Mouse.
- 4) Study of various Output devices.
- 5) To study and Installation of Scanner.
- 6) To study and Installation of Printer.
- 7) To study and Installation of Multimedia.
- 8) Study of different operating system.
- 9) Study of booting process.
- 10) To study assembling and disassembling the PC.

- 11) To study and Installation of configuring motherboard.
- 12) To study and Installation of VGA adaptor.
- 13) To study and Installation of SMPS.
- 14) To study and Installation of Software.
- 15) To study and Installation of antivirus software.
- 16) Procedure to cleanup Disk, Disk fragmentation.

Master of Computer Application – I
(Semester II)

Master of Computer Application – I (Semester II)

Paper Code :PSMCAT201

Paper 1:ADVANCE JAVA

Credit : 4]

[Max. Marks: 80

Unit – I: Introduction to Swing& JDBC:

Swing:- Basic Swing Components,**Event Delegation Model:**Event Source and Handlers, Event Categories, Listeners, Adapters-Anonymous Classes,Applets-Applet Life Cycle, Applet Context, Inter applet communication.

JDBC:-Introduction:- JDBC Architecture, Types of Drivers, Statement, ResultSet. Sample example of JDBC connectivity with MS-Access and ORACLE .

Collection Classes:-List, Linked List, Vector, Hash Set, Tree Set, interface such as comparator and iterator.

Unit – II: SERVLETS :

Introduction, Web application Architecture, Http Protocol & Http Methods, Web Server & Web Container, Servlet Interface, Generic Servlet, Http Servlet, Servlet Life Cycle, Servlet Communication, Servlet-Browser communication, sendError, setHeade, sendRedirect, Session Tracking Mechanisms, Web-Security.

Unit - III :JSP :

Introduction to JSP: Jsp Life Cycle, Jsp Implicit Objects & Scopes, Jsp Directives (page, include, taglib), Jsp Scripting Elements (declarative,scriptlets, expressions), Jsp Actions, Custom Actions(Classic Tags, Simple Tags).Server- Tomcat and Weblogic.

Unit - IV : Hibernate

Introduction to Hibernate:-ORM (Object Relational Mapping), Configuration xml file and Mapping xml file along with DTDs, Hibernate architecture, Installation and Directory Structure, Hibernate Data Types. Sample Application using Hibernate, Hibernate API, CRUD operations, Primary key Generators, Hibernate Query Language (HQL), Native SQL, Advantages of Hibernate compared to JDBC.

Text Books :

1. Diel, “How to program ” Pearson Education Inc.6th Edition, year 2007,ISBN No. 81-317-0954-X
2. Hibernate in Action (In Action series) by Christian Bauer and Gavin King

Reference Books:

1. Jason Hunter, William Craford“Java Servlet programming”, Oeilly publication Inc, 2nd edition ISBN no.0596000405

Master of Computer Application – I (Semester II)

Paper Code : PSMCAT202

Paper 2 : DATA STRUCTURES

Credit : 4]

[Max. Marks: 80

Unit - I : Introduction to Data Structures

Data Structure and Algorithms- Introduction, Data Structures, Fundamentals of DS, Operations on DS, Data, Information, Concept of Data Types, Different Approaches for Designing an Algorithm, Type of Algorithm, Algorithm of Analysis. **Arrays**- Introduction, Types of Arrays, Memory/Storage Representation of One Dimensional Array, Declaration of Array, Multidimensional Array, Number of Elements in 2-D, Jagged Array, Sparse Matrix. **Stacks**- Introduction and Definition, Array Representation of Stack, Application of Stack, Hierarchy of Operation, Representation of Arithmetic Expression.

Unit - II : Recursion, Queues and Link List

Recursion- Introduction, Recursion Properties, Applications of Recursion, Advantages and Disadvantages of Recursion, Tail Recursion, Linear and Binary Recursion, Tower of Hanoi. **Queues**- Introduction, Applications of Queue, Circular Queues, Priority Queues, Application of Priority Queue.

Linked List- Introduction, Dynamic Memory Management, Definition of Linked List, Application of Linked List, Representation of Linked List, Types of Linked List.

Unit - III : Tree and Graphs

Trees- Introduction, Definition of Trees, Binary Tree, Type of Binary Tree, Operation on Binary Tree, Traversal of Binary Tree, Binary Search Tree (BST), Expression Trees, Memory Representation of Binary Tree, Threaded Binary Tree, AVL Tree, B-Tree.

Graphs: Definition of Graph, Various Terminology Used in Graph, Sequential Representation of Graph, Path Matrix, Spanning Tree, Minimum Spanning Tree (Kruskal Algorithm, PRIM'S Algorithm), Traversing a Graph

Unit - IV : Sorting and Searching

Sorting- Definition of Sorting, Classification of Sorting, Stability, Comparison of Sorting Method, Bubble Sort, Sequential Sort, Insertion Sort, Selection Sort, Merge Sort, Shell Sort, Radix Sort, Heap Sort, Quick Sort, Topological Sorting.

Searching- Definition, Type of Searching (Linear / Binary / Soundex).

Text Books:

1. Dr. S. B. Kishor, "Data Structures", Das Ganu Prakashan, 2012, ISBN-978-81-921757-4-4
2. D. Samanta, "Classical Data Structure", Prentice Hall India, New Delhi.
3. Lipschutz Schaums, "Data Structure", Outline Series TMH Publication, Year-2003, ISBN-0-07-099032-8

Reference Books:

1. Tenenbaum, "Data Structures Using C and C++", Prentice Hall India Publication, 2nd Edition, Year-2006, ISBN-81-317-0328-2.

2.DeshpandeeandKakade, “C and Data Structure”, DreamtechPublication, Year-2007,
ISBN-81-7722-424-7

Master of Computer Application – I (Semester II)

Paper Code : PSMCAT203

Paper 3 :SOFTWARE TESTING

Credit : 4]

[Max. Marks: 80

Unit – I: Introduction to Software Testing

Introduction, Power and Challenges of Software projects, Software Fiascos, Reasons and solutions of software failure, Software testing professionals. **Fundamentals of Testing** – What is testing? Significance of Testing, Psychology of Testing and its choices, who does the Testing? Testing Phases, Testing Systems and its strategies, Metrics in Testing Phase. Risk-based Testing and Types of Risks.

Unit –II: Testing Levels and Types

Testing Levels – Testing Levels and Testing Approaches, **Types of Testing** – Smoke, Black box, White Box, Interface, Use Case, Gorilla, etc.**Static Testing-** Manual Reviews, Formal Code Reviews, Static Analysis.

Unit-III: Dynamic & Managing Testing Techniques.

Dynamic Testing – Review, Identify, Test Specification, Design Test Cases, Execute Test Cases, Generate Incident Report, Log the Defects, Test Documentation Standards, Formal Methods of Testing. **Managing Testing Process** – Management Commitment, Testing Process Management, Planning, Budgeting and Scheduling the Testing.

Unit-IV: Software Testing Tools & Code of Ethics

Software Testing Tools – Need for Tools, Classification of tools, benefits of tools, risk associated with tools, selecting tools, introduction to tools in testing process. **Code of Ethics for Software Professionals** – Human ethics, professional ethics, ethical issues in software engineering

Text Books:

1. Dr. K.V.K.K. Prasad, “ISTQB Certification Study Guide”, Wiley-Dreamtech Press, Year-2004, ISBN- 9788177227116.
2. Boris Beizer, “Software Testing Techniques”, Dreamtech Press, “2th Edition”, Year- 2002
- 3.SrinivasanDesikan, Gopaldaswamy Ramesh, “Software Testing: Principles and Practice”, Pearson Education India, Year-2006

Reference Books:

- 1.Dr. K.V.K.K. Prasad, “Software Testing Tools”, Dreamtech Press, Year- 2004
- 2.Brian Marick, “The Craft of Software Testing”, Pearson Education India.

3. SPD, “Software Testing Techniques”, Oreille.

Master of Computer Application - I (Semester – II)

Paper Code: PSMCAT204.1

Paper 4:DATA WAREHOUSING

Credit : 4]

[Max. Marks: 80

Unit – I: Data Warehouse and OLAP

Introduction to Data Warehousing: Characteristics of a Data Warehouse, Data Warehouse Architectural Strategies, Design Considerations, Data Content, Building a Data Warehouse, Metadata, Tools for Data Warehousing, Performance Considerations, Crucial Decisions in Designing a Data Warehouse. Various Technological Considerations: OLTP and OLAP Systems, Data Modeling, Categories of OLAP Tools, Managed Query Environment (MQE), OLAP Tools and Internet.

Unit – II: Data Mart and Data Mining Tools

Data Mart: Data Mart, Type of Data Mart, Loading a Data Mart, Metadata for a Data Mart, Data Model for a Data Mart, Software Component for a Data Mart, Tables in Data Mart, Security in Data Mart. **Data Mining and Tools:** Introduction, From Data Warehouse To Data Mining, Steps of Data Mining, Data Mining Algorithm, Database Segmentation, Predictive Modeling, Link Analysis, Tools for Data Mining.

Unit – III: SQL Basic, Create, Modify and Retrieve Database Objects

SQL Basic Concept and Principles: SQL Language, Role of SQL, SQL Feature and Benefits, Relational Database and SQL, Fundamental SQL Concepts and Principle, SQL Data Types, Constants, Operators, Expressions, SQL Functions and Data Integrity. **Creating, Modifying and Retrieving Database Objects:** Data Definition Language, Data Manipulation Language, Table, Index, Views, Aliases, Synonyms, Schemas and Sequences, Data Queries – Select Statement, Query Result, Single Table, Multiple Table Queries, Types of Clause, Types of Joins, Sub Queries and Queries Expression.

Unit – IV: Transaction Processing, Database Security and PL/SQL

Transaction Processing and Database Security: Transaction Control Language, Commit, Rollback, Save Point, Managing Security and Privileges, Grant, Revoke, Using Views for Security, Using Views, Stored Procedure and Triggers for Security, Locking Levels, Shared and Exclusive Locks, Deadlock, Avoidance, Locking Techniques. **PL/SQL Programming Concept,** Stored Procedure, Functions, Triggers

Text Books:

1. C.S.R. Prabhu, “Data Warehousing”, PHI Publication, “3rd Edition”, Year- 2010, ISBN No- 9788120336278
2. Pang-Ning Tan, Michael Steinbach and Vipin Kumar, “Introduction to Data Mining”, Pearson Addison Wesley Publication “ 1st Edition”, Year- 2005, ISBN No- 0321321367
3. Alan Beaulieu, ” Learning SQL”, O’Reilly Publication, ” 2nd Edition”, Year- 2009, ISBN No- 0596520832

Reference Books:

1. AmiteshSinha, ”Data Warehousing”, Thomson publication, “1st Edition ”, Year- 2001, ISBN No- 0790612496

2. Larry Rockoff, “ The language of SQL”, Course Technology PTR publication, “ 1st Edition”, Year- 2010, ISBN No- 143545751X

Master of Computer Application - I (Semester – II)

Paper Code :PSMCAT204.2

Paper 4:CLIENT AND SERVER TECHNOLOGIES

Credit : 4]

[Max. Marks: 80

Unit - I :Client Server Computing Concepts

Introduction to client / server computing Main frame – Centric client / server computing – Down sizing and client / server computing – Preserving mainframe application – Investment through porting – Client / server development tools – Advantages of Client / Server computing.

Unit - II : Components of Client Server Environment

Client Component : Components of client / server application – The client – Client service, request for services, RPC, windows services, Fax / print services, Remote boot services, other remote services – Utility embedding – Common request broker architecture (CORBA) – Server Component: The server - Detailed server functionality – The networking operating system – Novell network – LAN manager – IBM LAN server – Banyan VINES-PC network file services.

Unit - III : Client Server Platforms

Server operating system : Netware, OS/2, Windows NT, Unix – System Application architecture (SAA) – Connectivity – Open systems interconnect (OSI) process communication (IPC) – Communication interface technology, Wide area network technology.

Unit - IV : Client / Server Development Software

Platform migration and reengineering of existing systems – Hardware components - Distributed Objects and Internet: Distributed objects and components – Compound documents : The client framework – OLE / DCOM – Client / server and the Internet – Application Development Tools : Workbench architecture – Information engineering facility architecture – EASEL Workbench – Ellipse – SQL windows – Power builder – SQL Tool set APT workbench component.

Text Books :

1. Client Server Computing by Dewire and dawnatravis, McGraw Hill.
2. Designing Enterprise Client/Server Systems by Beth Gold – Bernstein, David Marca PHI.
3. Client / Server Communications by Thomas S Ligon, TMH.

Reference Books:

1. Client/Server Computing (2nd Edition) by Patrick Smith & Steave Guengerich, Publishers: PHI

Master of Computer Application – I (Semester – II)

Paper Code :PSMCAP205

Project

Credit : 4]

[Max. Marks: 100

Instruction:

Towards the end of the second semester of study, a student will be examined in the course “Project Work”.

- a. Project Work may be done individually or in groups (Maximum 2 students) in case of bigger projects. However if project is done in groups, each student must be given a responsibility for a distinct module and care should be taken to monitor the progress of individual student.
- b. The Project Work should be done using the tools covered in Master of Computer Application
- c. The Project Work should be of such a nature that it could prove useful or be relevant from the System-oriented/Application/commercial / management angle.
- d. The project work will carry 100 marks.
- e. The external viva-voce examination for Project Work would be held as per the Examination Time Table of the second year of study, by a panel of one external and one Internal examiner.
- f. Internal Examiner must reject any project title which was already carried out in any computer course in the college using same tools.

Types of Project

It is suggested that the project is to be chosen which should have some direct relevance in day-to-day activities of the candidates in his/her institution. The Applications Areas of project may be – Financial/Marketing/Database Management System/ Relational Database Management System/E-Commerce /Internet/ Manufacturing/ Web Designing/Hardware and Software interaction based etc.

Project Proposal (Synopsis)

The project proposal should be prepared in consultation with the guide/co-guide. The project proposal should clearly state the objectives and environment of the proposed project to be undertaken. It should have full details in the following form:

1. Title of the project
2. Objectives and Hypothesis of the Project
3. Project Category (DBMS/RDBMS/OOPS/Web Designing/Internet etc.)
4. Tools/Platform, Languages to be used
5. A complete Structure of the program:
 - i. Analysis.
 - ii. Numbers of Modules.
 - iii. Data Structures or Tables
 - iv. Process Logic.
 - v. Types of Report Generation.
 - vi. Scope of future Application.

Project Report Formulation :In General, project report must consist of following. Depending upon the kind of project one may alter the following sequence in consultation with guide.

1. Title Page.
2. Certificate Page.
3. Declaration Page.
4. Acknowledgment Page.
5. Index or Content Page.
6. Documentation.
 - i. Introduction/Objectives.
 - ii. Preliminary System Analysis.
 - Identification of Need.
 - Preliminary Investigation.
 - Feasibility Study.
 - Need of New System.
 - Flaws in Present System.
 - iii. Project Category.
 - iv. Software Requirement Specification.
 - v. Detailed System Analysis.
 - No. of Modules with title of module.
 - Data Structures and Tables if any used in project.
 - Entity-Relationship Diagram if any used in project.
 - vi. System Design.
 - Source Code.
 - Input Screen & Output Screen.
 - vii. Validation Checks.
 - viii. Implementation, Evaluation and Maintenance.
 - ix. Security Measures taken.
 - x. Future Scope of the project.
 - xi. Bibliography

Appendix

- o Survey Questionnaire

Master of Computer Application – I (Semester – II)

Practical

Paper Code :PSMCAP206

[Max. Marks: 100]

Practical list for Advance Java

1. Write a program to create a frame using JFrame class
2. Write a program to create Frame and add any component on it.
3. Write a program to create a login form and implement WindowListener .
4. Write a program to demonstrate the any one layout manager class.
5. Write a program to demonstrate Linked List class.
6. Write a program to demonstrate List class.
7. Write a program to demonstrate Vector class.
8. Write a program to demonstrate connectivity with MS-Access/Oracle .
9. Write a program to demonstrate HttpServlet class.
10. Write a program to retrieve the data from comparator interface.
11. Write a program to create servlet which display the message as a “Hello Servlet”.
12. Write a program to demonstrate servlet life cycle methods.
13. Implement a servlet which counts the no. of Hits.
14. Write an HTML page which inputs the below mentioned fields and invoke the java servlet program which enters the fields in the database table Fields: Roll_ no ,Name , Department , Email_ id.
15. Write a program to demonstrate JSP Life cycle methods.
16. Implement simple JSP page which display the message as “My First JSP Page”.
17. Write one HTML page that will ask user for login. When user submit this HTML page, run JSP on server which will make query in database to check whether username & password are correct or not.
18. Implement simple JSP page to demonstrate JSP action.
19. Implement simple JSP page to demonstrate Custom action.
20. Write a program to access the database through JSP.
21. Develop an application using hibernate.

Practical List of Data Structure

1. Write an algorithm and program in C++ to delete an element from n^{th} position from an array.
2. Write an algorithm and program in C++ to insert an element at n^{th} position in an array.
3. Write an algorithm and program in C++ for Push and pop operation on stack using array.
4. Write an algorithm and program in C++ that uses a recursive function for solving Towers of Hanoi problem.
5. Write an algorithm and program in C++ for Insertion and deletion operation in queue using array.
6. Write an algorithm and program in C++ for Insertion and deletion operation in priority queue using array.
7. Write an algorithm and program in C++ for creation, insertion and deletion in LinkedList.
8. Write an algorithm and program in C++ to count number of elements in linked list.
9. Write an algorithm and program in C++ for Creation of Binary search tree.
10. Write an algorithm and program in C++ for Insertion and deletion of node in Binary search tree.
11. Write an algorithm and program in C++ for Traversal of Binary search tree (inorder, preorder, postorder)
12. Write an algorithm and program in C++ to implement Kruskal's Algorithm.
13. Write an algorithm and program in C++ to implement Prim's Algorithm
14. Write an algorithm and program in C++ to sort an array using Bubblesort.
15. Write an algorithm and program in C++ to sort an array using Quicksort
16. Write an algorithm and program in C++ to sort an array using Selectionsort.
17. Write an algorithm and program in C++ to search an element in an array using Linear search.
18. Write an algorithm and program in C++ to search an element in an array using Binary search.
19. Write an algorithm and program in C++ to sort an array using Mergesort.
20. Write an algorithm and program in C++ to enter 'n' numbers in a file, after entering read a file and categorize the numbers in two files as even and odd numbers.

Practical List of Software Testing

1. Understand The Automation Testing Approach (Theory Concept)
2. Using Selenium IDE, Write a test suite containing minimum 2 test cases.
3. Conduct a test suite for any two websites.
4. Write and test a program to login a specific webpage.
5. Write and test a program to provide total number of objects present / available on the page
6. Study of any testing tool (e.g. Win runner)
7. Study of any web testing tool (e.g. Selenium)
8. Study of any bug tracking tool (e.g. Bugzilla, bugbit)
9. Study of any test management tool (e.g. Test Director)
10. Study of any open source-testing tool (e.g. Test Link)

Master of Computer Application – I (Semester – II)
Practical

Paper Code :PSMCAP207

Credit : 2]

[Max. Marks: 100

Practical on SQL

- A. Create table DONAR with following fields (Dno, Dname, City, Age, Sex, BG, Quantity, date).
B. Insert the following records into the table DONAR.

Dno	Dname	City	Age	Sex	BG	Quantity	Date
101	RAJESH RAO	CHANDRAPUR	28	M	O+ve	100	25-AUG-11
102	ANAND SHARMA	NAGPUR	20	M	O+ve	200	26-AUG-11
103	VISHAL DESHPANDE	HYDERABAD	23	M	O-ve	250	26-AUG-11
104	SHRUTI RAKHUNDE	CHANDRAPUR	22	F	A+ve	100	27-AUG-11
105	ANUSHREE DHAKATE	-	22	F	A-ve	200	26-AUG-11
106	VIJETA DHAKATE	BALLARPUR	22	F	O+ve	100	25-AUG-11
107	AAMIR TAJA	CHANDRAPUR	21	M	O+ve	250	27-AUG-11
108	AMIR KHAN	DURGAPUR	25	M	O+ve	100	25-AUG-11

C] Perform following queries on above table.

1. Find all donars whose name starts between alphabets 'A' to 'S'.
2. Find all donars who belongs to city CHANDRAPUR.
3. Find all donars who does not belongs to CHANDRAPUR city.
4. Find all donars who belongs to either CHANDRAPUR or NAGPUR city.
5. Find all donars whose city value contains NULL.
6. Arrange all donars in the sorted order whose age is between 18 and 22.
7. Find all male donars.
8. Find all male donars having O+Ve blood group.
9. Find all donars who donated the blood between 25-AUG-10 and 26-AUG-11.
10. Find all donars who donated more than 100 ml of blood.
11. Find all female donars who belong to city CHANDRAPUR having blood group 'O+Ve' in the sorted order of city?
12. Display all donars according their age.
13. Display the donar list in recent order of donation date.
14. Display all distinct blood group type.
15. Update the age of all donars by 1.

16. Mr. RAJESH RAO changed his name as RAMESH RAO and he is shifted to DURGAPUR. Note the above changes in the table.
17. Due to certain reason all the donars who donated the blood on date '26-AUG-11' are rejected. Hence delete their information.
18. Find the donars names whose first name starts with letter 'A' and ends with 'D' irrespective of case letter.
19. Find the donar names whose last name starts between alphabets 'D' to 'S' (Ex. DESPANDE, SHARMA)
20. Find total number of donars having O+Ve group.
21. Find total quantity of blood of group A+Ve.
22. Average age of female donar of O+Ve group by rounding the age to next digit.
23. Display all donars who name pronounces like 'AAMIR';
24. Find the donars who donated the blood in the month of AUG.
25. Find the donars who donated the blood on 15th Aug. of year.

Functions

Perform following queries on table donar (Functions)

- Find the donar names whose first name starts with letter 'A' and ends with 'D' irrespective of case letter.
(Ex. ANAND) Hint: Use SUBSTR and INSTR function to extract first name.
- Find the donar names whose last name starts between alphabet 'D' to 'S'
(Ex. DESHPANDE, SHARMA)
Hint: Use SUBSTR and INSTR function to extract first name.
- Find total number of donars having O+ve group.
- Find total quantity of blood of group A+ve.
- Average age of female donar of O+ve group by rounding the age to next digit.
Hint: use Ceil function to round the age to next digit.
- Display all donars who name pronounces like 'AAMIR';
- Find the donars who donated the blood in the month of AUG.
- Find the donars who donated the blood on 15th Aug. of year.
- Display all donar names in lowercase.
- Find donars whose first name is five characters long.
- Find every 3rd donar in the list. Donar numbers are assigned as consecutive no.
Hint: where $\text{mod}(\text{dno}, 3) = 0$

Practical on (PL/SQL)

- 1) Create following Tables and Execute the respective PL/SQL blocks.
 - Create table employee with the fields (empno, ename, job, hiredate, jodate&sal).
 - Create table Math with fields (numb, square, cube & square_root).
 - Create table Patient with fields (pname, age, prescription).
 - Create table Musicalbum with fields (title, hero, singer, qth).
 - Create table Stu with fields (name & marks).
 - Create table errorh with fields (error_no& description).
 - Create a table DONAR where following fields(Donar no., donar name, city, age, Sex, Blood group, quantity of blood given, date of donation)
- 2) Write a PL/SQL block to accept employee number and display his/her job, joining date and salary of employee. Define the variable using % rowtype.
- 3) Write a PL/SQL block to accept three paper marks and display result if student scores more than 35 marks in each paper and also specify the class.
- 4) Write a PL/SQL block to find the square, cube, square root of nos. bet 1 & 25 using loop.
- 5) Write a program to divide a number by character number. If any error occurs it should be handled properly, and store the error number and its description in a table called errorh.
- 6) Write a PL/SQL block to accept and insert a valid data into the table patient. Write appropriate user defined exception.
- 7) Write a PL/SQL block, to display only title and quality of all album stored in the table music album.
- 8) Write a PL/SQL to delete the records from table music album where quantity is less than 4 using cursor.
- 9) Write a PL/SQL block to display the employee all having salary > some value. The value some value can be passing during execution or through bind variable.
- 10) Write a PL/SQL block to accept the title and display other information; it must handle the exception properly.
- 11) Write a procedure to swap two numbers.
- 12) Write a procedure to insert values into a table stu. Write a PL/SQL, main program to call the procedure stu_insert.
- 13) Write a function which is able to perform addition of two numbers.
- 14) Write a function which is able to perform addition of two numbers as well as addition of three number using default argument concepts.
- 15) Write a package, which contain two procedures.
- 16) A procedure which display the data of stu.
- 17) A procedure which store the data into the table stu.
- 18) Write trigger before inserting or updating a name into the table stu name will be automatically converted into uppercase.
- 19) Write a trigger on a table stu, that whenever user try to insert a marks of math either less than zero or greater than 100 a trigger must fire before insertion or updating of records.

- 20) Use DONAR table and write a PL/SQL block to accept donar number and display the donar detail and find how many days it pass from the last donation.
- 21) Write a PL/SQL block to accept donar number, donar name, city, age, sex, blood group, quantity and date of donation and store the data into the table DONAR. Use user defined exception for handling various exception like donar name should not be blank, age of donar should be at least 18 years and so on. Also use STORAGE_ERROR exception to check storage is available or not.
- 22) Write a PL/SQL block to accept donor name and display the information of donor. If duplicate or no donor found then proper exception should be raised.
- 23) Create a procedure that displays the information of donor by accepting donor number.
- 24) Write a trigger which will not allow the user to work on table DONAR during period say 9 am to 9:30 am, on any day.
- 25) Write a trigger on a table Donor, that whenever user try to insert a quantity greater than 500 ml a trigger must fire before insertion or updation of records.