Total No. of Questions : 7]

SEAT No. : ____

PC-4387

[Total No. of Pages : 3

[6348]-1001

M.Sc. (Computer Application)

CA-501 MJ : DATABASE SYSTEMS AND SQL

(2023 Pattern) (Semester - I)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Question 1 is compulsory.***
2) ***Solve any Five questions from Q.2 to Q.7.***
3) ***Questions from Q.2 to Q.7 carry equal marks.***

Q1) **Solve any five of the following :** **[10]**

a) Enlist DCL statements.

b) What is the entity? List its types.

c) Explain the use of normalization in database.

d) Explain the terms. Unique key and Check constraint.

e) What is the use of Join?

f) State the functions of DBA.

Q2) **Attempt the following :** **[12]**

a) Explain the Architecture of DBMS.

b) List and explain DDL commands.

c) Explain views with example.

Q3) **Attempt the following :** **[12]**

a) Distinguish between DBMS and RDBMS.

b) Explain aggregate functions with example.

c) Write and explain syntax for creating trigger.

P.T.O.

Q4) **Attempt the following :** **[12]**

a) Define functional dependency? Explain its types.

b) Explain syntax and the use of group by and having clause.

c) What is cursor? Explain its types.

Q5) **Attempt the following :** **[12]**

a) Explain Error handling in PL/SQL.

b) Consider the following Entities and relationships.

Customer (Cust_no, Cust_name, Address, City)

Loan (Lno, loan_amt)

Relation between Customer and Loan is Many to many

Constraint: Primary Key, loan_amt should be>0

Write Queries for the following.

i) Find details of all customers whose loan is greater than 10 lakhs and from Nasik.

ii) List all customers whose name contains characters 'dh'

c) Consider the following Entities and relationships

Department (deptno, dept_name, location)

Employee (emp_no, emp_name, address, salary, designation)

Relation between Department and Employee is one to many

Constraint: Primary Key, Salary should be > 0

Write Queries for the following.

i) Decrease salary of all Managers by 20% from marketing department.

ii) List all employees who are working as clerk, from Pune city.

Q6) **Attempt the following :** **[12]**

a) Explain the levels of data abstractions in DBMS.

b) Write SQL query for following consider table

EMP (empno, deptno, ename, salary, designation, joiningdate, DOB, city)

i) Display maximum salary of employee in Pune city.

ii) Display details of employee who is Manager in the organization.

c) Write a PL/SQL procedure to check whether specified employee is present in EMP table or not. Accept empno from user. If employee does not exist display message.

Q7) **Write short notes on any two of the following** : **[12]**

a) Function in PL/SQL.

b) Attributes used in DBMS.

c) Specialization and Generalization.

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Total No. of Questions : 7] **SEAT No. :**

PC-4388 **[Total No. of Pages : 2**

[6348]-1002

F.Y. M.Sc. (Computer Application)

CA 502 MJ : PYTHON PROGRAMMING AND DATA STRUCTURES

(2023 Credit Pattern) (Semester - I)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Que. 1 is compulsory.***
2) ***Solve any five questions from Q.2 to Q.7.***

Q1) Solve any five of the following : **[10]**

a) Define time complexity and space complexity.

b) What is anonymous function? How to create it?

c) How to perfrom input output operations?

d) Differentiate between circular and linear queue.

e) List applications of Queue.

f) List features of python.

Q2) Attempt the following **[12]**

a) Convert p* θ + R/s – 7 into prefix & post fix expression.

b) Write a note on priority Queue.

c) Explain any two decision making statements with example.

Q3) Attempt the following **[12]**

a) Explain the basic list operations (any two)

b) Define set. Explain buit-in set functions with purpose.

c) Define Dictionary. How to create and access values in a dictionary.

P.T.O.

Q4) Attempt the following. **[12]**

a) Explain Lambda function with syntax and example.

b) Define Queue. Explain any four Queue operations using python.

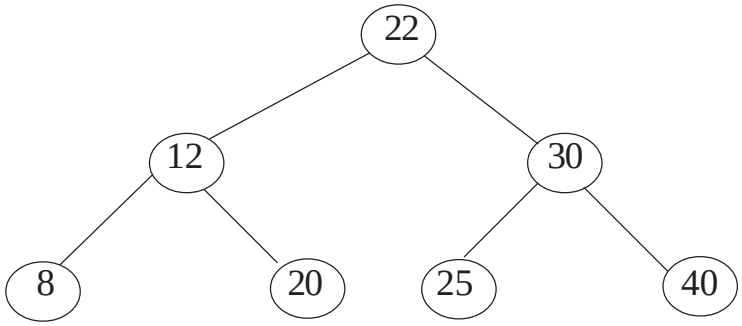
c) Compare python list and array.

Q5) Attmpt the following. **[12]**

a) Define the stack. Write the applications of stack.

b) Write a python program to find factorial of a number.

c) For following binary tree, list the elements in inorder, preorder and post order traversal



Q6) Attempt the following. **[12]**

a) Define Data structure. Explain the types of Data structure.

b) Write a python program for queue using array.

c) Explain Adjacency list and Adjacency matrix for graph representation.

Q7) Attempt any two of the following. **[12]**

a) Compare between BFS and DFS traversal.

b) Explain the static and Dynamic representation of Linked list.

c) Explain the concept of doubly ended Queue.

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Total No. of Questions : 5]

SEAT No. :

PC-4389

[Total No. of Pages : 2

[6348]-1003

M.Sc. (Computer Application)

CA-503-MJ: OPERATING SYSTEMS

(2023 Pattern) (Semester - I)

Time : 2 Hours] *[Max. Marks : 35*

Instructions to the candidates:

1) ***Question 1 is compulsory.***
2) ***Solve any three questions from Q.2 to Q.5.***
3) ***Questions 2 to Q.5 carry equal marks.***

Q1) **Attempt <u>any Five</u> of the following:** **[5 × 1 = 5]**

a) Define Operating System.

b) Define Deadlock

c) What is context switch.

d) List out function of memory management

e) What is paging.

f) What is single level directory.

Q2) **Attempt all of the following:**

a) What is CPU scheduler. **[2]**

b) Explain the concept of contiguous allocation, linked allocation, and indexed allocation in file systems. **[4]**

c) Consider the following set of processes, with the length of CPU burst time and arrival time in milliseconds. **[4]**

Process	Burst time	Arrival time
P1	5	1.5
P2	1	0
P3	2	2
P4	4	3

P.T.O.

Illustrate the execution of these processes using pre-emptive SJF CPU scheduling algorithm. Calculate average waiting time and average turnaround time. Give the contents of Gantt chart.

Q3) **Attempt <u>all</u> of the following:**

a) Explain process control block. **[2]**

b) What is free space management? Define Bit vector. **[4]**

c) What are different methods of deadlock prevention. **[4]**

Q4) **Attempt <u>all</u> of the following:**

a) What is Segmentation. **[2]**

b) Explain Bankers algorithm. **[4]**

c) Explain multi-threading model in detail. **[4]**

Q5) **Attempt <u>all</u> of the following:**

a) What is dynamic linking. **[2]**

b) Explain the difference between external and internal fragmentation, and how they affect memory allocation. **[4]**

c) Explain any four services provided by an operating system to users with examples. **[4]**

Total No. of Questions : 5]

SEAT No. :

PC-4390

[Total No. of Pages : 2

[6348] - 1004
F.Y. M.Sc.
COMPUTER APPLICATION
CA-510A MJ : Java Programming
(2023 Pattern) (Semester - I)

Time : 2 Hours] *[Max. Marks : 35*

Instructions to the candidates:

1) ***Question 1 is compulsory.***
2) ***Solve any three questions from Q.2 to Q.5.***
3) ***Questions 2 to Q.5 carry equal marks.***

Q1) **Solve any 5 of the following :** **[5]**

a) Define Interface.

b) What is JVM (Java Virtual Machine)?

c) Explain Access modifiers used in Java

d) What is inner Class?

e) What is Event Handling'?

f) Write Syntax to declare user defined exception.

Q2) **Attempt the following :**

a) Explain Try - Catch block with example. **[2]**

b) Explain MVC Architecture in detail. **[4]**

c) What are the Packages in java? Explain with its use. **[4]**

P.T.O.

Q3) **Attempt the following :**

a) Which Swing Classes are used to create menu? **[2]**

b) Explain Listeners in java with Example. **[4]**

c) Write a 'java' program to check whether given number is Armstrong or not. (Use static keyword) **[4]**

Q4) **Attempt the following :**

a) What is method Overloading? **[2]**

b) Explain different types of constructors in java. **[4]**

c) Explain **[4]**

i) data types in java

ii) Jcomponent

Q5) **Answer any two of the following :**

a) Write Java program to find factorial of number using command line argument. **[5]**

b) Define a class Product (pid, pname, price, qty). Write a function to accept the product details, display it and calculate total amount. (use array of Objects. **[5]**

c) Differentiate between interface and abstract class. **[5]**

Total No. of Questions : 5]

SEAT No. : ____

PC-4391

[Total No. of Pages : 2

[6348]-1005

M.Sc.

COMPUTER APPLICATION

CA-512B-MJ : Cloud Computing

(2023 Pattern) (Semester - I)

Time : 2 Hours] ***[Max. Marks : 35***

Instructions to the candidates:

1) ***Q.1 is compulsory.***
2) ***Attempt/solve any three questions from Q.2 to Q.5.***
3) ***Q.2 to Q.5 carries equal marks.***

Q1) **Solve any 5 of the following:** **[5]**

a) What are the primary layers of cloud computing architecture?

b) Write the full form of IaaS.

c) Who is responsible for running virtual Machines?

d) Define the term AWS.

e) Define the term CSA.

f) Define Hypervisor.

g) What is resource pooling?

Q2) **Attempt the following:**

a) What is the Amazon Web service? **[2]**

b) What are the different types of virtualization? **[4]**

c) List & define services offered by Microsoft Azure. **[4]**

P.T.O.

Q3) **Attempt the following:** **[10]**

a) What is the difference between Cloud computing & Grid computing? **[2]**

b) What are the advantages & disadvantages of Saas? **[4]**

c) What are the features of salesforce? **[4]**

Q4) **Attempt the following:** **[10]**

a) Define the term saas cloud computing security architecture? **[2]**

b) What are the steps to highlights “Cloud-adapted RMF” **[4]**

c) Describe the role of cloud for Backup and Recovery. **[4]**

Q5) **Attempt any two of the following:** **[10]**

a) Explain the insider threats in detail. **[5]**

b) Explain a seven step model of the migration process? **[5]**

c) What is a computational Grid? Why is it needed? **[5]**

Total No. of Questions : 7]

SEAT No. : ____

PC-4392

[Total No. of Pages : 2

[6348]-1006

M.Sc. (Computer Application)

CA-531 RM : RESEARCH METHODOLOGY

(2023 Pattern) (Semester - I)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Question 1 is compulsory.***
2) ***Solve any Five questions from Q.2 to Q.7.***
3) ***Questions Q.2 to Q.7 carry equal marks.***

Q1) **Solve any five of the following :** **[5 × 2 = 10]**

a) What are the main features of research?

b) Difference between Scientific research method and Arbitrary research Method.

c) What is plagiarism?

d) Define Statistical method.

e) What is Literature review?

f) List the E-resources for research.

g) What are the precautions to be taken while using secondary data?

Q2) **Attempt the following :** **[3 × 4 = 12]**

a) Explain in detail the various methods of collecting data.

b) Define Research Design? Explain the need and features of a good design.

c) What is research problem? Define the main issues which should receive the attention of the researcher in formulating the research problem.

P.T.O.

Q3) **Attempt the following :** **[3 × 4 = 12]**

a) Write a short note on characteristics of Research.

b) What is the role of research hypotheses in experimental research designs? How do researchers test hypotheses using experimental methods?

c) Explain the concept of systematic sampling in research.

Q4) **Attempt the following :** **[3 × 4 = 12]**

a) Explain objectives of research.

b) Differentiate between quantitative and qualitative research.

c) In what way newspaper articles can be used as a material for research? Explain.

Q5) **Attempt the following :** **[3 × 4 = 12]**

a) Explain Report Writing with the layout & Diagram.

b) Write a note on Exploratory or Formulative Research.

c) Differentiate between Research methods and methodology.

Q6) **Attempt the following :** **[3 × 4 = 12]**

a) Briefly explain the importance of E-journal and E-Library in research.

b) Write a short note on ANNOVA test with example.

c) Discuss the steps in preparation of Report.

Q7) **Write short note on any two of the following :** **[2 × 6 = 12]**

a) Examine the merits and limitations of the observation method in collecting data.

b) What is Hypothesis? What are the types of hypothesis?

c) What are the various means of conducting literature survey in modern times?

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Total No. of Questions : 7] **SEAT No. :**

PC-4393 **[Total No. of Pages : 3**

[6348]-2001
M.Sc (Computer Application)
CA 551 MJ : WEB TECHNOLOGY
(2023 Pattern) (Semester - II)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Que. 1 is compulsory.***
2) ***Solve any five questions from Q.2 to Q.7.***
3) ***Questions from Q.2 to Q.7 carry equal marks.***

Q1) Solve any five of the following : **[10]**

a) Define web page? State types of web page.

b) use of Slice operator in PHP?

c) Define Associative Arrays in PHP?

d) Define class and object?

e) Enlist the methods of simple XML extensions.

f) What is XML.

Q2) Attempt all. **[12]**

a) Explain Client - Server Architecture.

b) Define function in PHP with example?

c) Note on SSL.

Q3) Attempt all. **[12]**

a) Difference between indexed and Associative array.

b) Define Serialization.

c) What is an Array in javaScript? Explain type of Array in JavaScript.

P.T.O.

Q4) Attempt all. **[12]**

a) Write HTML code which generates the following output and display each element of list in different size, color & font. Use external CSS to format the list.

- Non flowering plants
  - Fern
  - Spore
- Flowering Plants
  - Lilly
  - Rose
    1. Red Rose
    2. Pink Rose

b) Write a JavaScript function that checks whether a input string is palindrome or not.

c) Write a PHP Code for flowing output:

1

1 2

1 2 3

1 2 3 4

Q5) Attempt all. **[12]**

a) Write a java script code to accept a string from user and display the occurrences of every vowel character from string.

b) Write a HTML code which will divide web page in three frames. First frame should consist of name of college as heading. Second frame should consist of name of courses with hyperlink. Once click on any course it should display subject of that course in third frame.

c) Consider the following relational database:

Project (P_Group_No, Project_Title)

Student (Seat no, Name, Class, P_Group_No)

Write a PHP script to accept project title and display list of students those who are working in a particular project.

Q6) Attempt all. **[12]**

a) what is PEAR DB? Explain with the help of program.

b) Create an XML file which gives details of books available in " ABC Bookstore" from the following categories:

i) Technical

ii) Cooking

iii) Yoga

c) Explain with example how to connect database using PHP and Ajax.

Q7) Write short notes on any two of the following. **[12]**

a) XML Parse

b) DOM Object.

c) AJAX Web Application.

Total No. of Questions : 7]

SEAT No. : ____

PC-4394

[Total No. of Pages : 2

[6348]-2002
M.Sc. (Computer Applications)
CA - 552 MJ: INTRODUCTION TO DATA SCIENCE
(2023 Pattern) (Semester - II)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Question 1 is compulsory.***
2) ***Solve any five questions from Q.2 to Q.7.***
3) ***Q.2 to Q.7 carry equal marks.***

Q1) Attempt any five of the following. **[5×2=10]**

a) Define data science.

b) Define variance.

c) Define interquartile range.

d) Define Data Attribute.

e) What is Exploratory Data Analysis.

f) What is use of Bubble plot?

Q2) Attempt all of the following. **[3×4=12]**

a) Explain 3v's of data science with diagram.

b) Define Outlier. Explain types of Outlier in detail.

c) Explain different strategies of data transformation.

Q3) Attempt all of the following. **[3×4=12]**

a) Explain Data Cube in detail.

b) Explain in detail Data Similarity and Dissimilarity.

c) Differentiate between Histogram and Dendrogram.

P.T.O.

Q4) Attempt all of the following. **[3×4=12]**

a) Explain lifecycle of data science.

b) Explain data visualization libraries.

c) What is Hypothesis testing. Explain with example.

Q5) Attempt all of the following. **[3×4=12]**

a) What is Venn diagram? How to create it? Explain with example.

b) Distinguish between structured and unstructured data.

c) Write a R program to create a list containing a vector, a matrix and a list and give names to the elements in the list. Access the first and second element of the list.

Q6) Attempt all of the following. **[3×4=12]**

a) Calculate the mean, mode, median, variance, IQR for the following data.
X: 13 18 13 14 13 16 14 21 13

b) What are different sources of data in data science? Explain in detail.

c) Explain Data Munging Operations in detail.

Q7) Write short notes on any two of the following. **[2×6=12]**

a) Data Discretization.

b) Visual Encoding

c) Types of Descriptive Statistics

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Total No. of Questions : 5]

SEAT No. : ____

PC- 4395

[Total No. of Pages : 2

[6348]-2003
M.Sc.
COMPUTER APPLICATIONS
CA - 553 MJ : Computer Networks
(2023 Pattern) (Semester - II)

Time : 2 Hours] ***[Max. Marks : 35***

Instructions to the candidates:

1) ***Q. 1 is compulsory.***
2) ***Solve any three questions from Q.2 to Q.5.***
3) ***Questions 2 to Q.5 carry equal marks***

Q1) **Solve any 5 of the following.** **[5]**

a) What are the characteristics of data communications?

b) Define the term throughput.

c) What is piggybacking?

d) What is Fragmentation?

e) What are the parts of E-mail address?

f) What are the advantages of UDP?

Q2) **Attempt the following.** **[10]**

a) Explain any two HTTP transaction header. **[2]**

b) List out the types of topologies? Explain any two topologies in detail. **[4]**

c) Write an algorithm for computing the CRC. Compute CRC for a frame having data 100100 and the generator 1101. **[4]**

Q3) **Attempt the following.** **[10]**

a) Differntaite between TCP and UDP **[2]**

b) What is line coding? What are its types? Convert the following data in NRZ-L & NRZ-1.01001110 **[4]**

c) Differentiate between 1PV4 & 1PV6 IP addresses **[4]**

Q4) **Attempt the following.** **[10]**

a) What is subnetting and Supernetting? **[2]**

b) Compare between Pure and Slotted ALOHA. **[4]**

c) Explain the layered architecture of ISO-OSI reference model. **[4]**

Q5) **Attempt any two of the following.** **[10]**

a) Solve the following problems. **[5]**

i) If there is a noiseless channel with a bandwidth of 4KHz that is transmitting a signal with 4 descrete levels what is the maximum bit rate?

ii) Calculate the maximum bit rate of a noisy channel if bandwidth is 4KHz and signal noise ratio is 100 **[5]**

b) What is WWW? Discuss its architecture in detail.

c) Attempt the following. **[5]**

i) Write a short note on

Process-to-process delivery. **[3]**

ii) What is framing?

What are the types of framing. **[2]**

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Total No. of Questions : 5]

SEAT No. : ____

PC-4396

[Total No. of Pages : 2

[6348]-2004

M.Sc. (Computer Application)

CA-560A-MJ: ADVANCED JAVA PROGRAMMING

(2023 Pattern) (Semester - II)

Time : 2 Hours] ***[Max. Marks : 35***

Instructions to the candidates:

1) ***Question 1 is compulsory.***
2) ***Solve any three questions from Q.2 to Q.5.***
3) ***Questions 2 to 5 carry equal marks.***

Q1) **Solve Any Five of the following:** **[5 × 1 = 5]**

a) Define Struts.

b) List various applications of Spring.

c) What are different types of drivers in JDBC?

d) What is the difference between get and post request (HTTP)?

e) What do you mean by Metadata?

f) State use of Bean in Java.

Q2) **Attempt the following:**

a) Write two points of difference between SocketServer and Socket class. **[2]**

b) Explain the life cycle of thread. **[4]**

c) Explain various Scripting Elements of JSP. **[4]**

P.T.O.

Q3) **Attempt the following:**

a) What is the use of PreparedStatement. **[2]**

b) Explain the life cycle of Servlet. **[4]**

c) Explain various JSP Directives. **[4]**

Q4) **Attempt the following:**

a) What is the role of JDBC? **[2]**

b) State Components of Hibernate. **[4]**

c) Write a JDBC program to insert the records into the table Employee (ID,name,salary) using PreparedStatement interface. Accept details of Employees from user. **[4]**

Q5) **Attempt any two of the following:**

a) Explain Maven Framework. **[5]**

b) Explain Thread Creation by using Thread Class & Runnable interface. **[5]**

c) Write a JDBC program to perform search operation on Person table. **[5]**

i. Search all the person born in the year 1995.

ii. Search all the females born between 2000- 2008.

Total No. of Questions : 5]

SEAT No. : ____

PC-4397

[Total No. of Pages : 2

[6348] - 2005
M.Sc.
(Computer Application)
CA 562B MJ:C# .NET
(Credit Pattern 2023) (Semester-II)

Time : 2 Hours] ***[Max. Marks : 35***

Instructions to the candidates:

1) ***Question 1 is compulsory.***
2) ***Solve any three questions from Q.2 to Q.5.***
3) ***Questions 2 to Q.5 carry equal marks***

Q1) **Solve any 5 of the following :** **[5]**

a) What is ASP.Net?

b) What is Array?

c) Enlist the decision making statements in VB.Net?

d) Write any 2 properties of RadioButton Control.

e) List any four common web server controls.

f) What is DataTable?

Q2) **Attempt the following :** **[10]**

a) What is Event Driven Programming? **[2]**

b) Explain Inheritance with Example **[4]**

c) Write a VB.Net program to check whether the entered character is vowel or not. **[4]**

P.T.O.

Q3) **Attempt the following :** **[10]**

a) Explain any 2 properties of Combobox Control. **[2]**

b) Explain Architecture of ADO.Net. **[4]**

c) Write a C#.Net program to find factors of a number. **[4]**

Q4) **Attempt the following :** **[10]**

a) What are the validation Controls in ASP.Net? **[2]**

b) Explain MVC Framework. **[4]**

c) Explain Method Overloading with Example. **[4]**

Q5) **Attempt any two of the following :** **[10]**

a) Explain dialog boxes in VB.Net. **[5]**

b) Explain Navigation Control in ASP. Net. **[5]**

c) Write a C#.Net program to determine whether the given number is palindrome or not. **[5]**

Total No. of Questions : 7]

SEAT No. :

PC-4398

[Total No. of Pages : 3

[6348]-3001

S.Y. M.Sc. (COMPUTER APPLICATION)

CA601MJ: Artificial Intelligence

(2023 Pattern) (Semester - III)

Time : 3Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Question 1 is compulsory.***
2) ***Solve any five questions from Q.2 to Q.7.***
3) ***Questions from 2 to Q.7 carry equal marks.***
4) ***Figures to right indicate full marks.***

Q1) **Solve any Five of the following:** **[5 × 2 = 10]**

a) Briefly describe the concept of an rational agent.

b) What is Breadth-first search?

c) Differentiate between procedural and declarative knowledge.

d) Explain the role of resolution in propositional logic.

e) What is Back ward chaining in AI?

f) What are the ethical concerns in Artificial Intelligence?

Q2) **Attempt all of the following:** **[3 × 4 = 12]**

a) What are the key differences between uninformed search algorithms and heuristic search algorithms?

b) Describe the architecture of an intelligent agent with a suitable diagram.

c) Discuss the concept of rational behaviour in AI and how it is measured in intelligent agents.

P.T.O.

Q3) **Attempt all of the following:** **[3 × 4 = 12]**

a) Explain knowledge representation using predicate logic with an example.

b) What is the role of the generate-and-test algorithm in heuristic search?

c) Discuss the process of reasoning with default information in AI systems.

Q4) **Attempt all of the following:** **[3 × 4 = 12]**

a) Compare and contrast propositional logic and predicate logic in knowledge representation.

b) Explain the role of unification in First-order Inference with a suitable example.

c) Discuss how events are represented and reasoned about in AI systems.

Q5) **Attempt all of the following:** **[3 × 4 = 12]**

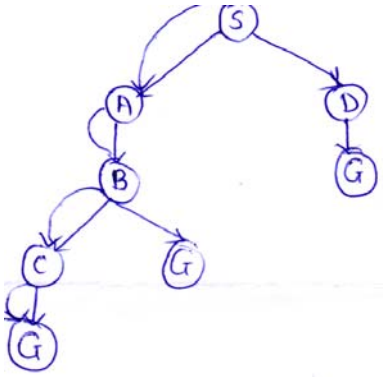
a) Explain the alpha-Beta Tree search and its application in optimizing game decision-making.

b) Describe the A* algorithm and its importance in solving search problems.

c) Discuss the challenges faced in knowledge representation and reasoning in AI system.

Q6) **Attempt all of the following:** **[3 × 4 = 12]**

a) Find the path using depth first search algorithm.



b) Describe the process of converting logical statements into clause form.

c) Discuss the importance of heuristic evaluation functions in search algorithms.

Q7) **Write short note on any two of the following:** **[2 × 6 = 12]**

a) What are the advantages and disadvantages of Artificial Intelligence?

b) Write heuristic formula and similarities for A* and AO* algorithm.

c) Explain the concept of forward chaining with an example.

Total No. of Questions : 7]

SEAT No. : ____

PC-4399

[Total No. of Pages : 3

[6348]-3002

S.Y.M.Sc.

COMPUTER APPLICATIONS

CA - 602 MJ : Machine Learning

(2023 Credit Pattern) (Semester - III)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Question 1 is compulsory.***
2) ***Solve any five questions from Q.2 to Q.7.***
3) ***Questions from Q.2 to Q.7 carry equal marks.***

Q1) Solve any five of the following : **[10]**

a) Define Machine Learning?

b) What is Support Vector Machine?

c) What is Maire Bayes classifier?

d) What is the use of boosting technique?

e) Define divisive hierarchical clustering?

f) What is Backward Pass?

Q2) Attempt the following : **[12]**

a) Explain supervised model used in machine learning?

b) Consider the following dataset Find out the clusters upto 3 iterations using k-metoid algorithm (K = 2).

Point	*x*	*y*
P_1	7	4
P_2	4	6
P_3	5	8
P_4	6	7
P_5	4	3

c) Explain single layer neural network.

P.T.O.

Q3) Attempt the following : **[12]**

a) Consider the following dataset using K-Nearest neighbouring algorithm find the class value for X = 30 & Y = 50? (use k = 3)

x	*y*	Class
90	60	blue
20	40	red
70	70	blue
20	80	blue
30	10	red

b) Explain working & random forest algorithm.

c) Explain convolution neural network in detail.

Q4) Attempt the following : **[12]**

a) Differentiate between parametric & non-parametric method.

b) Explain evaluation metrics of supervised learning algorithm.

c) Consider data points P_1 (0, 1), P_2(1, 1) P_3(3, 0) and P_4(0, 0). Calculate the local outlier factor (LOF) for each point and find the top 1 outliers. Use k value 2 and Manhattan distance as the distance function.

Q5) Attempt the following : **[12]**

a) Explain data formats & statistical learning models as an elements of machine learning.

b) Write a short note on Adaboost method used in machine learning.

c) Calculate linear regression for the following data point. Using least square function find the value of Y if X = 7.

X	Y
4	1
5	3
6	5
8	7
9	9

Q6) Attempt the following : **[12]**

a) Write a note on logistic regression.

b) Discuss elbow method used for evaluating clustering model.

c) Explain architecture of Radial basis function neural network.

Q7) Attempt the following : **[12]**

a) Discuss how machine learning is different from traditional programming.

b) Describe the one - Vs - one approach of multiclass classification.

c) Explain DBSCAN method in details.

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Total No. of Questions : 5]

SEAT No. : ____

PC-4400

[Total No. of Pages : 2

[6348]-3003

S.Y. M.Sc. (Computer Applications)

CA603MJ: SOFTWARE ENGINEERING

(2023 Pattern) (Semester - III)

Time : 2 Hours] ***[Max. Marks : 35***

Instructions to the candidates:

1) ***Question 1 is compulsory.***
2) ***Solve any three questions from Q.2 to Q.5.***
3) ***Questions 2 to Q.5 carry equal marks.***
4) ***Figure to right indicates full marks.***

Q1) **Solve the following: (any 5)** **[5]**

a) List the goal of Requirement Engineering.

b) What is Pseudo code?

c) List two advantages of waterfall model.

d) What is Scrum?

e) Define Software.

f) What is meant by XP?

Q2) **Attempt the following:** **[10]**

a) What is System Software and application Software? **[2]**

b) Explain spiral model in detail. **[4]**

c) Explain fact finding techniques. **[4]**

P.T.O.

Q3) **Attempt the following:** **[10]**

a) Write advantages of Prototyping Model? **[2]**

b) Explain any Four human factors used for agile process. **[4]**

c) Explain any Four tasks involved in Requirement Engineering. **[4]**

Q4) **Attempt the following:** **[10]**

a) Explain any two principles to achieve agility. **[2]**

b) Explain Mc Call's quality factors. **[4]**

c) What is DFD? Enlist and specify the purpose of symbols used in DFD. **[4]**

Q5) **Attempt Any Two of the following:** **[10]**

a) A Co-operative bank XYZ will grant loans under the following conditions: **[5]**

i) If a customer has an account with the bank and has no loan outstanding loan will be granted.

ii) If a customer has an account with the bank but some amount outstanding from previous loans, then loan will be granted if special management approval is obtained.

iii) Reject loan applications in all other cases. Draw decision tree for the above case study.

b) Explain any five core principles in software Engineering. **[5]**

c) Explain concurrent development model. **[5]**

Total No. of Questions : 5]

SEAT No. :

PC-4401

[Total No. of Pages : 2

[6348]-3004
S.Y.M.Sc.
COMPUTER APPLICATION
CA 610 MJ : Mobile Application Development
(2023 Pattern) (Semester - III)

Time : 2 Hours] ***[Max. Marks : 35***

Instructions to the candidates:

1) ***Question. 1 is compulsory.***
2) ***Solve any three questions from Q.2 to Q.5.***
3) ***Questions from Q.2 to Q.5 carry equal marks.***
4) ***Figure to right indicates full marks.***

Q1) Solve any five of the following : **[5]**

a) What is Dalvik Virtual Machine?

b) What are the four essential activity states?

c) Define Worker Thread.

d) What is contentvalues class?

e) List the features of React?

f) What are different types of layouts used in Android

Q2) Attempt the following : **[10]**

a) Which are the basic views that can be used to design UI of android application? **[2]**

b) Explain service life cycle in detail. **[4]**

c) What is Pop-up menu? Explain with example. **[4]**

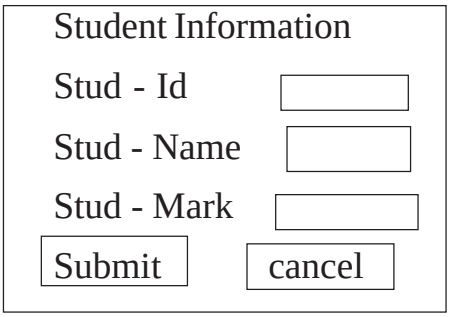
P.T.O.

Q3) Attempt the following. **[10]**

a) How Lists work in React? **[2]**

b) What is Arrayadapter ? Explain with example. **[4]**

c) Write an Android application for the following Layout. **[4]**



Q4) Attempt the following **[10]**

a) What is children props? **[2]**

b) Write the use of oncreate( ). onupgrade( ) and get writable Database( ) methods with example **[4]**

c) Write an Android application to create first activity to accept information to Employee like first name, middle name , last name , date of birth, address and display all information on second activity when user cilck on submit button. **[4]**

Q5) Attmpt any two of the following **[10]**

a) Write a short note on Locatron based services. **[5]**

b) Explain Notification with example. **[5]**

c) What are the components of Android Application. **[5]**

Total No. of Questions : 5]

SEAT No. : ____

PC-4402

[Total No. of Pages : 2

[6348]-3005

S.Y. M.Sc. (Computer Application)

CA-612 MJ : SOFTWARE TESTING

(2023 Pattern) (Semester - III)

Time : 2 Hours] ***[Max. Marks : 35***

Instructions to the candidates :

1) ***Question 1 is compulsory.***
2) ***Solve any three questions from Q.2 to Q.5.***
3) ***Questions Q.2 to Q.5 carries equal marks.***
4) ***Figure to right indicate full marks.***

Q1) **Solve any five of the following :** **[5]**

a) What are the goals of software testing?

b) List out the test plan component.

c) What is verification meant by?

d) Define alpha and beta testing.

e) What is automation testing?

f) Identify test case design stratergies.

Q2) **Attempt the following :** **[10]**

a) Define unit testing. Give an example. **[2]**

b) Define terms defect, fault and failure. Give an example for each. **[4]**

c) What is cyclomatic complexity and graph matrix? Explain with example. **[4]**

Q3) **Attempt the following :** **[10]**

a) Write features of agile testing. **[2]**

b) Explain the various phases of internationalization testing. **[4]**

c) Explain integration testing. What is bottom up integration. **[4]**

P.T.O.

Q4) **Attempt the following :** **[10]**

a) Describe basic path testing with example. **[2]**

b) Write a short note on black box testing. **[4]**

c) What is performance testing? Write the steps. **[4]**

Q5) **Attempt any two of the following :** **[10]**

a) What is the role of documentation in manual testing. **[5]**

b) Difference between automation testing and manual testing. **[5]**

c) What are the key differences functional testing and non functional testing? Provide example of each. **[5]**

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