Total No. of Questions : 7]

SEAT No. :

P-7491

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F.Y. M.Sc.

COMPUTER APPLICATION

CA 501 MJ: DATABASE SYSTEMS AND SQL

(Credit Pattern 2023) (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) State the database users.

b) Explain the terms: Primary key and candidate key.

c) Define normalization. Enlist its type.

d) What are the basic sections of a PL/SQL block?

e) What is Join?

f) Enlist DDL and DML commands.

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

a) Explain the Architecture of DBMS.

b) List and explain DCL commands.

c) Write and explain create, update and drop views.

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

a) Distinguish between DBMS and RDBMS.

b) Explain aggregate function with example.

c) Write and explain syntax for creating procedure.

P.T.O.

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

a) What is functional dependency? Discuss its types.

b) Write and explain syntax for creating function.

c) What is cursor? Explain with example.

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

a) State advantages of DBMS over file processing system.

b) Write SQL query for following consider table

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

i) Display average salary of all employees.

ii) Display name of employee who earned highest salary.

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

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

a) Differentiate between Triggers and Assertions.

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 laths.

ii) List all customers whose name starts with 'sa'.

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) Increase salary of “Managers” by 15%.

ii) Delete all employees who are working as “clerk”.

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

a) Define network model and hierarchical model with examples.

b) Define Group By and Having Clause with examples.

c) Define Specialization and Generalization with examples.

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Total No. of Questions : 7]

SEAT No. : ____

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F.Y. M.Sc.

COMPUTER APPLICATION

CA 502 MJ - PYTHON PROGRAMMING AND DATA STRUCTURES

(Credit Pattern 2023) (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) Attempt any Five of the following. **[5 × 2 = 10]**

a) What is mean by immutable data type in Python?

b) What is keyword? List any 4 keywords in Python.

c) What is the use of lambda( )?

d) Write any four applications of Stack.

e) What is linear data structure. List any two linear data structure.

f) List any four sorting algorithms.

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

a) Explain any two loop control statements with proper syntax and example.

b) What is List. State any four built-in list function with their use.

c) Explain any two array operations.

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

a) Write a Python program to find length of a set, maximum and minimum value in a set.

b) What is the difference between a Set and Dictionary?

c) Explain how to create class and object in Python.

P.T.O.

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

a) Explain function in Python with suitable example.

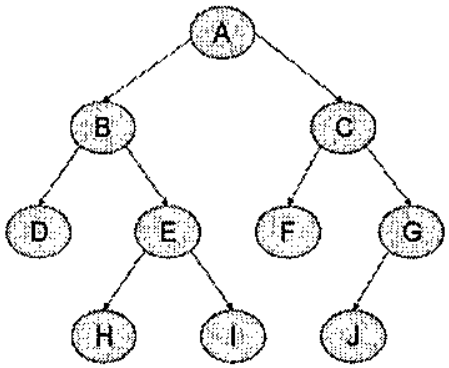
b) What is stack? Explain any four stack operations in data structure using python.

c) Write Prefix and Postfix Expression of A * B + C * D

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

a) What is Queue? Explain types of Queue.

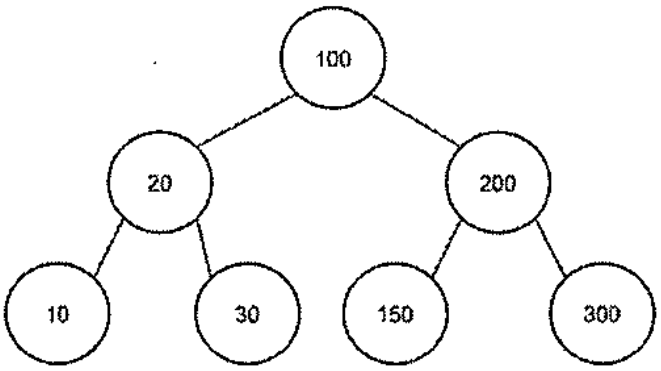
b) Write the elements in BFS of the following Binary Tree.



c) Write python program for stack using list.

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

a) Write the elements in inorder, preorder and postorder traversal of the following Binary Search Tree.



b) Explain any two ways of representation of graph.

c) Write python program for insert node at start position of Linked List.

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

a) Explain features of Python programming.

b) Explain various operators in Python programming.

c) What is Linked List? Explain types of Linked List.

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Total No. of Questions : 5]

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F.Y.M.Sc.
COMPUTER APPLICATION
CA-503 MJ : OPERATING SYSTEM
(Credit Pattern 2023) (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.***
4) ***Figures to the right indicates full marks.***

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

a) List any two services provided by OS to users.

b) What is paging?

c) Define

i) BT

ii) WT

d) List out, the operations on the file.

e) What is a Resource Allocation Graph?

f) Define Static and dynamic linking.

Q2) Attempt the following.

a) Consider the set of 5 processes whose arrival time and burst time are given below-

Process Id	Arrival time	Burst time	Priority
P1	0	4	2
P2	1	3	3
P3	2	1	4
P4	3	5	5
P5	4	2	5

Calculate the average waiting time and average turnaround time. (Higher number represents higher priority). **[2]**

P.T.O.

b) What is Process? Write all states of Process. **[4]**

c) Write an Advantages and Disadvantages of FCFS **[4]**

Q3) Attempt the following.

a) Define PCB. **[2]**

b) Explain Architecture of Linux OS. **[4]**

c) What is Multithreading in OS. **[4]**

Q4) Attempt the following

a) What is Main Memory? **[2]**

b) Describe different services provided by OS to Users. **[4]**

c) Write File attributes. **[4]**

Q5) Attempt the following

a) Write a Short Note on Swapping. **[2]**

b) What is Deadlock? Write all Necessary Conditions for deadlock. **[4]**

c) What are the various file operations? Explain in detail. **[4]**

▽▽▽▽

Total No. of Questions : 5]

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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 5 carry equal marks.***

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

a) State any two access specifiers used in Java.

b) What is garbage collection in Java?

c) Define wrapper classes.

d) What is JVM (Java Virtual Machine)?

e) What is method overloading?

f) List any two types of listeners in Java.

Q2) **Attempt the following :**

a) What are checked and unchecked exceptions? **[2]**

b) Explain the uses of super-keyword with suitable example. **[4]**

c) Explain the Delegation Event Model for event handling. **[4]**

Q3) **Attempt the following :**

a) List any two swing components along with their use. **[2]**

b) Explain the features of Java. **[4]**

c) Write a Java program to create a method that takes an integer as a parameter and throws an exception if the number is greater than 100. **[4]**

P.T.O.

Q4) **Attempt the following :**

a) What is an iterator in Java? **[2]**

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

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

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

a) Write a Java program to create a class known as Bank Account with methods called deposit( ) and withdraw( ). Create a subclass called Savings Account that overrides the withdraw( ) method to prevent withdrawals if the account balance falls below Five hundred. **[5]**

b) Write a Java program to accept name in text box and hobbies of user using checkbox and display the selected options in the text box. **[5]**

c) Write a note on the MVC architecture. **[5]**

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Total No. of Questions : 5]

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F.Y.M.Sc

COMPUTER APPLICATION

CA 512BMJ : Cloud Computing

(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***
4) ***Figure to right indicates full marks***

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

a) What is Cloud Computing?

b) What are virtual machines in cloud computing?

c) What is software as a service security in cloud computing?

d) What are the 4 types of risk management?

e) Why cloud security governance is needed?

f) Define the Hybrid Cloud.

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

a) Write down the Advantages of Cloud Computing. **[2]**

b) Explain the Cloud Computing Architecture. **[4]**

c) Write a short note on Cloud Service Models. Explain any one. **[4]**

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

a) What are the Security Risks of Cloud Computing? **[2]**

b) Explain how Grid Computing work? **[4]**

c) Write a short note on Google Cloud Applications. **[4]**

P.T.O.

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

a) What are the types of Virtualization in Cloud Computing? **[2]**

b) Explain Multi-tenancy in Cloud computing. **[4]**

c) Write a short note on Grid Computing. **[4]**

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

a) What is Cloud disaster recovery? **[5]**

b) What is Data Center in Cloud Computing? **[5]**

c) Explain the Architecture of DevOps. **[5]**

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Total No. of Questions : 7]

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F.Y.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 from Q.2 to Q. 7. carry equal marks.***

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

a) Define Research.

b) What is deductive logic in Research?

c) What is Review of literature? Give examples of any 2 sources of literature.

d) What is Applied Research?

e) What is meant by sampling? Give examples of method of sampling?

f) Describe Hypothesis.

g) What is qualitative data Analysis?

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

a) Explain in detail the steps followed in Scientific Research?

b) What is plagiarism? Explain any 3 tools of plagiarism.

c) Write objectives of Research in detail.

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

a) Explain in detail advantages of sampling?

b) What literature resources are used in research?

c) What is deductive logic? Write its advantages.

P.T.O.

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

a) What research ethics should be followed in research?

b) Explain various types of probability sampling method.

c) What measures of central tendency are used in Research?

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

a) Write distinction between primary data and secondary data.

b) Explain in detail difficulties encountered in Scientific Research.

c) Explain various methods of data collection for Research.

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

a) Write a short note on grounded theory.

b) What different types of hypothesis can be formulated for research with examples.

c) What are the advantages of sampling methods attached when you select non-probability sampling.

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

a) Types of Research.

b) Measures of Distribution.

c) Computer aided qualitative analysis.

▽▽▽▽