

(Time: 3 Hours)

Total Marks: 80

- N.B.: (1) Question No. 1 is compulsory.
(2) Solve any **three** from remaining **five** questions.



Q1. Answer the following questions

- (a) Draw the Database Architecture and explain in brief. (5)
(b) Explain the Database recovery management in brief. (5)
(c) Describe trigger with an example. (5)
(d) What are the different types of data models? (5)

- Q2. (a) Construct an ER diagram for school with the sets of students and a set of teachers associated with each student with a log of various examinations conducted write a relational schema for the ER design (10)
(b) What is deadlock? How to detect and prevent this problem? (10)

- Q3. (a) Explain 1NF, 2NF, 3NF and BCNF with a suitable example? (10)
(b) Explain following types of attributes with an example. (10)
i) Single Valued ii) Multi Valued
iii) Composite iv) Derived

- Q4. (a) Shop has the following relations, (10)
Inventory (code, name, number of Items)
Person (ID, name, age)
Is_member (code ID, date of joining)
Items (accession number, Serial number, category, Size, price)
Purchased_by (accession number, serial id, date of purchase)

Answer the following queries in SQL:

- i) list all the items purchased before 31st March 2019 and details of the Purchaser
ii) Find the details of Items and Customer/Purchaser who Purchased items above Rs. 15000
iii) Give the details of unsold items of size above 10 incl.
iv) List the frequent purchasers/Customers who have purchased at least one item on every visit.

- (b) Explain the following terms with the help of relational algebra:
1) Set intersection 2) set difference 3) natural joint. (10)

- Q5. (a) Draw the state diagram of transaction. Discuss every state in brief with an example. (10)
(b) Explain Data definition language and Data manipulation Language. (10)

Q6. Write short note on

1. Two phase locking protocol (5)
2. Constraints in SQL (5)
3. ACID Properties Integrity constraint (5)
4. Evaluation of Data Model (5)
