

(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.
- i) Single Valued                      ii) Multi Valued
  - iii) Composite                      iv) Derived (10)

- 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 31<sup>st</sup> 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 inch.
- 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)

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