

- N.B. :** (1) Question No 1 is Compulsory.
 (2) Attempt any three questions out of the remaining five.
 (3) All questions carry equal marks.
 (4) Assume suitable data, if required and state it clearly.

Q.1 Attempt any four

Marks

- | | |
|---|---|
| a. Define DBA. Discuss role DBA. | 5 |
| b. Define entity and types of entities. | 5 |
| c. Explain Views in SQL. | 5 |
| d. Write ACID properties of transactions. | 5 |
| e. Explain attributes and its types. | 5 |

- Q.2. a.** Solve all queries below using only select, project, Cartesian product, and natural join.

10

First Schema

Suppliers (sID, sName, address)

Parts (pID, pName, colour)

Catalog (sID, pID, price)

Catalog[sID] \subseteq Suppliers[sID]

Catalog[pID] \subseteq Parts[pID]

- Find the names of all red parts.
 - Find all prices for parts that are red or green. (A part may have different prices from different manufacturers.)
 - Find the sIDs of all suppliers who supply a part that is red or green.
- b.** What is serializability? Explain different types of serializability used in transactions.

10

- Q.3.a** Draw the Database Architecture and explain in detail.

10

- b.** Consider the following schema for institute Library.
 Student (Rollno, Name, Father_name, Branch)
 Book (ISBN, Title, Author, Publisher)
 Issue (Rollno, ISBN, Date_of_Issue)

10

Write SQL queries for the following statements

- List Roll Number and Name of all students of the branch CSE.
- Find the name of students who have issued a book published by ABC publisher.
- List title of all books and their author issued by student Prashant
- List title of all books issued on or before 1st FEB 2021.

- Q.4.a. What is Normalization? Explain 1NF, 2NF, 3NF with example. 10
- b. Write difference between File systems v/s Database systems 10
- Q.5.a Draw ER Diagram for Hospital management system. 10
- b Explain aggregation functions in SQL with proper examples 10
- Q.6 Write notes on any two
- a). DDL commands 10
- b) Transaction states 10
- c) Functional Dependencies 10
