

Time: 3 Hours

Max. Marks: 80

NB:

1. Question No. 1 is compulsory and solve any THREE questions from remaining questions
2. Assume suitable data if necessary
3. Draw clean and neat diagrams

Q.1 Attempt any four

- a. Explain weak entity with example. **5**
- b. Define Generalization & Specialization. **5**
- c. Compare traditional file system with DBMS. **5**
- d. Explain Database Languages. **5**
- e. Define Transaction & Concurrency control. **5**

Q.2. a. List the functional dependencies which satisfy the relation: **10**

x	y	z
X1	Y1	Z1
X1	Y2	Z1
X2	Y2	Z1
X2	Y2	Z1

- b. Construct an EER diagram and convert into Relational Model for a library Management System. **10**

Q.3.a Explain different types of operations in relational algebra. **10**

- b. Consider the following schema for institute Library. **10**

Student (Rollno, Name, Father_name, Branch)

Book (ISBN, Title, Author, Publisher)

Issue (Rollno, ISBN, Date_of_Issue)

Write SQL queries for the following statements.

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

Q.4.a. Consider a relation R with five attribute ABCDE. You are given the following dependencies: 10

$A \rightarrow B$ $BC \rightarrow E$ $ED \rightarrow A$

- i. List all keys for R
- ii. Is R in 3NF
- iii. Is R in BCNF.
- b. What is Normalization? Explain 1NF,2NF,3NF with example. 10

Q.5.a Explain types of Integrity Constraints with example. 10

- b. What do you mean by deadlock with respect to transaction? 10
Explain the procedure for deadlock handling.

Q.6 Write notes on **any two**

- a) Views in SQL. 10
- b) DDL commands. 10
- c) Triggers and transaction control commands. 10
- d) Cursor and its types with examples. 10