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? Explain the procedure for deadlock handling. **10**

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**