MODEL QUESTION PAPER
DEPARTMENT OF INFORMATION TECHNOLOGY: VRSEC

II/IV B. Tech (SEMESTER IV)

20IT4302 DATABASE MANAGEMENT SYSTEMS

Time: 3 Hours **Max. Marks 70**

Part-A is compulsory

Answer One Question from each Unit of Part-B

PART-A

10X1=10M

a. Define database instance.
b. What is physical data independence?
c. Explain Rename operation in Relational algebra
d. Difference between primary key and unique key constraint.
e. Define virtual table.
f. Differentiate between strong and weak entity sets
g. What is multi-valued dependency?
h. What is a Lock.
i. What are the rules of BCNF ?
j. Write the SELECT-FROM-WHERE structure with an example.

PART- B

4X15=60M

UNIT I

1. a) Elaborate the importance of workers behind the scene. **7M**

   b) Discuss about the database system environment. **8M**

(**OR)**

2. a) Explain the integrity constraints in relational data model**.** **7M**

   b) Summarize database languages and interfaces. 8**M**

UNIT II

3. a) Consider the following schemas
   BOOK (Book_id, Title, Publisher_Name)
   BOOK_AUTHORS (Book_id, Author_Name)
   BOOK_COPIES (Book_id, Branch_id, No_Of_Copies)
   LIBRARY_BRANCH (Branch_id,Branch_name,Address)
   Write the following queries in SQL. **8M**
   i. How many copies of the book titled 'The Last Tribe' are owned by each library branch
   ii. How many copies of the book titled 'The Last Tribe' are owned by library branch whose name is 'Sharpstown'?
   iii. Retrieve the Book titles and corresponding Author_names
   iv. For each library branch, list the branch name , no.of books owned by the branch .

   b) Illustrate Aggregate functions, Group by and Having clauses with examples. 7**M**

(OR)

4. a) Explain about different set theoretic operations of relational algebra **8M**

   b) Discuss DIVISION operation in relational algebra with an example. **7M**

UNIT III

5. a) Explain in detail 1st, 2nd and 3rd Normal Forms with examples. **9M**

   b) Briefly explain the properties of Decomposition. **6M**

(OR)

6. a) . Construct the ER diagram for simple bank database. **7M**

   b) Explain Generalization ,Specialization concepts in ER Model **8M**

UNIT IV

7. a) Explain in detail about ACID Properties. **4M**

   b) Draw and explain transaction state diagram **4M**

8. What are the problems caused by interleaved execution **7M**

(OR)

9. a) What is conflict serializability? Explain the algorithm to test a schedule for conflict serializability. **7M**

   b) Give an overview of NoSQL. **8M**