H Roll No. .....

TMC–204(DBMS)

M. C. A. (SECOND SEMESTER) END SEMESTER EXAMINATION, July/Aug., 2022

DATABASE MANAGEMENT SYSTEM

Time : Three Hours

Maximum Marks : 100

Note : (i) All questions are compulsory.

(ii) Answer any *two* sub-questions among (a), (b) and (c) in each main question.

(iii) Total marks in each main question are **twenty**.

(iv) Each sub-question carries 10 marks.

1. (a) List and Explain various Advantages of DBMS over flat files. Also explain roles and responsibilities of various types of DBMS users. (CO1)

P. T. O.

(b) Write a detailed note on various types of data Models. Why is Relational Model Better ? (CO1)

(c) Using a diagram explain how various components work together to run a Database Server. (CO1)

2. (a) Draw an ER Diagram for a typical Banking System. Assume Branches, Customer, Accounts, Transactions etc., Convert This ERD into Tables. Show Sample Table Values. (CO2)

(b) What is relational Algebra ? List its various operations. (CO2)

Assume Following Tables and Write relational algebraic queries for given questions: (CO2)

(1) EMP(EMPCODE,NAME,SALARY)

(TABLE 1)

(2) PROJECT(PCODE,EMPCODE, LANGUAGE) (TABLE 2)

Write Relational Algebraic Queries for following (NOT SQL QUERIES, ONLY ALGEBRAIC)

(i) Display Name of All Employees.

(ii) Show details of all "JAVA" language projects.

(iii) Show Codes of those employees who are having salary > 50000.

(iv) Show Codes of Employees who are not working in any project.

(c) Explain the Importance of CODD's rules in the development of RDBMS and SQL. (CO2)

3. (a) Explain Sub Queries in SQL using proper examples. How Sub-queries and Joins Differ ? (CO3)

(b) What is Referential Integrity Constraint ? Explain various ways to apply this in a table. Write proper SQL Examples. (CO3)

(c) Write SQL queries for the given requirements based on following tables : (CO3)

Party(Pcode,PName,Email)

(Assume all table values)

Hotel(HID,HName,Type,Address)

(Assume all table values)

Allocation(PCode,HID)

(Assume all table values)

Write SQL queries for following requirement :

Creation of above tables along with constraints (Pkey, Fkey etc).

(i) Show List of all 5-Star Hotels.

(ii) Show total numbers of hotels allocated to each Party Code.

(iii) Full Details of all Parties along with the details of their allocated hotels.

(iv) Show names of those hotels which have not been allocated to any party.

4. (a) What are the various types of anomalies that can occur in a table ? Show using examples. How we can avoid them. (CO4)

(b) What is the role of Functional dependency in Relational table design ? Also Explain Inference Axioms. (CO4)

(c) What are Normal Forms ? Explain 3rd Normal Form using a proper example. (CO4)

5. (a) What are the various types of failures that can occur during transaction Execution ? How database can handle them ? (CO5)

(b) Explain 2-Phase Locking Protocol using examples. (CO5)

(c) Define DBMS transaction and Explain its various properties and stages. (CO5)