This question paper contains 4+2 printed pages]

Roll No. | | | | | | | | | | |

S. No. of Question Paper : **1994**

Unique Paper Code : **62341201** **GC-4**

Name of the Paper : **Database Management Systems**

Name of the Course : **B.A. (Prog.) Discipline Course**

Semester : **II**

Duration : **3 Hours** Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Question No. **1** is compulsory.

Answer any *five* questions from Question Nos. **2** to **8.**

1. (*a*) What are the problems caused due to data redundancy ? 4

(*b*) Explain any *two* functions of DBMS. 4

(*c*) Give full form of the following : 2

(*i*) SQL

(*ii*) DML.

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(*d*) How are entities and attributes represented in ER model ? 2

(*e*) Differentiate between Single-Valued and Multi-Valued attributes with examples. 4

(*f*) Explain the Integrity Rules to design a database. 4

(*g*) What is partial dependency ? Explain with a suitable example. 3

(*h*) Explain Foreign key in a relation. 2

2. What are the components of a database system ? 10

3. A college maintains data about the following entities : 10

(*i*) Courses : including number, title, credits, syllabus, and prerequisites;

(*ii*) Courses offered : including course number, year, semester, section number, instructor(s), timings, and classroom;

(*iii*) Students : including student-id, name, and program;

(*iv*) Instructors : including id_number, name, department and title.

Construct an E-R diagram for the same.

4. Consider the following schema and write SQL for the following :

Student (RollNo, Name, Age, Sex, City)

Student_marks (RollNo, Marks1, Marks2, Marks3)

(*i*) To create the given tables and declare primary keys and foreign keys. 4

(*ii*) Display student details grouped by their city. 2

(*iii*) Display name of students who got more than 75 marks in Marks-1. 2

(*iv*) Delete the table Student_marks. 2

5. Consider the following relations R1 and R2 : 10

Roll No.	Name
1001	Ankit
1002	Suraj
2001	Vivek
2002	Ruchika

R1

Roll No.	Name
1004	Amit
1005	Suraj
2002	Ruchika
1001	Ankit

R2

Give the result of the following operations :

(*i*) **R1** PRODUCT **R2**

(*ii*) **R1** UNION **R2**

(*iii*) **R1** INTERSECTION **R2**

(*iv*) SELECT Roll No. greater than 1005 From **R1**

(*v*) **R1** DIFFERENCE **R2**

6. (*a*) Explain the different data anomalies in a database with example. 6

(*b*) Differentiate between primary key and secondary key in a relation with example. 4

7. (*a*) Explain any *two* advantages of DBMS. 4

(*b*) Explain different types of relationships that exist in a database model. 6

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8. Write short notes on any *four* : 10

(*i*) Network Data Model

(*ii*) Connectivity and Cardinality

(*iii*) Relational set operator JOIN

(*iv*) Data Dictionary and System Catalog

(*v*) Third Normal Form.