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

26/5/17 Evening Friday

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.

(*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

P.T.O.

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.

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