[This question paper contains 8 printed pages]

Your Roll No. : .....

Sl. No. of Q. Paper : **7543** **HC**

Unique Paper Code : 32345201

Name of the Course : **Generic Elective: Computer Science**

Name of the Paper : Introduction to Database Systems

Semester : II

Time : 3 Hours ***Maximum Marks : 75***

Instructions for Candidates :

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

(b) Question NO.**1** is compulsory in **Section- A.**

(c) Attempt any **five** questions from **Section-B**.

(d) Parts of question should be attempted together.

P.T.O.

Section- A

1. (a) What are the functions of a DBA ? 2

(b) Identify the primary and foreign keys in the following relations : 5

Part (Part_no, Part_name, color)

Supplier (Supplier_no,Supplier_name,City)

Shipment (Part_no,Supplier_no, Quantity)

(c) Define the following terms : 4

(i) Attribute

(ii) Degree of a relation

(d) Give short answer for the following : 3

(i) What is the SQL clause for displaying the output of the query in ascending order ?

(ii) What is the column or group of columns that uniquely identify a tuple called ?

(iii) What is the diagrammatic representation of the entities and the relationships amongst them called ?

(e) Consider the following table EMP_DETAIL :

I D	Name	Age	Address	Salary(₹)
1	Ram	32	Mumbai	5000.00
2	Mohan	25	Delhi	3500.00
3	Roy	23	Agra	4000.00

Formulate the SQL queries for the following :

(i) Insert a tuple <4,Sita, 28, Shimla, 7000>. 2

(ii) Delete the tuple where the address is 'Delhi'. 2

(iii) Modify the salary of an employee having ID = 1, to 6000. 2

(iv) Display the names and address of employees having salary greater than 4000. 2

(f) Suggest appropriate data types for the following attributes : 3

(i) Commission of a salesperson

(ii) The date of joining of an employee

(iii) Name of the author of a book

Section-B

2. (a) Can a binary relation have both the attributes defined over the same entity set ? Illustrate using an example. 4

(b) Draw the ER diagrams for the following entities and relationships, depicting the cardinality ratios : 6

Entity 1	Relationship	Entity 2
(i) Employee	HAS	Dependent
(ii) Supplier	SUPPLIES	Part
(iii) Waiter	SERVES	table

3. (a) Consider the following relational database schema that keeps track of auto sales in a car dealership.

CAR (Serial_no, Model, Manufacturer, Price)

Sales (Salesperson _id, Serial _no, Date, Sale_price)

SALESPERSON (Salesperson _id, Name, phone)

Write the SQL queries for the following :

(i) For the salesperson named 'Raman Lamba', list the Serial _no, Manufacturer, Sale_price for the cars she sold. 3

(ii) List the serial_no and model of cars sold in between the months of March 2016 and Dec 2016. 2

(iii) Display all car models and their manufacturers in the decreasing order of their price. 2

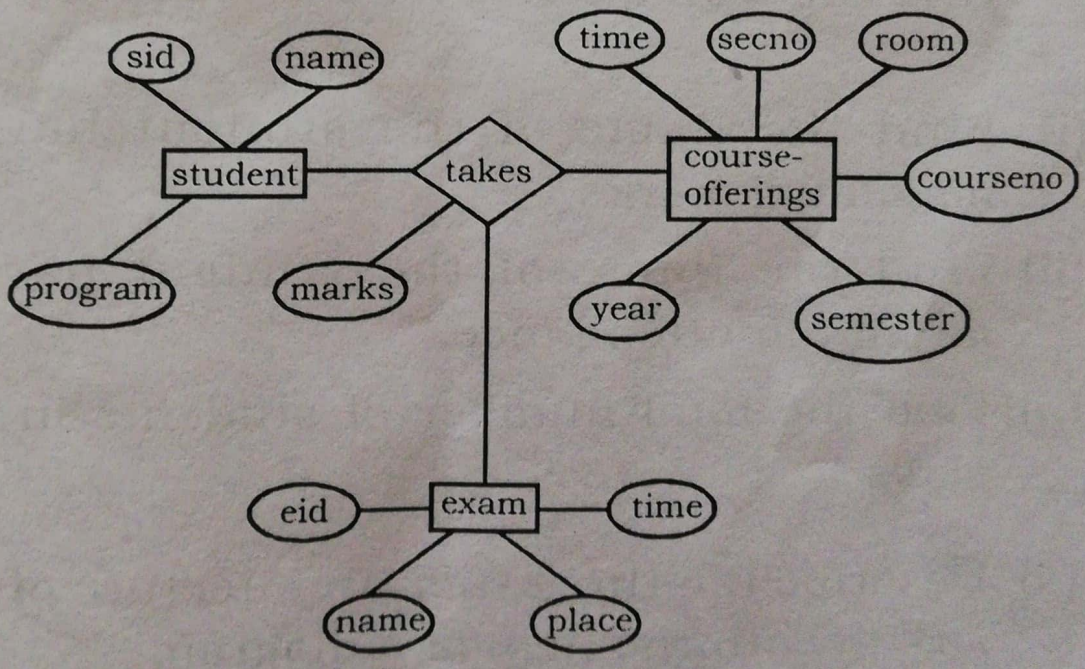
(b) Give one word answer for the following : 3

(i) An entity which has primary key of its own

(ii) Attributes that combine to form primary key

(iii) Data about data

4. Consider the following ER diagram :



(i) Identify the relations and relationship from the diagram. 2

(ii) Give the schema for each of them. 4

(iii) Give the primary and foreign keys of each relation. 4

5. (a) What is normalization ? Why do we need it ? 2+2=4

(b) Consider the following relation STUDENT :

Roll No	Name	Marks	Attendance
1	Smith	44	78
2	Paul	52	68
3	James	69	87
4	John	54	74

Give the SQL queries for the following : 2×3=6

(i) Find the Name of the student having maximum marks.

(ii) Find the Name of the student having minimum attendance.

(iii) Find the total number of students in the class.

6. (a) Describe the three -tier architecture of the DBMS with the help of a diagram. 4

(b) Consider the following table PLAYER_INFO :

Player ID	Name	Sport Played
1	Joey	44
2	Virat	52
3	Manoj	69
4	Xavier	54

(i) Write SQL command to create the table. 2

(ii) Write SQL command to add one more column AGE to above table. 2

(iii) Write SQL command to remove the above table from the database. 2

7. (a) Differentiate between primary key, candidate key and super key. 3

(b) Consider the database of an online book store.

Every book has a title, ISBN, Year and price. The store also keeps the information about the author and publisher for all the books. For author the database keeps the name, address, and phone number. For publishers, the database keeps the name, address, phone number. Many author may write many book and a book is published by one publisher only.

(a) Identify the entities of interest and their attributes. 2

(b) Identify the relationships among these entities. 2

(c) Design an E-R diagram for such a bookstore and state necessary assumptions. 3

8. (a) What are referential integrity constraints ? Give one example. 4

(b) Differentiate between : 2×3=6

(i) Logical and physical data independence

(ii) DDL and DML

(iii) Strong and weak entity