

(Time: 2 ½ Hours)

[Total Marks: 75]

- N.B. 1) All questions are compulsory.  
2) Figures to the right indicate marks.  
3) Illustrations, in-depth answers and diagrams will be appreciated.  
4) Mixing of sub-questions is not allowed.  
5) Assume suitable data if necessary and state it clearly.

**Q. 1 Attempt All.**

**(15M)**

**(a) Multiple Choice Questions**

1. A \_\_\_\_\_ in a table represents a relationship among a set of values.  
A) Column  
B) key  
C) Row  
D) Entry
2. Consider attributes ID, CITY and NAME. Which one of this can be considered as a super key?  
A) NAME  
B) ID  
C) CITY  
D) CITY , ID
3. Which of the following is used to denote the selection operation in relational algebra?  
A) Pi(Greek)  
B) Sigma(Greek)  
C) Lambda(Greek)  
D) Omega (Greek)
4. Which of the following query is correct for using comparison operators in SQL:  
A) SELECT sname, coursename FROM studentinfo ;  
B) SELECT sname, coursename FROM studentinfo  
WHERE age>50 && age <80;  
C) SELECT sname, coursename FROM studentinfo  
WHERE age>50 & WHERE age<80;  
D) None of the above

**5. In 2NF**

- A) No functional dependencies exist.
- B) No multivalued dependencies exist.
- C) No partial functional dependencies exist
- D) No partial multivalued dependencies exist

**(b) Fill in the blanks.**

1. Field is otherwise called as ..... of the record.
2. The ..... is related to the concept of multi-valued dependency.
3. The \_\_\_\_\_ operator takes the results of two queries and returns only rows that appear in both result sets.
4. Architecture of the database can be viewed as \_\_\_\_\_.
5. .... is a full form of SQL

**(c) Short Answers**

1. State any two examples based on derived attribute.
2. Write syntax of select operation of relational algebra.
3. What is the output produce by date () function?
4. Explain the string function ltrim () with example.
5. Define the term DBMS.

**Q. 2 Attempt the following (Any THREE)**

**(15M)**

- (a) State the drawback of traditional file processing systems.
- (b) **Show an E-R diagram illustrating the use entity sets listed.**

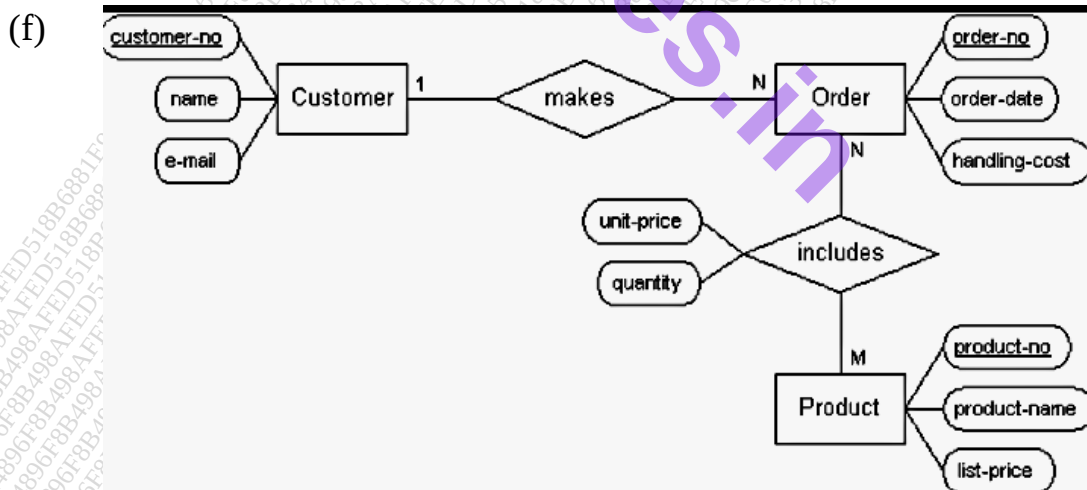
Galleries keep information about artists, their names (which are unique), birthplaces, age, and style of art. For each piece of artwork, the artist, the year it was made, its unique title, its type of art (e.g., painting, lithograph, sculpture, photograph), and its price must be stored. Pieces of artwork are also classified into groups of various kinds, for example, portraits, still lifes, works by Picasso, or works of the 19th century; a given piece may belong to more than one group.

Each group is identified by a name (like those just given) that describes the group. Finally, galleries keep information about customers. For each customer, galleries keep that person's unique name, address, total amount of dollars spent in the gallery (very important!), and the artists and groups of art that the customer tends to like.

- (c) List and explain different database users.
- (d) What do you mean by Null constraint, Check constraint? Discuss with suitable example?
- (e) List and explain different types of mapping cardinalities.
- (f) Draw an ER diagram showing movie ticket management system. [Assume suitable data and state them clearly.]

**Q. 3 Attempt the following (Any THREE) (15M)**

- (a) Giving 2 examples explain 1 NF.
- (b) Explain any 3 aggregate functions with examples.
- (c) Discuss cross product, union operations from relational algebra with suitable example.
- (d) Perform following using mysql
  - 1) Create a table student (rollno, name, address) rollno is PK.
  - 2) Insert 2 records
  - 3) Delete a record whose rollno is 3.
  - 4) Find a record whose name starts with a.
- (e) How to perform commit and rollback operation give example to support your answer.



Construct tables from the above ER diagram. [assume suitable mapping cardinalities and mention them.]

**Q. 4 Attempt the following (Any THREE) (15)**

- (a) Explain the concept of functional dependency with suitable example.
- (b) Describe the process of creating user in mysql.
- (c) Write a short note on how to create a view with suitable example.
- (d) Perform following by assuming suitable data and database.
  - 1) Create a report that shows the city, company name, and contact name of all customers who are in cities that begin with "A" or "B." Sort by contact name in descending order.
  - 2) Create a report that shows the company name, contact name and fax number of all customers that have a fax number. Sort by company name.
  - 3) select name from student where name like '%i';
- (e) What do you mean by privilege with respect to database and its types.
- (f) Discuss various types of Threats to Databases.

**Q. 5 Attempt the following (Any THREE) (15)**

- (a) Consider the following entities for a hospital management system.

*Equipment:* The main attributes are identification number, name, description of its functionalities, type, location, purchase cost, purchase date, etc.

*Department:* The main attributes are identification number, name, address, total number of doctors, total number of nurses, etc.

*Doctor:* The main attributes are identification number, name, address, area of specialty, current working schedule, etc.

*Nurse:* The main attributes are identification number, name, address, skills, current working schedule, etc.

*Patient:* The main attributes are identification number, name, address, type (inpatient or outpatient), disease, etc.

*Room:* The main attributes are room number, type (operating room, ward, etc.), capacity, description, etc.

Draw ER diagram and define relationships.

(b) Write queries in relational algebra form:

- 1) Find the information of name “ram” from student table.
- 2) Select the records from student table who has marks > 60
- 3) Find all students having marks < 40 from student table.
- 4) Rename student table to SST.
- 5) Find name from student whose address is virar.

(c) Discuss avg (), max (), min () functions with suitable example.

(d) Write a note on sub-query and provide example.

(e) Define the terms data, information, entity, attribute, relationship.

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