

# END TERM EXAMINATION

SECOND SEMESTER [BCA] JULY 2023

Paper Code: BCA-108

Subject: Database Management System

Time: 3 Hours

Maximum Marks: 75

**Note: Attempt five questions in all including Q.No. 1 which is compulsory. Select one question from each unit.**

Q1. Answer the following (**any five**) (5x5=25)

- (a) Explain advantage of database management system over file processing system.
- (b) Explain the role of E-R model in database design.
- (c) Differentiate between serializable and non-serializable transactions.
- (d) What problems are encountered if data is not stored in normalized table?
- (e) Explain DDL and DML. Give three commands each for DDL and DML.
- (f) What is data independence? What are two forms of data independence? Explain with the help of an example.
- (g) What is the difference between strong and weak entity sets? Why sometimes weak entity sets are needed in database design.

## UNIT-I

- Q2. a) Describe the three - schema architecture. Why do we need mappings between schema levels? How does different schema definition language support this architecture? (6)
- b) A database is being constructed to keep track of the teams and games of a sports league. A team has a number of players, not all of whom participate in each game. It is desired to keep track of the players participating in each game for each team, the positions they played in that game, and the result of the game. Design an ER diagram for this application, stating any assumptions you make. Choose your favourite sport (e.g., soccer, baseball, football) (6.5)
- Q3. a) Explain different types of keys with example. Differentiate between Primary key, candidate key and super key. (6.5)
- b) Illustrate the use of SUM (), AVG (), COUNT (), MIN (), MAX (). (6)

## UNIT -II

- Q4. a) Consider the following relations
- Customer (CustId, CusName, Address, State)
- Parts (PartNum, Description, Price)
- Order (OrderNo, Name, Partnum, Qty, CustId)

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Write query for each of the following:

**(2x4=8)**

- Write query for each of the following:
- Find all customers who have placed order for part description "Tyres".
  - Find customer name, address of customers who have purchased Partnum 10 and quantity ordered is more than 100.
  - Find the customer name, address of those customers residing in state ="Delhi"
  - Find all customer names that have placed order for product with price more than 500.
- b) Explain stored procedure and triggers in DBMS with example. (4.5)
- Q5. a) What are the integrity constraints? Explain each of them. (6.5)
- b) "NULL value concept is useful one but a large use of NULL VALUE in implemented database is not desirable". Comment. (6)

### UNIT-III

- Q6. a) Describe Full Join and Division Operation relational algebraic operations giving one an example of each **(6.5)**  
b) Define the following terms: **(1.5x4=6)**  
(i) Normalization (ii) MVD  
(iii)FFD (iv) BCNF
- Q7. a) Explain Codd's rules in RDBMS. **(6)**  
b) What are set operations? Explain each with the help of an example. When two tables are said to be union compatible? How are the results ordered in union compatible? **(6.5)**

## UNIT -IV

- Q8. a) What is a transaction? Explain ACID properties of a transaction. **(3+3=6)**  
b) Discuss the different types of transactions failures that may occur in database environment. **(6.5)**
- Q9 a) Explain 2 phase locking scheme for data recovery. How two-phase Locking helps in maintaining integrity in the database? **(6.5)**  
b) Explain Discretionary Access Control [Grant/Revoke] methods for database security. **(6)**

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