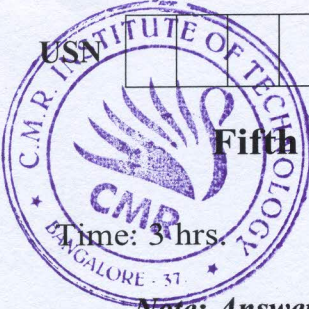


# CBCS SCHEME

21CS53



## Fifth Semester B.E. Degree Examination, June/July 2024 Database Management Systems

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Define DBMS. Explain main characteristics of database approach. (08 Marks)
- b. Explain advantages of Database Management system. (08 Marks)
- c. Define data model. Explain the different types of user friendly interfaces. (04 Marks)

OR

- 2 a. Define Entity and attributes. Explain all the types of attributes along with notations. (10 Marks)
- b. Explain Cardinality ratios for binary relationship and write a ER diagram for movie database (minimum 4 entities). (10 Marks)

### Module-2

- 3 a. Explain relational model constraints. (06 Marks)
- b. Explain different types of update operations and show an example of a violation of the referential and entity integrity in each of update operation. (08 Marks)
- c. Define the following with example :
  - (i) Primary key
  - (ii) Foreign key
  - (iii) Super key
  - (iv) Candidate key(06 Marks)

OR

- 4 a. Briefly explain the ER to relational mapping algorithm with suitable example for each step. (10 Marks)
- b. Explain following relational algebra operators with example :
  - (i) Select
  - (ii) Project
  - (iii) Intersection
  - (iv) Cartesian product(10 Marks)

### Module-3

- 5 a. Explain insert, delete, update, alter and drop statement in SQL. (10 Marks)
- b. Consider the following schema for order database :  
SALESMAN (Salesman\_Id, Name, City, Commission)  
CUSTOMER (Customer\_Id, Cust\_name, City, Grade, Salesman\_id)  
ORDERS (Ord\_No, Purchase\_amt, Ord\_Date, Customer\_id, Salesman\_id)  
Write SQL queries to,
  - (i) Find the name and numbers of all salesman who had more than due customer.
  - (ii) List all the salesman and indicates those who have and don't have customer in their cities (use union).
  - (iii) Create that view finds the salesman who has the customers with the higher order. (10 Marks)

OR

- 6 a. Write a note on for following :
- Assertion and action trigger. (10 Marks)
  - Views in SQL. (05 Marks)
- b. Explain stored procedures in SQL. (05 Marks)
- c. Briefly explain JDBC classes.

**Module-4**

- 7 a. Explain informal guidelines to determine the quality of relation scheme design with example. (08 Marks)
- b. Explain Armstrong inference rule. (06 Marks)
- c. Discuss insertion and deletion anomalies. (06 Marks)

OR

- 8 a. Define normal form. Explain 2NF, 3NF and BCNF with suitable example. (10 Marks)
- b. Consider 2 sets of FDs, F and G,  $F = \{A \rightarrow B, B \rightarrow C, AC \rightarrow D\}$  and  $G = \{A \rightarrow B, B \rightarrow C, A \rightarrow D\}$  Are F and G equivalent? (05 Marks)
- c. Consider set of FD's be E:  $\{B \rightarrow A, D \rightarrow A, AB \rightarrow D\}$ , find the minimal cover of E. (05 Marks)

**Module-5**

- 9 a. Why concurrency control needed. Explain types of problems that may occur when 2 simple transaction run concurrently. (10 Marks)
- b. Explain why recovery needed and Acid properties. (10 Marks)

OR

- 10 a. Briefly discuss Two-phase locking techniques for concurrency control. (08 Marks)
- b. Explain ARIES recovery algorithm with example. (08 Marks)
- c. Write a note on Deadlock prevention protocol. (04 Marks)

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