CBCS SCHEME

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21CS53

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

Time: 3 hrs. 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, Commision)
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 :
(i) Assertion and action trigger.
(ii) Views in SQL. **(10 Marks)**

b. Explain stored procedures in SQL. **(05 Marks)**

c. Briefly explain JDBC classes. **(05 Marks)**

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 anamalies. **(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 translation 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 Deedlock prevention protocol. **(04 Marks)**

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