CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐

15CS53

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Database Management System

Time: 3 hrs.   Max. Marks: 80

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

Module-1

1 a. Discuss the main characteristics of the database approach and how it differs from traditional file systems. **(08 Marks)**

   b. Explain the component module of DBMS and their interactions with the help of neat diagram. **(08 Marks)**

OR

2 a. Draw an ER-diagram for AIRLINE database schema with atleast five entity types and specify primary key and structural constraints and weak entity type. **(10 Marks)**

   b. Define the following terms:
      i)   Weak entity type
      ii) Degree of a relationship type
      iii) Role names and recursive relationship. **(06 Marks)**

Module-2

3 a. Discuss the different types of update operations on relational database. Explain how the basic operations deals with constraint violations. **(08 Marks)**

   b. Explain the data types available for attribute specification in SQL. **(08 Marks)**

OR

4 a. Consider the two tables T_1 and T_2. Show the results of the following operations:

T_1		
P	Q	R
10	a	5
15	b	8
25	a	6

T_2		
A	B	C
10	b	6
25	c	3
10	b	5

   i) $T_1 \bowtie_{T_{1.P}=T_{2.A}} T_2$

   ii) $T_1 \bowtie_{T_{1.Q}=T_{2.B}} T_2$

   iii) $T_1 \rtimes_{T_{1.P}=T_{2.A}} T_2$

   iv) $T_1 \ltimes_{T_{1.Q}=T_{2.B}} T_2$

   v) $T_1 \bowtie_{(T_{1.P}=T_{2.A} \text{ AND } T_{1.R}=T_{2.C})} T_2$ **(10 Marks)**

   b. Explain Unary relational operations with an example. **(06 Marks)**

Module-3

5 Consider the following schema of order database
SALESMAN (Salesmanid, name, city, commission);
CUSTOMER (Custid, custname, city, grade, salesmanid);
ORDERS (Ordno, purchaseamt, orddate, custid, salesmanid);
Write SQL queries for the following:
i)   Find the name and numbers of all salesman who had more than one customer.
ii) Count the customers with grade above Bangalore's average.
iii) List all the salesman details whose first name is 'John'.
iv) List all salesman and indicate those who have and don't have customers in their cities (Use UNION operation).
v)   Use the delete operation by removing salesman with id = 2000.   **(16 Marks)**

OR

6 a. Explain three-tier architecture with neat diagram.   **(08 Marks)**
   b. Define stored procedure. Explain creating and calling of stored procedure with an example.
                                                                                       (08 Marks)

Module-4

7 a. Define normal form. Explain 1NF, 2NF and 3NF with suitable example.   **(08 Marks)**
   b. Discuss insertion, deletion and modification anomalies. Why are they considered bad? Illustrate with example.   **(08 Marks)**

OR

8 a. Explain the four informal guidelines that may be used as measures to determine the quality of relation schema design.   **(08 Marks)**
   b. Write an algorithm for finding a minimal cover 'F' for a set of functional dependencies 'E'. Find the minimal cover for the given set of FD's
G: {A → BCDE, CD → E}   **(08 Marks)**

Module-5

9 a. Discuss the atomicity, durability, isolation and consistency preserving properties of a database transaction.   **(08 Marks)**
   b. Why concurrency control is needed demonstrate with example?   **(08 Marks)**

OR

10 a. Discuss Two-Phase Locking Technique for concurrency control.   **(10 Marks)**
   b. Explain NO-UNDO/REDO Recovery based on deferred update.   **(06 Marks)**

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