CBCS SCHEME

USN |__|__|__|__|__|__|__|__|__|__| 17CS53

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

Time: 3 hrs.   Max. Marks: 100

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

Module-1

1 a. Compare DBMS and early file systems , bringing out the major advantages of the database approach. **(06 Marks)**
   b. With a neat block diagram, explain the architecture of a typical DBMS. **(10 Marks)**
   c. What are the responsibilities of the DBA and the database designers? **(04 Marks)**

OR

2 a. Define the following terms :
      i) Data model   ii) Schema   iii) Instance   iv) Canned Transaction. **(08 Marks)**
   b. Draw an ER diagram to represent the Election Information System based on the following description :
      In the Indian national election, a state is divided into a number of constituencies depending upon the population of the state. Several candidates contest elections in each constituency. Candidates may be from some party or independent. The election information system must record the number of votes obtained by each candidate. The system also maintains the voter list and a voter normally belongs to a particular constituency.
      Note that the party details must also be taken care in the design. **(12 Marks)**

Module-2

3 a. Define the following terms :   i) Key   ii) Super key   iii) Candidate key
      iv) Primary key   v) Foreign key. **(05 Marks)**
   b. Enumerate the steps involved in converting the ER constructs to corresponding relational tables. **(07 Marks)**
   c. Considering the schema
      Sailors (sid , sname , rating , age)
      Boats (bid , bname , color)
      Reserves (sid , bid , day)
      Write relational algebraic queries for the following :
      i)   Find names of sailors who have reserved boat # 103.
      ii) Find names of sailors who have reserved a red boat.
      iii) Find names of sailors who have reserved a red or green boat.
      iv) Find names of sailors who have reserved all boats. **(08 Marks)**

OR

4 a. Explain with examples , the basic constraints that can be specified when a database table is created in SQL. **(12 Marks)**
   b. Write SQL queries for the following relational schema :
      CUSTOMER (CID , CNAME , EMAIL , ADDR , PHONE)
      ITEM (ITEM_NO , ITEM_NAME , PRICE , BRAND)
      SALES (CID , ITEM_NO , # ITEMS , AMOUNT , SALE_DATE)
      SUPPLIER (SID , SNAME , SPHONE , SADDR)
      SUPPLY (SID , ITEM_NO , SUPPLY_DATE , QTY)

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b. Define Multi valued Dependency and Join Dependency. Explain 4NF and 5NF with examples. **(10 Marks)**

Module-5

9 a. Describe the database inconsistency problems : Lost update , dirty read and blind write. **(06 Marks)**

b. With a neat diagram, explain the various states of a transaction execution. **(07 Marks)**

c. Check whether the below schedule is conflict serializable or not.
{b2 , r2(X) , b1 , r1(X) , w1(X) , r1(Y) , w1(Y) , w2(X) , e1, c1, e2, c2}. **(07 Marks)**

OR

10 a. What is 2PL? Explain with an example. **(06 Marks)**

b. How do you detect a deadlock during concurrent transaction execution? **(06 Marks)**

c. Explain the various database recovery techniques, with examples. **(08 Marks)**

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