CBCS SCHEME

USN | RV | | | | | |

15CS53

h Semester B.E. Degree Examination, June/July 2019
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. Define DBMS. Discuss the advantages of DBMS over the traditional file system. **(08 Marks)**
   b Explain the component modulus of DBMS and their interaction, with the help of a diagram. **(08 Marks)**

OR

2 a. Define the following with an example
      i) Weak entity type   ii) Participation constraints
      ii) Cardinality ratio   iv) Recursive relationship. **(08 Marks)**
   b. Draw an ER diagram of Banking system taking into account atleast five entities, indicate all keys, constraints and assumptions that are made. **(08 Marks)**

Module-2

3 a. What is meant by Integrity Constraint? Explain the importance of referential integrity constraint. How referential integrity constraint is implemented in SQL? **(08 Marks)**
  b. Consider the following Movie database ;
      Movie (Title , director , Myear , Rating)
      Actors (Actor , Aage)
      Acts (Actor , title)
      Directors (Director , dage)
      Write the following queries in relational algebra on the database given ;
      i) Find movies made by "Hanson" after 1997.
      ii) Find all actors and directors.
      iii) Find "Coen's" movie with "Mc Dormand".
      iv) Find (director, actor) pairs where the director is younger than the actor. **(08 Marks)**

OR

4 a. Discuss insulation , deletion and modification anomalies. Why are they considered bad? Illustrate with an example. **(08 Marks)**
   b. Write the SQL queries for the following relational schema ;
      Sailors (Sid , Sname , Rating, Age)
      Boats (Bid , Bname , color)
      Reserve (Sid , Bid , Day)
      i) Retrieve the Sailor's name who have reserved red and green boat.
      ii) Retrieve the no of boats which are not reserved.
      iii) Retrieve the Sailors name who have reserved boat number 103.
      iv) Retrieve the Sailors name who have reserved all boats. **(08 Marks)**

Module-3

5 a. How are triggers and assertions defined in SQL? Explain. **(08 Marks)**
   b. How are views created and dropped? Explain how the views are implemented and updated. **(08 Marks)**

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OR

6 a. Explain the Single — tier and Client — server architecture, with a neat diagram. **(08 Marks)**
   b. Explain the following :
      i) Embedded SQL   ii) Database stored procedure. **(08 Marks)**

Module-4

7 a. Which Normal form is based on the concept of transitive functional dependency? Explain the same with an example. **(08 Marks)**
   b. What is the need for normalization? Consider the relation :
      Emp proj = SSn , Pnumber , Hours , Ename , Pname , P location }
      Assume {SSn , Pnumber} as primary key.
      The dependencies are ;
        SSn , Pnumber —÷ Hours
        SSn **Ename**
        Pnumber   tPname , Plocation }
      Normalize the above relation to 3NF. **(08 Marks**

OR

8 a. What is Functional Dependency? Find the minimal cover using the minimal cover algorithm for the following functional dependency.
      F=tAB-41),B—C,AE-313,A—>D,D—EF}. **(08 Marks)**
   b. Consider two sets of functional dependency.
      F=1A-->C,AC--D,E—÷AD,E—*H1 andG= {A--*CD,E—).AH}.
      Are they equivalent? **(08 Marks)**

Module-5

9 a. Discuss the ACID properties of a database transaction. **(04 Marks)**
   b. Why Concurrency control is needed? Demonstrate with an example. **(12 Marks)**

OR

10 a. Discuss the UNDO and REDO operations and the recovery techniques that use each.
  (06 Marks)
   b.   Discuss the time — stamp ordering protocol for concurrency control. **(05 Marks')**
   c.   Explain how shadow paging helps to recover from transaction failure. **(05 Marks)**