Second Semester MCA Degree Examination, Dec.2016/Jan.2017
Database Management Systems

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. With a neat diagram, discuss the component modules of DBMS and their interaction with DBMS. **(10 Marks)**
   b. Define DBMS, and explain the advantages of using the DBMS approach. **(06 Marks)**
   c. List the actors on the scene and the workers behind the scene of DBMS. **(04 Marks)**

2 Write a short note on:
   a. Database languages
   b. Three – schema architecture
   c. Client – server architecture for DBMS
   d. Classifications of DBMS. **(20 Marks)**

3 a. What are entity sets? Discuss different types of entity with example. **(04 Marks)**
   b. Describe the different phases of database design. **(08 Marks)**
   c. Define key and explain different types of keys. **(08 Marks)**

4 a. List any five relational algebra operators along with their purpose and syntax of using them. **(10 Marks)**
   b. Give a brief note on different types of 'JOINS'. **(10 Marks)**

5 a. Draw an ER diagram with the following requirements:
      i)   An employee's personal details are stored.
      ii) Department details are stored separately
      iii) Employee's leave details are stored
      iv) Dependent details of the employees are stored separately
      v)   An employee can avail several leaves until his balance gets exhausted
      vi) An employee may or may not have dependents
      vii) An employee can work for one department
      viii) All employees are working in some department. **(08 Marks)**
   b. What are views in SQL? Explain view implementation and view update. **(08 Marks)**
   c. Discuss the elements of SQL. **(04 Marks)**

6 a. Explain aggregate or group functions in SQL with suitable example. **(10 Marks)**
   b. Use the following tables and implement the SQL queries.
      SAILOR (SID, SNAME, SRATE, SAGE)
      BOATS (BID, BNAME, COLOUR)
      RESERVES (SID, BID, DAY)
         i)   Find the sailor who has reserved a red and green boat.
         ii)   Find the names of sailors who have reserved all boats called 'INTERLAKE'.
         iii) Find the SIDs of sailors with age over 20 who have not reserved a red boat.
         iv)   Find the names of sailors who have reserved at least two boats.
         v)   Find the names of sailors who are older than the oldest sailor with a rating of 10.
         vi)   Find the sailor whose ranking is better than a sailor called "KING".
         vii) Find the colour of the boat reserved by sailor 'X'
         viii) Find the names of sailor who have reserved boat 103. **(10 Marks)**

7   a.   What is normalization? Explain 1NF, 2NF and 3NF with suitable examples.   **(10 Marks)**
    b.   Define functional dependency and give the six inference rules for functional dependencies.
                                                                                    (10 Marks)

8   a.   Explain PL/SQL block and execution environment.
    b.   Discuss different kinds of literals in PL/SQL.   **(08 Marks)**
    c.   List out the advantages of PL/SQL.   **(04 Marks)**
    d.   Briefly explain the types of triggers.   **(04 Marks)**
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