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**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. (08 Marks)  
b. Discuss different kinds of literals in PL/SQL. (04 Marks)  
c. List out the advantages of PL/SQL. (04 Marks)  
d. Briefly explain the types of triggers. (04 Marks)

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