Code No: R22053 **R10** SET - 1

II B. Tech II Semester Supplementary Examinations, November-2017
DATA BASE MANAGEMENT SYSTEMS
(Com. to CSE, IT)

Time: 3 hours Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. a) Present some popular applications of database systems and role of databases in those applications. (8M)
   b) Explain the concept of physical data independence and its importance in database systems. (7M)

2. a) Explain the main steps in database design. What is the goal of each step? In which step is the ER model mainly used? Why? (8M)
   b) What is class hierarchy? How they are represented in ER diagrams? Explain with examples. (7M)

3. Consider the following relational schema: (15M)
   Emp (eid: integer, ename: string, age: integer, salary: real)
   Works(eid: integer, did: integer, peLtime: integer)
   Dept(did: integer, dname: string, budget: real, managerid: integer)
   List all the foreign key constraints among these relations. And give reasons for selecting them as keys.
   Write the SQL statements required to create the above relations, including appropriate versions of all primary and foreign key integrity constraints.
   Define the Dept relation in SQL so that every department is guaranteed to have a manager.

4. a) What is a trigger, and what are its three parts? What are the differences between row-level and statement-level triggers? (6M)
   b) Consider the following schema: (9M)
   Sailors(sid, sname, rating, age)
   Boats(bid, bname, color)
   Reserves(sid, bid, date)
   Write SQL queries to find average and sum of ratings of sailors aged 30 or more.
   List the required constraints for the above schema to work smoothly. Write SQL statements to define those constraints.
   Write SQL statement to list the blue boat that is reserved most.
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5. a) Illustrate redundancy and the problems that it can cause. Give examples of insert, delete, and update anomalies. Suggest solutions. (8M)
   b) Consider the relational schema R (A, B, C), which has the FD: B → C. If A is a candidate key for R, is it possible for R to be in BCNF? If so, under what conditions? If not, explain why not. (7M)

6. a) What are ACID properties? Define with examples. (8M)
   b) Consider the following two transactions: (7M)

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T13: read(A);
     read(B);
     if A = 0 then B := B + 1;
     write(B).
T14: read(B);
     read(A);
     if B = 0 then A := A + 1;
     Write (A).
```

   Write a concurrent execution of T13 and T14 that produces a non-serializable schedule.

7. a) Explain three main properties of ARIES Algorithm. (7M)
   b) On what factors techniques for indexing and hashing must be evaluated? Explain. (8M)

8. a) Explain the distinction between closed and open hashing. Discuss the relative merits of each technique in database applications. (8M)
   b) Discuss about dynamic index structure. (7M)