JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, August/September - 2022
DATABASE MANAGEMENT SYSTEMS
(Common to CSE, IT)

Time: 3 hours   **Max. Marks: 75**
Answer any Five Questions
All Questions Carry Equal Marks
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1.a) What are the functions of DBMS? Explain.
  b) Define the concept of aggregation. Give two examples of where this concept is useful.
                                                                       [8+7]

2.a) Explain the following:
    i) Query languages   ii) Data Independence.
  b) What is E-R Model? Draw an ER- diagram for library management.   [8+7]

3.a) Explain the natural join and division operations in relational algebra with examples.
  b) Let R =(ABC) and S=(DEF) let r(R) and s(S) both relations on schema R and S. Give an expression in the tuple relational calculus that is equivalent to each of the following.
    i) r×s   ii) $\sigma_{B=25}(r)$ iii) $\prod_{A,F,}(\sigma_{C=D}(r×s))$ [7+8]

4.a) What is trigger? What are its three parts?What are the differences between row level and Statement leveltriggers in SQL?
  b) Explain about set membership and set comparison operations in SQL with examples.
                                                                        [8+7]

5.a) What conditions are required for a relation to be in BCNF? Give an example of a relation that is BCNF.
  b) What do you mean by dependency preserving decomposition? Explain with an example.
                                                                       [8+7]

6.a) Consider the relation R(A,B,C,D,E,F) and the following set of functional dependencies for a relation R scheme.F={A →B, BC→E, ED→A}. Find the list of candidate keys of R and check whether R is in 3NF or BCNF.
  b) Explain why 4 NF normal forms is more desirable than BCNF.   [8+7]

7.a) What is transaction? Explain the properties of transaction.
  b) Explain the two phase commit protocol with an example.   [7+8]

8.a) Give an overview of various file organization mechanisms.
  b) Demonstrate with an example insection operation in B$^+$ tree for the values 8, 11, 2, 6, 18, 22, 17.   [7+8]

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