Code No: 124CQ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year II Semester Examinations, March - 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 is E-R modeling? Enlist the components of E-R diagram.
  b)   List and explain the five responsibilities of database management systems.   [7+8]

2.   A company database needs to store information about employees (identified by ssn, with salary and phone as attributes), departments (identified by dno, with dname and budget as attributes), and children of employees (with name and age as attributes). Employees work in departments; each department is managed by an employee; a child must be identified uniquely by name when the parent (who is an employee; assume that only one parent works for the company) is known. We are not interested in information about a child once the parent leaves the company. Draw an ER diagram that captures this information.   [15]

3.a)   Comment on the expressive power of algebra and calculus.
  b)   What are nested queries? What is correlation in nested queries?   [7+8]

4.a)   Describe the set operations of relational algebra, including union (U), set difference (-), and cross product (X). For each, what can you say about the cardinality of their input and output tables.
  b)   Briefly explain the complex integrity constraints in SQL Triggers and active data bases.   [7+8]

5.a)   Define functional dependencies. How are primary keys related to FDs?
  b)   List and explain the properties of decomposition.   [7+8]

6.   Discuss how schema refinement through dependency analysis and normalization can improve schemas obtained through ER design.   [15]

7.a)   Explain the recovery procedure that needs to take place after a disk crash.
  b)   Describe the three steps in crash recovery in ARIES.   [8+7]

8.   How does a B+ tree index handle search, insert and delete? Explain.   [15]

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