Code No: 813AP

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
MCA III Semester Examinations, December - 2019
DATABASE MANAGEMENT SYSTEMS

Time: 3hrs   Max.Marks:60

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 8 marks and may have a, b, c as sub questions.

PART - A

5 × 4 Marks = 20

1.a) What is data model? Explain various types of data model?   [4]
  b) What is the difference between tuple relation calculus and domain relation calculus?   [4]
  c) Explain Multivalued dependencies and Fourth normal form with example?   [4]
  d) What is concurrency control? Explain.   [4]
  e) What is indexing? Explain the cluster index, primary and secondary indexes.   [4]

PART - B

5 × 8 Marks = 40

2.a) What is E-R Model? Define generalization, specialization and aggregation? How are they represented in E-R Model?
  b) List out the significant difference between file processing system and DBMS.   [4+4]

OR

3.a) Define data independence? Explain difference between logical and physical data independence.
  b) What is E-R Model? Draw an E-R Diagram for Airline reservation system.   [4+4]

4.a) Let R =(ABC) and S=(DEF) let r(R) and s(S) both relations on schema Rand S.
      Give an expression in the Tuple relational calculus that is equivalent to each of the following.
      i) $\prod_{A1}(r)$ ii) $\sigma_{p-19}(r)$ iii) rXs   iv) $\prod_{A,F}(\sigma_{C-D}(rXs))$.
  b) What is a trigger? Explain various types of triggers with examples.   [4+4]

OR

5.a) Explain the following Operators in SQL with examples
      i) EXISTS   ii) NOT IN   iii) INTERSECTION iv) UNION
  b) Explain various DML stamens in SQL With example.   [4+4]

6.a) What are the conditions required for a relation to be in BCNF What is the difference between 3NF and BCNF.
  b) What is the maximum normal form satisfying the following relation R and functional dependencies?
      R(A,B,C,D,E,P) and F.D ={ AB→CD, DE→P,C→E,P→C }   [4+4]

OR

7.a) Define functional dependencies. How are primary keys related to FD's?
  b) Explain about Inclusion dependencies with example?   [4+4]

8.a) Explain the multiversion concurrency control protocol ? How is it used to ensure Serializability?

  b) Explain the following
      i) Write-Ahead Log Protocol   ii) Fuzzy Check point.   [4+4]

OR

9.   Give an overview of deadlocks.   [8]

10.   What are the difference between *ISAM* and *B+ trees* Indexes? Explain Deletion and insertion operations in ISAM with examples?   [8]

OR

11.   What is linear hashing? How does linear hashing avoid directory? Discuss the round robin splitting of buckets.   [8]

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