Code No: 134AP

R16

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, May - 2019
DATABASE MANAGEMENT SYSTEMS
(Common to CSE, IT)

Time: 3 Hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a) What is DBMS? What are the advantages of DBMS?   [2]
  b) Explain generalization, specialization and aggregation in E-R Model.   [3]
  c) Define the terms primary key constrains and foreign key and check constraints.   [2]
  d) Explain the following Operators in SQL with examples: i) SOME   ii) NOT IN.   [3]
  e) What is normalization? What are the conditions required for a relation to be in 1NF, 2NF?   [2]
  f) Explain what are the problems caused by redundancy.   [3]
  g) What is locking Protocol?   [2]
  h) Explain the ACID Properties of transaction with examples.   [3]
  i) What is Indexing and Hashing?   [2]
  j) Explain what are the differences between tree based and Hash based indexes.   [3]

PART – B

(50 Marks)

2.a) Develop an E-R Diagram for Banking enterprise system.
  b) Explain the functions of Database Administrator.   [5+5]
                                           OR
3.a) Compare between super key, Candidate key, Primary Key for a relation with examples.
  b) Construct an ER-Diagram for a hospital with a set of patients and set of medical doctors.
     Associated with each patient a log of the various tests and examinations conducted. [5+5]

4.a) Explain the fundamental operations in relational algebra with examples.
  b) Explain various Domain constraints in SQL with examples.   [5+5]
                                           OR
5.a) Let R =(ABC) and S=(DEF) let r(R) and s(S) both relations on schema Rand S.
     Formulate an expression in the Tuple relational calculus that is equivalent to each of the
     following.
     i) $\prod_A(r)$ ii) $\sigma_{p=19}(r)$ iii) rXs   iv) $\prod_{A,F}(\sigma_{C=D}(rXs))$.
  b) Explain various DML functions in SQL with examples.   [5+5]

6.a) When is a decomposition said to be dependency preserving? Why this property Useful? Explain.

  b) Determine the closer of the following set of functional dependencies for a relation scheme. R(A,B,C,D,E,F,G,H),
F={ AB→C, BD→EF, AD→G,A→H}
List the candidate keys of R. [5+5]

OR

7.a) Suppose that we decompose the schema $R = (A, B, C, D, E)$ into $R_1 (A, B, C)$ and $R_2 (A, D, E)$. Determine that this decomposition is a lossless-join decomposition or dependency preserving if the following set F of functional dependencies holds:
$A \rightarrow BC, CD \rightarrow E, B \rightarrow D, E \rightarrow A$

  b) Explain 2NF, 3NF and BCNF Normal forms with example. What is the difference between 3NF and BCNF? [5+5]

8.a) Explain the Time Stamp - Based Concurrency Control protocol. How is it used to ensure serializability?

  b) Explain the Check point log based recovery scheme for recovering the data base. [5+5]

OR

9.a) Explain multiple granularity of locking protocol with example.

  b) What is serializability? Explain. [5+5]

10.a) Explain about Validation-Based Protocol.

   b) Explain the Insertion and deletion Operations in B+ trees with example. [5+5]

OR

11.a) Explain Deletion and insertion operations in ISAM with example.

   b) Explain how does it handles insert and delete operations *Extendable hashing*? [5+5]

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