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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