Printed Pages: 02 **Sub Code: NCS502**

Paper Id: **100518** **Roll No.** | | | | | | | | | | |

B TECH
(SEM V) THEORY EXAMINATION 2018-19
DATABASE MANAGEMENT SYSTEM

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. (2 x10 = 20)

a) Distinguish between DBMS and RDBMS?
b) What is data model? List the types of data model used?
c) What do you understand by Union Comparability?
d) Discuss the various anomalies associated with normalization?
e) Differentiate between SQL and PL/SQL?
f) MVD is a special case of JD. Discuss?
g) Differentiate between relational algebra and relational calculus?
h) Define the term ACID properties?
i) What do you mean by Cursor?
j) Distinguish between Shared and Exclusive Locks?

SECTION B

2. Attempt any *three* of the following: (10 x 3 = 30)

a) Compare and contrast the differences between File Processing System and DBMS? Also discuss the terms Generalization, Specialization and Aggregation with suitable example?

b) Discuss the concept of Trigger with a suitable example? Also differentiate between Views and Indexes?

c) What are RAT axioms? Also discuss the algorithm for finding the closure of functional dependency with a suitable example?

d) Explain the various recovery techniques from transaction failure in detail?

e) Compare and contrast the differences between time stamp protocol and validation based protocol for concurrency control?

SECTION C

3. Attempt any *one* part of the following: (10 x 1 =10)

a) What are the symbols used in E-R diagram? Construct an E-R diagram for a car insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents? Also convert the E-R diagram into tables?

b) Distinguish the terms: super key, candidate key, primary key, Unique Key and foreign key with example?

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4. Attempt any *one* part of the following: (10 x 1 =10)

(a) Consider the following Scheme:
SUPPLIER (SUPPLIER ID, SUPPLIER_NAME, SUPPLIER_ADDRESS)
PARTS (PART ID, PART_NAME, COLOR)
CATALOG (SUPPLIER ID, PART ID, COST)
Write the following queries in **Relational Algebra** and in **SQL**:
(i) Find the name of the suppliers who supply Black Parts.
(ii) Find the name of suppliers who supply both Blue and Black Parts.
(iii) Find the name of suppliers who supply all Parts.

(b) Explain the concepts of natural join? Also discuss the types of Outer join with suitable example?

5. Attempt any *one* part of the following: (10 x 1 =10)

(a) What is the purpose of Normalization? Explain 1NF, 2NF, 3NF and BCNF with suitable example?

(b) What do you mean by Loss-Less Join Decomposition? Explain with suitable example that how functional dependency can be used to show that decompositions are loss-less?

6. Attempt any *one* part of the following: (10 x 1 =10)

(a) What is deadlock? Discuss about the deadlock detection? Also mention the steps for recovery from deadlock?

(b) What are distributed databases? Discuss the various concurrency protocol used in distributed database in detail?

7. Attempt any *one* part of the following: (10 x 1 =10)

(a) Discuss the concept of two phase locking protocol? Also differentiate between strict two phase & rigorous two phase locking protocol?

(b) Explain the concept of Multiple Granularity? Also discuss Multi-version Schemes?

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