

Code: CS7T4B

**IV B.Tech - I Semester – Regular/Supplementary Examinations
October - 2019**

**ADVANCED DATABASES
(COMPUTER SCIENCE & ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11 x 2 = 22 M

1. a) What are the steps to translate SQL queries into Relational Algebra?
- b) How would you summarize query optimization in Oracle?
- c) Can you list the properties of transactions?
- d) Create a concurrent schedule for executing the following transactions:
T1: transfer funds \$1000 from account A to account B
T2: Increase the balance amount of account A to 10%
- e) Can you list the locks used in lock compatibility matrix in multiple granularity locking?
- f) List out some of the issues in concurrency control.
- g) What is the main idea of Shadow Paging?
- h) Can you explain what LSN is in ARIES recovery algorithm?
- i) What are the Components of GIS systems?
- j) What changes would you make to solve triggers in Oracle?
- k) Can you give the outline of deductive databases?

PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) Write an algorithm for Select and Join operations in Query Processing. 8 M

b) Explain the concept of Heuristics in query optimization. 8 M

3. a) How can you test whether a given schedule is conflict-serializable? Is every conflict-serializable schedule is serializable? Justify. 8 M

b) Distinguish between recoverable schedule with non recoverable schedule. 8 M

4. a) Why concurrency control is needed? Explain the problems that would arise when concurrency control is not provided by the database system. 8 M

b) How would you compare and contrast two phase locking protocol (2PL) with Strict 2PL and Rigorous 2PL. 8 M

5. a) Consider the log of transactions given below: 8 M

< T2 start >

< T2, H, 18, 20 >

< T3 start >

< checkpoint {T2, T3} >

< T3 commit >

< T4 start >

< T4, G, 6, 7 >

< T2, Y, 12 >

< T2 abort >

Suppose there is a crash after the record < T2 abort >.

Identify the Transactions from the Redo and Undo phases.

b) How is data backup and recovery done from catastrophic failures? 8 M

6. a) Briefly describe the architecture and data management issues in Mobile Data. 8 M

b) Illustrate about data types, models and operators in Spatial Data. 8 M