

(2½ Hours)

[Total Marks : 75

- N.B. :** (1) All questions are **compulsory**
 (2) **Figures** to the **right** indicate **full** marks.
 (3) **Illustrations**, in-depth answers and **diagrams** will be appreciated.
 (4) **Mixing of sub-questions** is **not allowed**.

1. Attempt the following(any **three**):- 15
- Describe Decomposition. Explain in short desirable properties of it.
 - Define normalization. Explain 4NF.
 - What is closure set of functional dependency?
 - Explain fundamental properties of transaction.
 - Briefly explain view serializability.
 - A schedule has transactions T_1 and T_2 as given below
 $r_1(x), r_2(z), r_1(z), r_3(x), r_3(y), w_1(x), w_3(y), r_2(y), w_2(z), w_2(y)$
 - Draw precedence graph
 - Is schedule conflict serializable or not? Find respective serial schedule
2. Attempt the following(any **three**):- 15
- Explain briefly Two phase Locking
 - Describe Thomas Write Rule
 - Explain the term Deadlock in DBMS with Dead lock detection and recovery.
 - Explain ARIES algorithm.
 - Explain briefly Log-Based Recovery.
 - Describe the term checkpoint in detail.
3. Attempt the following(any **three**): 15
- What are different types of data types in PLSQL.
 - Explain the CASE expression with example.
 - Explain the concept of NULL values.
 - Explain general format of 'FOR LOOP' in PLSQL.
 - Write a PLSQL block to generate 10 odd numbers using FOR LOOP.
 - Write short note on GOTO statement with one example.

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4. Attempt the following(any **three**):

15

- (a) Write short note on: sequences
- (b) Explain the term system catalog
- (c) Briefly explain selection operation in relational algebra
- (d) Explain implicit cursor attributes with example
- (e) Write PLSQL block to accept radius of circle from user and insert radius and area in area table.
- (f) Explain transaction COMMIT, ROLLBACK and Savepoint

5. Attempt the following(any **three**):

15

- (a) Consider relation R= (A, B, C, D, E, F) having set of FD's
 $A \rightarrow B$ $A \rightarrow C$ $BC \rightarrow D$ $B \rightarrow E$ $BC \rightarrow F$ $AC \rightarrow F$
Calculate some member of Axioms as below
(i) $A \rightarrow E$ (ii) $BC \rightarrow DF$ (iii) $AC \rightarrow D$ (iv) $AC \rightarrow DF$
 - (b) Explain Lock conversion-Upgrading and Downgrading Lock
 - (c) Explain exit statements in PLSQL with example.
 - (d) Briefly explain Join operation in query evaluation
 - (e) Write short note on Conflict serializability.
 - (f) Write short note on Query optimization.
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