QP Code : 78981

(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

    (a) What is Decomposition? State and explain characteristics of decomposition.

    (b) Write a short note on fifth normal form.

    (c) What does 'c' stands for in ACID properties? State with example how it is check for the transfer of money from one account to another account.

    (d) Explain Multi valued dependency in database with suitable example.

    (e) State and explain conditions which makes two schedules view equivalent of each other.

    (f) What is precedence graph? State the steps to draw precedence graph.

2. Attempt the following (any **three**):-

    (a) Explain deadlock concept in terms of Database Management system.   15

    (b) State and explain strict 2PL protocol.

    (c) What is log file? State the purpose and importance of it. Also explain structure of data which gets stored in it.

    (d) State and explain time stamp concurrency control protocol read and write operations.

    (e) State and explain how transaction and dirty page table are used in recovery mechanism.

    (f) Describe characteristics of Write-ahead log protocol.

3. Attempt the following (any **three**):-

    (a) What is PL/SQL? State importance of PL/SQL.   15

    (b) Briefly explain different types of 'number data type'

    (c) With appropriate example explain how Null values work in comparisons

    (d) Briefly explain CASE statements in PL/SQL

    (e) State different types of Iterative control structure. Explain any one iterative control structure with example.

    (f) Write a short note on nested table.

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4. Attempt the following (any **three**):-   15

   (a) State syntax of defining sequence. Describe different elements used in defining with respect to

      (i) Compulsory or optional to define

      (ii) Default value if any

   (b) Briefly explain need and importance of system catlog.

   (c) What is query optimization? Explain it with example.

   (d) Write a short note on cursor for loop.

   (e) Explain any two relational algebra operators.

   (f) Explain working of Rollback and savepoint command with example.

5. Attempt the following (any **three**):-   15

   (a) For a given relation R - (A,B,C,D,E,F)Consider

$$F = \{A \rightarrow B, A \rightarrow C, CD \rightarrow E, CD \rightarrow F, B \rightarrow E\}.$$ Find out the closure of F.

   (b) Explain pros and cons of

      (i) Writing to disk with Force and No-Force strategy and

      (ii) Cache page with steal and No-steal strategy

   (c) Write a PL/SQL function to find factorial of given number call the function in dbms_output. put_line.

   (d) What is explicit cursor? State and explain characteristics of explicit cursor.

   (e) Describe in detail WR conflict.

   (f) Describe in short 'Date time' data type of PL/SQL.