

GROUP B

(Short Answer Type Questions)

Answer any *three* questions.

3×5 = 15

- 2. What is granularity of locking? State Tree Protocol. 5
- 3. (a) Describe the Thomas write rule in Timestamp ordering? 2
 (b) What do you mean by Temporary update problem? Explain with example. 3
- 4. (a) Explain Cascading Abort with example? 3
 (b) What is trivial MVD 2
- 5. (a) Discuss the advantage of Timestamp Ordering Protocol over 2PL protocol. 3
 (b) Discuss the benefits of rigorous 2PL. 2
- 6. Discuss the structure of log of transaction table. What is checkpointing? How checkpoint can be used in log? 2+1+2

GROUP C

(Long Answer Type Questions)

Answer any *three* questions.

3×15 = 45

- 7. (a) What is schedule? When a schedule is said to be a complete schedule? 1+2
 (b) What is the difference between serial and non-serial schedule? When are the two operations said to be in conflict? When a schedule is said to be conflict serializable? 2+2+2
 (c) Describe shadow paging. Define wound-wait and wait-die schemes. 3+3
- 8. (a) Two data items A and B are to be updated by two transactions T1 and T2 respectively. T2 is nested with T1. Considering the relevant read and write statements only, the transactions are shown below 3+3+3

```

T1      read A;
        :
T2      read B;
        :
        write B;
        : ← (1)
        end T2;
        :
        write A;
        : ← (2)
        end T1;
    
```

- At the time of crash recovery, what would be the content of the log and what recovery action will be taken if
- (i) crash occurs at (1) under the deferred update principle.
 - (ii) crash occurs at (1) under the immediate update principle.
 - (iii) crash occurs at (2) under the deferred update principle.
- (b) Define functional dependency with suitable example. Show that every MDV is a JD. 3+3
9. (a) Discuss Intension Shared and Intension Exclusive locks. 4
- (b) What is cursor? How does it work in database? 1+3
- (c) How to declare host variables in embedded SQL? Discuss different parts of embedded SQL and their features? 1+3
- (d) Write a database trigger that will automatically generate the employee number when you want to insert values into the employee table. 3
10. (a) Discuss conflict and view serializability. 4
- (b) What is phantom deadlock? 2
- (c) Differentiate LOG and CHECKPOINT? 4
- (d) With the help of bind variable and arguments with OUT write a procedure that accept the name of an employee and return the salary plus the 10% of his salary of that employee with that OUT variable. Display the salary outside the procedure. This procedure will fire on the emp table. The table consists of the following attributes: emp_code varchar2 (30), ename varchar2 (30), Sal number, dept_no number. 5
11. (a) (i) For the relation $R = (A, B, C, D, E)$ and $F.D = \{B \rightarrow D, CD \rightarrow E, E, \rightarrow A, A \rightarrow BC\}$.
 R is decomposed into $R_1 = \{A, B, C, E\}$ and $R_2 = \{B, D\}$. Is the above decomposition lossless join decomposition? 2+1+2
- (ii) Give $R(A, B, C)$ and set of functional dependencies $\{A \rightarrow BC, B \rightarrow C, A \rightarrow B, AB \rightarrow C\}$
- (a) Find the extraneous attributes.
- (b) Find the canonical cover.
- (b) Describe briefly the following terms which are needed for distributed database design 2+2+1
- (i) Data Fragmentation
 - (ii) Data Replicaton
 - (iii) Data Allocation
- (c) Illustrate the features of object oriented database. What are the advantages and disadvantages of using object oriented database management system? 2+3