

Con. 2608-07.

[REVISED COURSE]

ND-8162

Library

(3 Hours)

[Total Marks : 100]

- N.B. : (1) Question No. 1 is **compulsory**.
 (2) Attempt any **four** questions out of remaining **six** questions.
 (3) Make **suitable** assumptions if **needed**.

1. (a) Explain the structure of DBMS. 6
 (b) Explain the insertion of entry in a B+ tree. 7
 (c) Explain validation based protocol. 7
2. (a) Explain following relational algebraic operations with example. 10
 (i) Division
 (ii) Generalized Projection
 (iii) Rename
 (iv) Assignment
 (v) Outer Join
 (b) What is view ? How it is defined and stored ? What are benefits and limitation of view ? 10
3. (a) What is recoverable schedule ? Why recoverability of schedule is desirable ? Are there any circumstances under which it would be desirable to allow non-recoverable schedule ? Explain. 10
 (b) What is deadlock ? Discuss various strategies for deadlock prevention and deadlock recovery. 10
4. (a) Explain time stamp ordering protocol and Thomas write rule. 10
 (b) Draw a ER diagram for banking enterprise (state assumptions clearly). Convert ER diagram in to tables. 10
5. (a) When is it preferable to use dense index rather than sparse index ? Explain your answer. Also explain hash indices. 12
 (b) Explain various extended features of ER diagram such as aggregation, specialization and generalization with suitable example. 8
6. (a) Compare shadow page recovery scheme with log based recovery scheme. 13
 (b) What is transaction ? Explain its properties. 7
7. (a) What is normalization ? Explain 1NF, 2NF, 3NF and BCNF with suitable example. 10
 (b) Write short note on (any two) :- 10
 (i) Assertion
 (ii) Integrity Constraints
 (iii) Security Mechanism.