Module VI

CHAPTER 6

Transactions Management and Concurrency and Recovery

Syllabus Topics

Transaction: Transaction concept, State Diagram, ACID Properties, Transaction Control Commands, Concurrent Executions, Serializability – Conflict and View, Concurrency Control : Lock-based-protocols, Deadlock handling Timestamp-based protocols, Recovery System: Recovery Concepts, Log based recovery. Self-learning Topics : Study the various deadlock situation which may occur for a database designed in module V.

6.1 Transaction Concept 6-3

UQ. 6.1.1 Define transaction ? **MU - May 16, 2 Marks** 6-3

6.2 ACID Properties 6-4

UQ. 6.2.1 Explain properties of transaction. **MU - May 16, 4 Marks** 6-4

UQ. 6.2.2 Describe ACID properties. **MU - Dec. 16, 10 Marks** 6-4

UQ. 6.2.3 Write short note on ACID properties of Transaction. **MU - May 17, 10 Marks** 6-4

6.3 State Diagram / Transaction States 6-6

UQ. 6.3.1 Explain transaction state diagram. **MU - May 16, 4 Marks** 6-6

UQ. 6.3.2 Explain Transaction state diagram. **MU - May 17, 5 Marks** 6-6

6.4 Transaction Control Commands / Transaction Management 6-7

6.5 Concept of Schedule 6-8

6.5.1 Types of Schedule 6-8

6.5.1(A) Serial Executions (Schedule) 6-9

6.5.1(B) Concurrent Executions (Schedule) 6-10

6.5.2 Advantages of Concurrent Execution of Transactions 6-10

6.5.3 Problems Occurred in Concurrent Execution of Transaction 6-11

6.6 Serializability 6-13

6.6.1 Difference between Serial Schedule and Serializable Schedule 6-13

6.7 Serializability : Conflict and View 6-16

UQ. 6.7.1 Explain conflict and view serializability with example. **MU - Dec. 16, 10 Marks** 6-16

6.7.1 Conflict Serializability 6-16

UQ. 6.7.2 What is conflict Serializability **MU - May 17, 10 Marks** 6-16

6.7.2 View Serializability 6-20

6.8 Concurrency Control 6-21

6.8.1 Need of Concurrency Control 6-21

6.8.2 Different Concurrency Control Protocols 6-22

6.9 Locking based Scheduler 6-23

6.10 Locking based Scheduler : Lock Based Protocols 6-23

6.10.1 Lock-based Protocols 6-23

6.11 Deadlock 6-25

UQ. 6.11.1 Explain deadlock in brief. **MU - May 16, 5 Marks** 6-25

UQ. 6.11.2 Explain deadlock with wait-for-graph. **MU - Dec. 16, 10 Marks** 6-25

6.11.1 Deadlock Prevention 6-25

6.11.2 Deadlock Detection 6-26

UQ. 6.11.6 Explain deadlock with wait-for-graph. **MU - Dec. 16, 10 Marks** 6-26

UQ. 6.11.7 Explain Deadlock Detection. **MU - May 17, 5 Marks** 6-26

6.11.3 Deadlock Recovery 6-27

6.12 Deadlock Handling Timestamp-based Protocols 6-28

6.13 Database Recovery : Recovery Concepts 6-29

UQ. 6.13.1 Explain Recovery. **MU - May 17, 5 Marks** 6-29

6.13.1 Log-based Recovery 6-30

6.13.2 Shadow Paging 6-31

6.13.3 Solved Examples 6-32

6.14 Self-learning Topics : Study the various deadlock situation which may occur for a database designed in module V.. 6-34

❒ **Chapter Ends** **6-34**