

M.C.A. Sem.-1 (A.T.K.T.) Examination  
Relational Database Management Systems  
July-2024

Time : 3-00 Hours]

[Max. Marks : 50

Instructions: Draw Diagrams wherever necessary.  
Make Assumptions wherever necessary.

## SECTION – I

- Q-1 Explain the following in detail: (Any Two) 12
1. Discuss the Data Models in detail.
  2. Draw State diagram of Transaction and explain in detail
  3. Explain Three-tier database architecture with appropriate diagram
  4. Explain wait-die and wound-wait deadlock prevention technique with example

- Q.2 Define (Any <sup>Four</sup> ~~Five~~) 08
1. CLR
  2. Timestamp
  3. Deadlock
  4. Starvation
  5. Degree of a Relation
  6. BCNF
  7. Projection Operator

- Q.3 Draw an ER Diagram for Hospital Management System 05
- SECTION – II

- Q.4) Attempt the following (Any Two) 12
1. Explain Aries Recovery algorithm
  2. Explain concurrency control with time stamping methods
  3. Explain Thomas write rule in detail
  4. Explain 2PL in detail with appropriate example

- Q.5) Define (Any <sup>Four</sup> ~~Five~~) 08
1. System Catalog
  2. DML Statements
  3. Candidate Key
  4. Anomalies
  5. View
  6. Latches
  7. Convoy

- Q.6 Normalize the following structure 05
- CLIENT (Client#, Name, Location, Manager#, Manager\_name, Manager\_location,  
(Contract#, Estimated\_cost, Completion\_date, (Staff#, Staff\_name, Staff\_location)))