MCA/D-16
DATABASE MANAGEMENT SYSTEM
PAPER: MCA-14-34

Time Allowed: 3 Hours Maximum Marks: 80

Note: Attempt five questions in all. Question No. 1 is compulsory. All questions carry equal marks.

1. Differentiate between the following concepts :
   (a) Primary key and super key.
   (b) Entity and Referential Integrity constraints.
   (c) Functional Dependency and Multivalued Dependency.
   (d) Relation, Table and File
   (e) Tuple, Row and Record
   (f) Atomicity property and Isolation property
   (g) Join, Equi join and Natural Join
   (h) Serial and Non-Serial schedules.

Unit-I

2. Explain the difference between external, internal and conceptual schemas. How are these different schema layers related to the concept of logical and physical data Independence?
3. Draw an E-R diagram for a Hospital system and highlight the entities of interest and the relationship that exist between these entries.

Unit-II

4. What is SQL? How you will differentiate between SEQUEL and SQL? Discuss how various constraints are specified in SQL.
5. (a) Discuss briefly network data model versus hierarchical data model.
   (b) What is an Oracle instance? Discuss the basic structure of Oracle.

Unit-III

6. (a) Why BCNF is considered to be more stronger and stricter then 3 NF?
   (b) When a relation is in 3 NF but fails to meet the requirements of BCNF?
   (c) When 3 NF and BCNF are equivalent?
   (d) What conditions are required for a relation to be in BCNF?
7. What do you mean by database design? Discuss the process of physical database design in relational database.

Unit-IV

8. What are the underlying objectives of database recovery procedures? Describe the various recovery techniques used in a centralized DBMS.
9. (a) What is meant by concurrent execution of database transactions in a multiuser system? Discuss the problems associated with it through examples.
   (b) What are the problems of two-phase locking protocol and give possible solutions of those problems.