

Roll No. ....

Total Pages:  
**10426**

**MCA(6/7)/D-12  
DATABASE SYSTEMS  
PROCESSING  
Paper-MCA-301**

Time allowed: 3 hours

Maximum marks: 80

**Note:** Attempt five questions in all. Question no. 1 is compulsory. In addition to compulsory Question, student will have to Attempt four more questions selecting one question from each unit.

**Compulsory Question**

1. Write short note on the following:
- (a) Total and Partial participation.
  - (b) Domain key constraints.
  - (c) Indexes in SQL.
  - (d) Oracle-System Global Area.
  - (e) Closure set of Functional dependencies.
  - (f) Physical database design.
  - (g) Failure and Recoverability.
  - (h) Binary lock.

8x3=24

**Unit-I**

2. (a) Why do we model data? What are the objectives of Data modeling?  
(b) Discuss the main activities in the conceptual and external database level. 7+7=14
3. (a) Design an E-R database schema for online book store. Further reduce E-R schema so created into tables.  
(b) Differentiate between Stored and Derived attributes. 7+7=14

**Unit-II**

4. (a) Explain Hierarchical data models. What are the advantages and disadvantages of Hierarchical data models?  
(b) Explain the syntax and purpose of Rollback, Alter, Revoke and Create SQL commands. 7+7=14
5. What is oracle data dictionary? For what purpose it includes in Oracle structure? Discuss the Storage organization in Oracle. 14

**Unit-III**

6. (a) What is the importance of Functional dependencies in database design and data modeling?  
(b) What do you mean by Information system? Discuss the role of Information system in an Organization. 7+7=14
7. What is the Normalization Denormalization? How it plays a major role in designing of RDBMS Discuss join dependencies, and explain fifth normal form with suitable example. 14

#### **Unit-IV**

8. (a) What are the different dimensions of Database security? Explain.  
(b) What is a Transaction? What are its properties? Why are transactions important unit of Operation in a DBMS? 7+7=14
9. (a) Using an example, illustrate how two-phase locking works.  
(b) What are Database recovery? What is meant by Forward and Backward recovery? Discuss. 7+7=14