

## **Paper-I: Fundamentals of Database Systems**

**Maximum Marks: 50**

**Minimum Pass Marks: 18**

**Time: 3 Hours**

**External: 40**

**Internal: 10**

**Note:** Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

### **UNIT – I**

Basic Concepts – Data, Information, Records and files. Traditional file Based Approach-Limitations of Traditional File Based Approach, Database Approach-Characteristics of Database Approach, Database Management System (DBMS), Components of DBMS Environment, DBMS Functions and Components, Advantages and Disadvantages of DBMS.

### **UNIT – II**

Actors on the Scene - Data and Database Administrator, Database Designers, End users Applications Developers and Workers behind the Scene.

Database System Architecture – Three Levels of Architecture, Schemas – External, Conceptual and Internal Level, Database Languages – VDL, DDL, SDL, DML, SQL, Mappings – External/Conceptual and Conceptual/Internal, Instances, Data Independence – Logical and Physical Data Independence

### **UNIT – III**

Data Models: High Level, Low Level and Representational – Records- based Data Models, Object-based Data Models, Physical Data Models and Conceptual Models

Entity-Relationship Model – Concepts, Entity Types, Entity Sets, Attributes, Relationships, Constraints, Keys, Degree, Cardinality etc.

ER Diagrams of any Database Organization- Inventory System, Payroll System, Reservation System, Online Book Store etc.

### **UNIT – IV**

Classification of Database Management System, Centralized and Client Server architecture  
Relational Data Model:-Brief History, Terminology in Relational Data Structure, Relations, Properties of Relations, Keys – Primary, Secondary, Composite, Candidate, Alternate and Foreign Key, Domains, Integrity Constraints over Relations.

### **TEXT BOOKS:**

- Elmasri Ramez & Navathe Shamkant B., “Fundamentals of Database Systems”, Addison & Wesley, New Delhi, 2007
- Date C.J., “Database Systems”, Prentice Hall of India, New Delhi, 2004

### **REFERENCE BOOKS:**

- Korth H.F. & Silverschatz A., “Database Concepts”, Tata McGraw Hill, New Delhi, 2010
- Thomas Connolly Carolyn Begg, “Database Systems”, 3/e, Pearson Education

