MCA-14-34   DATABASE MANAGEMENT SYSTEMS

Maximum marks: 100 (External: 80, Internal: 20)   Time: 3 hours
Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to question no. 1, the examiner is required to set eight more questions selecting two 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: File Systems vs. DMBS, Characteristics of the Data Base Approach, Abstraction and Data Integration, Database users, Advantages and Disadvantages of a DBMS.
Data Base Systems Concepts and Architecture: Schema and Instances, DBMS architecture and Data Independence, Data Base languages and Interfaces, DBMS functions and component modules.
Entity Relationship Model: Entity Types, Entity Sets, Attributes & keys, Relationships, Relationships Types, Roles and Structural Constraints, Design issues, E-R Diagrams, Design of an E-R Database Schema, Reduction of an E-R schema to Tables.
Relational Data Model: Relational model concepts, Integrity constraints over Relations, Relational Algebra – Basic Operations.

UNIT – II
SQL: Data Definition and Data Types, Components of SQL: DDL, DML, and DCL, Schema Change Statement in SQL, Views& Queries in SQL, Specifying Constraints & Indexes in SQL, Additional Features of SQL.
Relational Data Base Management System: ORACLE/MySQL, Basic structure, Date Base Structure & its manipulation in ORACLE/MySQL, Storage Organization in ORACLE/MySQL.
Conventional Data Models: An overview of Network and Hierarchical Data Models.

UNIT – III
Relational Data Base Design: Functional Dependencies, Decomposition, Normal forms based on primary keys (1 NF, 2 NF, 3 NF, & BCNF), Multi-valued Dependencies, 4 NF, Join dependencies, 5 NF, Domain key normal form.
Practical Data Base Design: Role of Information systems in Organizations, Database design process, physical database design in Relational Database.

UNIT – IV
Transaction Processing Concepts: Introduction to Transaction Processing, Transaction & System Concepts, Properties of Transaction, Schedules and Recoverability, Serializability of Schedules.
Concurrency Control Techniques: Locking Techniques, Time stamp ordering, Multi-version Techniques, Optimistic Techniques, Granularity of Data items.
Recovery Techniques: Recovery concepts, Recovery Techniques in centralized DBMS.
Data Base Security: Introduction to Data base Security issues.

Text Books:
1.   Elmasri & Navathe: Fundamentals of Database systems, 5th edition, Pearson Education.
2.   Thomas Connolly Carolyn Begg: Database Systems, 3/e, Pearson Education.

Reference Books:
1.   Korth & Silberschatz: Database System Concept, 4th Edition, McGraw Hill International Edition.
2.   Raghu Ramakrishnan & Johannes Gehrke: Database Management Systems, 2nd edition, Mcgraw Hill International Edition.
3.   Peter Rob, Carlos Colonel: Database system Design, Implementation, and Measurement, Cengage Learning, 2nd Ed.
4.   Database Systems: A practical Approach to Design, Implementation and Management, Pearson Education- 3e
5.   C.J. Date: An Introduction to Data Bases Systems 7th Edition, Addison Wesley N. Delhi.
6.   Bipin C. Desai: An Introduction to Database System, Galgotia Publication, N. Delhi.
7.   Abbey, Abramson & Corey: Oracle 8i-A Beginner's Guide, Tata McGraw Hill.
8.   Ivan Bayross: SQL, PL/SQL- The Program Language of ORACLE, BPB Publication.
9.   RUSSELL DYER, MYSQL IN A NUTSHELL