

Syllabus

Panjab University

BCA-16-(Database Management System) 405

BCA- (4th Semester)

L T P Cr
6 - - 3

Time Duration: 3 Hrs.

External Marks: 65

Internal Marks: 10

Number of Lectures: 60

OBJECTIVE: This course aims at giving the students the insight of the underlying concepts of database management system and implement them using Database software.

Note.

- (i) The question Paper will consist of Four Units.
- (ii) Examiner will set total of NINE questions comprising TWO questions from Unit and ONE compulsory question of short answer type covering whole syllabi.
- (iii) The students are required to attempt ONE question from each Unit and the Compulsory question.
- (iv) All questions carry equal marks unless specified.

UNIT - I

Basic Concepts: A Historical perspective, File Systems vs. DBMS, Characteristics of the Data Base Approach, Abstraction and Data Integration, Database users, Advantages and Disadvantages of DBMS, Implication of Database approach.

Data Base Systems Concepts and Architecture: Data Models, Schemas and Instances, DBMS architecture and Data Independence, Data base languages & Interfaces, DBMS functions and component modules.

Entity Relationship Model: Entity Types, Entity Sets, Attributes & Keys, Relationships, Relationship Types, Roles and Structural Constraints, Design issues, weak entity types, E-R Diagrams. Design of an E-R Database Schema, Reduction of an E-R Schema to Tables.

UNIT - II

Relational Data Model: Relational model concepts, Integrity constraints over Relations, Relational Algebra – Basic Operations.

Conventional Data Models: An overview of Network and Hierarchical Data Models. Relational Data Base Design: Functional Dependencies, Decomposition, Desirable properties of decomposition, Normal forms based on primary keys (1NF, 2NF, 3NF and BCNF).

RDBMS: Terminology, The 12 Rules (Codd's Rule) for an RDBMS.

UNIT - III

Understanding SQL-1: Data Types, Creating Tables, Creating a Table with data from Another table, Inserting Values into a Table, Updating Column(s) of a Table, Deleting Row(s) from a Table, Dropping a Column, Querying database tables, Conditional retrieval of rows, Working with Null Values, Matching a pattern from a table, ordering the result of a Query Aggregate Functions, Grouping the Result of a Query, creation and deletion of Views, Managing privileges with Grant and Revoke Command, COMMIT and ROLLBACK, Functions: Character Functions, Date Functions, Groups Functions

UNIT - IV

Understanding SQL-II: Querying Multiple Tables using Equi-Joins, Cartesian Joins, Outer Joins, Self-Joins, SET Operations: Union, Interest, Minus; Introduction to Nested Queries

PL/SQL: Introduction to PL/SQL, The Advantage of PL/SQL, PL/SQL Block Structure, PL/SQL Architecture, Fundamentals of PL/SQL, PL/SQL Data Types, Variables and Constants, Scope and Visibility of a Variable, Assignments and Expressions, Operator Precedence, Conditional and Iterative Control, Cursor Management in PL/SQL, Implicit/explicit Cursor Attributes, Exception Handling in PL/SQL; Predefined Exceptions, User Defined Exceptions, Database Trigger, types of triggers, dropping triggers, storage for triggers.