JYOTI NIVAS COLLEGE AUTONOMOUS

Programme: B.COM BDA

Semester II

DATABASE MANAGEMENT SYSTEM & SQL

No. of Credits: 4 **No. of Hours: 60**

COURSE OBJECTIVES:

- Understand the fundamental concepts, architecture, and types of Database Management Systems.
- Design databases using ER models, normalization, and relational data concepts.
- Apply SQL queries and commands to create, manage, and manipulate databases.
- Analyze database operations including security, concurrency, and distributed database management.

Learning OUTCOMES:

- Explain basic database concepts, models, and system architecture.
- Design structured databases using ER diagrams and normalization techniques.
- Execute SQL commands for data retrieval and manipulation.
- Apply database management techniques for data security, backup, and efficient processing.

UNIT 1: INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS 08 HRS

Meaning and Definition of Database, Objectives of Database, Features of Database, Database System Concept and Architecture, Data models: HDBMS, NDBMS, RDBMS, OODBMS, Desktop and Server-level Database, Recent Trends in Database.

UNIT 2: DATABASE DESIGN 14 HRS

Data Modeling Using the Entity Relationship Model: ER Model Concepts, Notation for ER Diagram, Mapping Constraints, Keys, Concepts of Super Key, Candidate Key, Primary Key, Generalization, Aggregation, Reduction of an ER Diagram to Tables, Relationship of Higher Degree. Relational Data Model and Language: Relational Data Model Concepts, Integrity Constraints, Entity Integrity, Referential Integrity, Keys Constraints, Domain Constraints, Relational Algebra, Normalization: Functional dependencies, normal forms, first, second, third normal forms, BCNF.

UNIT 3: OPERATIONS MANAGEMENT 12 HRS

Client / Server and Databases – Data Warehousing – Query Processing – Concurrency

Management – Recovery – Security, Back-up and Recovery. Distributed Databases: Structure of Distributed Database; Trade-offs in Distributing the Database, Advantages of Data

Distribution, Disadvantages of Data Distribution; Design of Distributed Databases, Data Replication, Data Fragmentation.

UNIT 4: SQL STRUCTURED QUERY LANGUAGE 12 HRS

Introduction on SQL: Characteristics of SQL, Advantage of SQL. SQl Data Type and Literals.Types of SQL Commands. SQL Operators and Their Procedure. Tables, Views and Indexes.Queries and Sub Queries. Aggregate Functions. Insert, Update and Delete Operations, Joins,Unions, Intersection, Minus.

UNIT 5: PRACTICAL PROBLEMS AND LAB-WORK ON SQL 16 HRS

Practical Problems And Lab-Work On SQL.

Skill Development Activities:

- Draw an ER Diagram for Company Database
- Explain SQL Joins in Detail
- Explain Aggregate Functions in SQL with Examples.
- Given BOOK (Bookid, Bookname, Authorid, Publisher) and AUTHOR (Authorid,
- Authorname, Country,age)
- Create the above two tables with proper primary key and foreign key constraint.
  a) Insert 5 rows to the table.
  b) Show the foreign key violation.
  c) Delete the column age in Author table
  d) Retrieve bookname and publisher from Book table.

Books for References:

1. Gary W.Hansen and James V.Hansen, ″Database Management and Design″ Prentice Hall

2. C.S.V.Murthy – Data Base Management Systems-HPH

3. C.Laudon. management information-systems, 6 th edition, published in the year 2000. p. 6.

4. DR. Milind M. Oka. Management information systems. Everest Publishing House,p.3

5. Gordon. B. Davis & M. H. Olson. Management Information Systems.. Conceptual Foundations, structure and development. Second Edition. P. 6

5. Jacek Błażewicz, et al., ″Handbook on parallel and distributed processing″, Springer Science & Business Media, 2013.

6. O′Brien James — A Management Information Systems, Tata Mc Graw Hill, New Delhi.

Note: Latest edition of text books may be used.