ST.JOSEPH’S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

III SEMESTER **COMPUTER SCIENCE**  TIME:4HRS/WEEK

CS 3602 (3) **DATABASE MANAGEMENT SYSTEMS** MAX.MARKS:100

w.e.f. 20-21 admitted batch-“20AH” **SYLLABUS**

**COURSE OBJECTIVES:** To enable the students to:

* Understand the different issues involved in the design and implementation of a database system.
* To understand and use data manipulation language to query, update, and manage a database.
* To introduce the concepts of transactions and transaction processing.

**COURSE OUTCOMES:**

Upon successful completion of the course, a student will be able to:

* Develop and design database application and therefore enhance entrepreneurship skills.
* Design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respect data.
* Design and implement a Database Schema for a given Problem-domain.
* Apply Normalization Techniques on given Database Design to avoid Anomalies.
* Understand various transaction processing and concurrency control mechanisms.

**UNIT I : OVERVIEW OF DATABASE MANAGEMENT SYSTEM:** Introduction to data, information, database, database management systems, file-based system, Drawbacks of file-Based System, database approach, Classification of Database Management Systems, advantages of database approach, Various Data Models, Components of Database Management System, three schema architecture of data base, costs and risks of database approach.

**UNIT II : ENTITY-RELATIONSHIP MODEL**: Introduction, the building blocks of an entity relationship diagram, classification of entity sets, attribute classification, relationship degree, relationship classification, reducing ER diagram to tables, enhanced entity-relationship model (EER model), generalization and specialization, IS Arelationship and attribute inheritance, multiple inheritance, constraints on specialization and generalization, advantages of ER modelling.

**UNIT III : RELATIONAL MODEL:** Introduction, CODD Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra, relational calculus, tuple relational calculus, domain relational Calculus (DRC), Functional dependencies and normal forms upto 3rd normal form.

**UNIT IV : STRUCTURED QUERY LANGUAGE:** Introduction, History of SQL Standard, Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Aggregate functions, Data Manipulation Language, Table Modification Commands, Join Operation, Set Operations, View, Sub Query.

**UNIT V : PL/SQL:** Introduction, Shortcomings of SQL, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL, Program, Iterative Control, Procedure, Function, Database Triggers, Types of Triggers.

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**PRESCRIBED TEXT BOOKS:**

* Database System Concepts by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill ,6e.
* Database Management Systems by Raghu Ramakrishnan, McGrawhill ,3e

**REFERENCE BOOKS:**

* Principles of Database Systems by J. D. Ullman
* Fundamentals of Database Systems by R. Elmasri and S. Navathe
* SQL: The Ultimate Beginners Guide by Steve Tale.

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