**A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A),KAKINADA**

**DEPARTMENT OF COMPUTER SCIENCE**

**B.Sc – III Year 5th Semester**

**Paper-V: Data Base Management Systems**

**UNIT I**

**Overview of Database Management System:** Introduction, file-based system, Drawbacks of file-Based System ,Data and information, Database, Database management System, Objectives of DBMS, Evaluation of Database management System, Classification of Database Management System, DBMS Approach, advantages of DBMS, data models, Components and Interfaces of Database Management System. Database Architecture, Situations where DBMS is not Necessary.

**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 A** relationship and attribute inheritance, multiple inheritance, constraints on specialization and generalization, aggregation and composition, entity clusters, connection types, advantages of ER modelling.

**UNIT III**

**Relational Model:** Introduction, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra

**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, Table Truncation, Imposition of Constraints, Join Operation, Set Operation, View, Sub Query

**UNIT IV**

**Relational Database Design, Normalization:** Pitfalls in Relational-Database Design, Decomposition, Normalization Using Functional Dependencies: Lossless-Join Decomposition, Dependency Preservation, BCNF, Third Normal Form, Normalization using Multivalued Dependencies Normalization using Join Dependencies.

**UNIT V**

**Transaction Management and Concurrency Control:** What is transaction, Concurrency control, Concurrency control with locking Methods, Concurrency control with time stamping methods, concurrency control with optimistic methods, database recovery management. Distributed Database Management Systems: The evolution of Distributed Database Management Systems, DDBMS advantages and Disadvantages, Distribution Processing and Distribution Databases, Characteristics of Distributed database management systems, DDBMS Components, Levels of Data and Process distribution (Chapters: 10, 12)

**Reference Books**

1. “Database System Concepts” by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010, 9780073523323

2. “Database Management Systems” by Raghu Ramakrishnan, McGrawhill, 2002,

3. Fundamentals of Relational Database Management Systems by S. Sumathi, S. Esakkirajan, Springer Publications

4. “An Introduction to Database Systems” by Bipin C Desai

5. “Principles of Database Systems” by J. D. Ullman

6. “Fundamentals of Database Systems” by R. Elmasri and S. Navathe

7. Peter Rob, Carlos Coronel, Database Systems Design, Implementation and Management, Seventh Edition, Thomson , 2007.

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**Data Base Management Systems Lab**

1. Write a program to demonstrate DDL Commands.
2. Write a program to demonstrate DML Commands.
3. Write a program to demonstrate DCL Commands.
4. Write a program to demonstrate TCL Commands.
5. Write a program to demonstrate Set operations.
6. Write a program to demonstrate Queries.
7. Write a program to demonstrate Sub Query.
8. Write a program to demonstrate of Aggregate functions.
9. Write a program to demonstrate Views.
10. Write a program to demonstrate Sequences.

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**B.Sc – III Year 5th Semester**

**Paper VI : Software Engineering**

**UNIT I**

**INTRODUCTION:** Software Characteristics, Software Applications, Software Engineering Process paradigms : waterfall model, RAD model, Prototyping model, Incremental model, Spiral model- Process and Project Metrics : Size Oriented Metrics, Function Oriented Metrics – software estimation - Risk analysis - Software project scheduling.

**UNIT II**

**REQUIREMENTS ANALYSIS :** Requirement Engineering Processes – Feasibility Study – Problem of Requirements – Software Requirement Analysis – Analysis Concepts and Principles – Analysis Process – Analysis Model

**UNIT III**

**SOFTWARE DESIGN:** Software design - Abstraction - Modularity - Software Architecture - Effective modular design - Cohesion and Coupling - Architectural design and Procedural design – Design Heuristics

**UNIT IV**

**USER INTERFACE DESIGN AND REAL TIME SYSTEMS :** User interface design: Golden Rules – User Interface Design: The User Interface Design Process- Interface Design Activities : Defining Interface Objects and Actions, Design Issues.

**UNIT V**

**SOFTWARE QUALITY AND TESTING :** Software Quality Assurance: Quality Concepts - Quality metrics : An Overview of Factors That Affect Quality, Measuring Quality, Defect Removal Efficiency - Software testing - Path testing – Control Structures testing - Black Box testing - Integration, Validation and system testing

CASE tools –Building Blocks for CASE, A Taxonomy of CASE Environments.

**REFERENCE BOOKS:**

1. Roger Pressman S., “Software Engineering: A Practitioner's Approach”, 7th Edition, McGraw Hill, 2010.

2. Software Engineering Principles and Practice by Deepak Jain Oxford University Press

2. Sommerville, “Software Engineering”, Eighth Edition, Pearson Education, 2007

3. Pfleeger, “Software Engineering: Theory & Practice”, 3rd Edition, Pearson Education, 2009

4. Carlo Ghazi, Mehdi Jazayari, Dino Mandrioli, “Fundamentals of Software Engineering”, Pearson Education, 2003

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**B.Sc – III Year 5th Semester**

**SOFTWARE ENGINEERING LAB**

1. Studying various phases of Water-Fall Model.

2. Prepare SRS for Banking or On line book store domain problem

3. Compare Waterfall model with Spiral Model

4. Calculate effort using FP oriented estimation model

5. Analyze the Risk related to the project and prepare RMMM plan.

7. Draw E-R diagram, DFD, CFD and STD for the project.

8. Design of the test cases.

9. Develop User Interface for any sample Project