Semester	**4**
Course	**MAJOR**
Paper Code	**C2CS230422T / C2CS230422P**
Paper Title	**DATABASE MANAGEMENT SYSTEM**
No. of Credits	**4**
Theory / Practical / Composite	**COMPOSITE**
Minimum No. of preparatory hours per week a student has to devote	5
Number of Modules	One
Syllabus	1. Fundamental concepts of DBMS; Purpose of Database Systems; Data Abstraction: Physical, Conceptual and External Levels; Data Models; Database Languages; Database Users; Database Manager; Database Administrator; DBMS Structure. 2. Entity Relationship Model: Entity Sets; Relationship Sets; Mapping Constraints; Keys; E R Diagrams; Strong and Weak Entity Sets; Extended ER Features: Specialization/Generalization, Aggregation. 3. Relational Model: Structure of Relational Databases; Database Schema; Query Languages: Relational Algebra: Fundamental Operations, Additional Operations; Relational Calculus; Structured Query Language 4. Database design: Constraints: Domain Constraints; Referential Integrity; Functional Dependencies, Normalization: INF, 2NF, 3NF and BCNF 5. File Organization: Operations on files, Records: Fixed length, Variable Length, Sequential File Organization, Indexing structures (Primary index, secondary index, clustering index), B and B+ trees. Hashing. 6. Introduction to Transaction Processing: ACID properties, concurrency control 7. Introduction to Distributed Databases; Comparison with traditional databases; DDBMS Components.

Learning Outcomes	On completion of the course, the students will be able to: 1. Understanding Fundamental Concepts of DBMS 2. Model and design real life problems using ER diagrams 3. Mastery of Relational Model and Query Languages 4. Competence in Database Design and Normalization 5. Understanding File Organization and Indexing Structures 6. Understand the fundamentals of advanced database concepts	
Reading/Reference Lists	1. R. Elmasri, S.B. Navathe, Fundamentals of Database Systems 6th Edition, Pearson Education, 2010. 2. A. Silberschatz, H.F. Korth, S. Sudarshan, Database System Concepts 6th Edition, McGraw Hill, 2010. 3. R. Ramakrishanan, J. Gehrke, Database Management Systems 3rd Edition, McGraw-Hill, 2002. 4. Distributed Databases: Principles and Systems; Stefano Ceri, Giuseppe Pelagatti, Tata McGraw Hill 5. C. J. Date, An Introduction to Database Systems, 8th Edition, Pearson India	
Evaluation	Theory CIA: 12 Attendance: 3 Semester Exam: 45	Practical CA: 38 Attendance: 2
Paper Structure	Answer 3 out of 5 of 15 marks each	