**13CS3208-DATABASE MANAGEMENT SYSTEMS**

Credits: 4

Hours /week: 4 Hrs Sessional Marks: 40

Univ.Exam.Duration: 3Hrs Univ.Examination.Marks: 60

**UNIT-I**

**DATABASE SYSTEM & APPLICATIONS:** data base System VS file System – View of Data – Data Abstraction – Instances and Schemas – data models – the ER Model – Relational model – Other Models – Data base Languages – DDL – DML – data base access for applications programs – data base Users and Administrator – Transaction Management – data base systems structure – Storage Manager – the query processor – History of Data base Systems.Data base design and ER diagrams –Beyond ER Design Entitles, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER model – Concept Design with the ER model – Conceptual Design for Large enterprises.

**UNIT-II**

**RELATIONAL MODEL:** Introduction to the Relational Model – Integrity Constraint Over relations – Enforcing integrity constraints – Querying relational data – Logical data base Design – Introduction to view – destroying / altering Tables and Views.

**RELATIONAL ALGEBRA AND CALCULUS:** Relational Algebra – Selection and projection set operations – renaming joins – Division – Examples of Algebra overviews – Relational calculus – Tuple relational Calculus –Expressive power of algebra and calculus. Form of basic SQL Query – Examples of SQL Queries – Introduction to Nested Queries - Correlated Nested Queries set – Comparison Operators – Aggregative operators NULL values – Comparison using NULL values – Logical connectivity’s – AND,OR and NOTR – Impact on SQL Constructs – Outer joins –Disallowing NULL values – Complex integrity Constraints in SQL 0 Triggers and Active Data bases.

**UNIT-III**

**SCHEMA REFINEMENT:**Problems caused by redundancy – Decompositions – Problem related to decomposition – reasoning about FDS-FIRST, SECOND, THIRD Normal forms – BCNG – Lossless join Decompositions – Dependency preserving Decomposition – Schema refinement in data base design – Multi valued dependencies – Forth Normal form.Overview of Transaction Management: ACID Properties – Transactions and Schedules – Concurrent Execution of transaction – Lock Based concurrency control – Performance locking – Transaction support in SQL – Introduction to Crash recovery.

**UNIT-IV**

**CONCURRENCY CONTROL:** Serializability and recoverability – introduction to Lock Management – Lock Conversions – Dealing with Dead locks – Specialized Locking Techniques – Concurrency with outlocking.

**CRASH RECOVERY:** Introduction to ARIES – the Log – Other Recovery related structures – The Write Ahead Log protocol – Check pointing – recovering from a system Crash – Media recovery –Other approaches and interaction with Concurrency control.

**UNIT-V**

**OVER VIEW OF STORAGE AND INDEXING:** Data on External storage – File Organization and Indexing – Cluster Indexes, Primary and Secondary Indexes – Index data structures – Hash Based Indexing – Tree base Indexing – Comparison of file organizations – Indexes and performance Tuning.

**STORAGE DATA:** Disks and Files: The memory Hierarchy – Redundant Arrays of Independent – Disks –Disk Space Management – Buffer Manager – Files of records –Page formats – record formats.

Tree Structured Indexing- Intuitions for free Indexes – Indexed sequential Access Methods (ISAM)-B+

**TREES:** A Dynamic Index Structure

**HASH BASED INDEXING:** Static Hashing – Extendable hashing – Linear Hashing – Extendable vs Linear Hashing.

**TEXTBOOKS:**

1. Database Management system, Raghurama Krishna, Johannes Gehrke, TATA

McGraw Hill, 3rd edition.

1. Database Systems Design, Implementation, and management, Rob & Coronel

5th Edition, Thomson.

**REFERENCE BOOKS:**

1. Introduction to Database Systems, C.J.Data Pearson Education.
2. Database Systems Design, Implementation, and management, Rob & Coronel 5th Edition, Thomson.
3. Database Management System, Elmasri Navrate Pearson Education.
4. Database Management System Mathew Leon, Leon Vikas.