

## ADVANCED DBMS

**Subject Code: 10IS751**  
**Hours/Week : 04**  
**Total Hours : 52**

**I.A. Marks : 25**  
**Exam Hours: 03**  
**Exam Marks: 100**

### PART - A

#### UNIT – 1

**7 Hours**

**Overview of Storage and Indexing, Disks and Files:** Data on external storage; File organizations and indexing; Index data structures; Comparison of file organizations; Indexes and performance tuning  
Memory hierarchy; RAID; Disk space management; Buffer manager; Files of records; Page formats and record formats

#### UNIT – 2

**7 Hours**

**Tree Structured Indexing:** Intuition for tree indexes; Indexed sequential access method; B+ trees, Search, Insert, Delete, Duplicates, B+ trees in practice

#### UNIT – 3

**6 Hours**

**Hash-Based Indexing:** Static hashing; Extendible hashing, Linear hashing, comparisons

#### UNIT – 4

**6 Hours**

**Overview of Query Evaluation, External Sorting :** The system catalog; Introduction to operator evaluation; Algorithms for relational operations; Introduction to query optimization; Alternative plans: A motivating example; what a typical optimizer does.  
When does a DBMS sort data? A simple two-way merge sort; External merge sort

### PART - B

#### UNIT – 5

**6 Hours**

**Evaluating Relational Operators :** The Selection operation; General selection conditions; The Projection operation; The Join operation; The Set operations; Aggregate operations; The impact of buffering

#### UNIT – 6

**7 Hours**

**A Typical Relational Query Optimizer:** Translating SQL queries in to Relational Algebra; Estimating the cost of a plan; Relational algebra equivalences; Enumeration of alternative plans; Nested sub-queries; other approaches to query optimization.

**UNIT – 7****7 Hours**

**Physical Database Design and Tuning:** Introduction; Guidelines for index selection, examples; Clustering and indexing; Indexes that enable index-only plans; Tools to assist in index selection; Overview of database tuning; Choices in tuning the conceptual schema; Choices in tuning queries and views; Impact of concurrency; DBMS benchmarking.

**UNIT – 8****6 Hours**

**More Recent Applications:** Mobile databases; Multimedia databases; Geographical Information Systems; Genome data management

**Text Books:**

1. Raghu Ramakrishnan and Johannes Gehrke: Database Management Systems, 3<sup>rd</sup> Edition, McGraw-Hill, 2003.  
(Chapters 8, 9, 10, 11, 12, 13.1 to 13.3, 14, 15, 20)
2. Elmasri and Navathe: Fundamentals of Database Systems, 5<sup>th</sup> Edition, Pearson Education, 2007.  
(Chapter 30)

**Reference Books:**

1. Connolly and Begg: Database Systems, 4<sup>th</sup> Edition, Pearson Education, 2002.

**EMBEDDED COMPUTING SYSTEMS****Subject Code: 10IS752****I.A. Marks : 25****Hours/Week : 04****Exam Hours: 03****Total Hours : 52****Exam Marks: 100****PART- A****UNIT – 1****6 Hours**

**Embedded Computing:** Introduction, Complex Systems and Microprocessors, Embedded Systems Design Process, Formalism for System design

Design Example: Model Train Controller.

**UNIT – 2****7 Hours**

**Instruction Sets, CPUs:** Preliminaries, ARM Processor, Programming Input and Output, Supervisor mode, Exceptions, Traps, Coprocessors, Memory Systems Mechanisms, CPU Performance, CPU Power Consumption. Design Example: Data Compressor.

*Signature*  
**H.O.D.**