ADVANCED DBMS

Subject Code: 10IS751   **I.A. Marks   : 25**
Hours/Week : 04   **Exam Hours: 03**
Total Hours : 52   **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, 3rd 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, 5th Edition, Pearson Education, 2007.
      (Chapter 30)

Reference Books:
   1. Connolly and Begg: Database Systems, 4th 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.