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.

UNIT – 3 **6 Hours**

Bus-Based Computer Systems: CPU Bus, Memory Devices, I/O devices, Component Interfacing, Designing with Microprocessor, Development and Debugging, System-Level Performance Analysis
Design Example: Alarm Clock.

UNIT – 4 **7 Hours**

Program Design and Analysis: Components for embedded programs, Models of programs, Assembly, Linking and Loading, Basic Compilation Techniques, Program optimization, Program-Level performance analysis, Software performance optimization, Program-Level energy and power analysis, Analysis and optimization of program size, Program validation and testing. Design Example: Software modem.

PART- B

UNIT – 5 **6 Hours**

Real Time Operating System (RTOS) Based Design – 1: Basics of OS, Kernel, types of OSs, tasks, processes, Threads, Multitasking and Multiprocessing, Context switching, Scheduling Policies, Task Communication, Task Synchronization.

UNIT – 6 **6 Hours**

RTOS-Based Design - 2: Inter process Communication mechanisms, Evaluating OS performance, Choice of RTOS, Power Optimization. Design Example: Telephone Answering machine

UNIT – 7 **7 Hours**

Distributed Embedded Systems: Distributed Network Architectures, Networks for Embedded Systems: I2C Bus, CAN Bus, SHARC Link Ports, Ethernet, Myrinet, Internet, Network Based Design. Design Example: Elevator Controller.

UNIT – 8 **7 Hours**

Embedded Systems Development Environment: The Integrated Development Environment, Types of File generated on Cross Compilation, Dis-assembler /Decompiler, Simulators, Emulators, and Debugging, Target Hardware Debugging.

Text Books:

1. Wayne Wolf: Computers as Components, Principles of Embedded Computing Systems Design, 2nd Edition, Elsevier, 2008.
2. Shibu K V: Introduction to Embedded Systems, Tata McGraw Hill, 2009

(Chapters 10, 13)

Reference Books:

1. James K. Peckol: Embedded Systems, A contemporary Design Tool, Wiley India, 2008.
2. Tammy Neorgaard: Embedded Systems Architecture, Elsevier, 2005.

JAVA AND J2EE

Subject Code: 10IS753	**IA Marks: 25**
Hours/Week: 4	**Exam Marks: 100**
Total Hours: 52	**Exam Hours: 3**

PART - A

UNIT – 1 **6 Hours**

Introduction to Java: Java and Java applications; Java Development Kit (JDK); Java is interpreted, Byte Code, JVM; Object-oriented programming; Simple Java programs.

Data types and other tokens: Boolean variables, int, long, char, operators, arrays, white spaces, literals, assigning values; Creating and destroying objects; Access specifiers.

Operators and Expressions: Arithmetic Operators, Bitwise operators, Relational operators, The Assignment Operator, The ? Operator; Operator Precedence; Logical expression; Type casting; Strings

Control Statements: Selection statements, iteration statements, Jump Statements.

UNIT – 2 **6 Hours**

Classes, Inheritance, Exceptions, Applets: Classes: Classes in Java; Declaring a class; Class name; Super classes; Constructors; Creating instances of class; Inner classes.

Inheritance: Simple, multiple, and multilevel inheritance; Overriding, overloading.

Exception handling**:** Exception handling in Java.

The Applet Class: Two types of Applets; Applet basics; Applet Architecture; An Applet skeleton; Simple Applet display methods; Requesting repainting; Using the Status Window; The HTML APPLET tag; Passing parameters to Applets; getDocumentbase() and getCodebase(); ApletContext and showDocument(); The AudioClip Interface; The AppletStub Interface; Output to the Console.