EMBEDDED COMPUTING SYSTEMS

Sub Code: 10CS72   IA Marks   :25
Hrs/Week: 04   Exam Hours :03
Total Hrs: 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.

PROGRAMMING THE WEB

Subject Code: 10CS73	I.A. Marks : 25
Hours/Week : 04	Exam Hours: 03
Total Hours : 52	Exam Marks: 100

UNIT – 1
6 Hours

Fundamentals of Web, XHTML – 1: Internet, WWW, Web Browsers and Web Servers, URLs, MIME, HTTP, Security, The Web Programmers Toolbox.

XHTML: Basic syntax, Standard structure, Basic text markup, Images, Hypertext Links.