Elective –I (CS 7103 Embedded Computer System)

Unit – I

Introduction to Embedded systems

Embedded Systems Vs General Computing Systems, Classification of Embedded Systems, Major application areas of Embedded Systems, Purpose of Embedded systems ,Core of the Embedded system, Memory, Sensors and Actuators, Communication Interface, Embedded firmware, PCB and Passive Components, Characteristics and Quality attributes of a Embedded System .

Unit – II

Design of Embedded Systems with 8bit Microcontrollers-8051

Factors for considering in selecting a Controller ,Designing with 8051 microcontroller Different addressing modes supported by 8051 , Instruction set for 8051 microcontroller. Fundamental issues in Hardware Software Co-Design , Computational models in Embedded Design .

Unit – III

Embedded Hardware & Firmware Design and Development

Analog &Digital Electronic components, VLSI & Integrated circuit design, Electronic Design Automation tools , PCB layout Design and its fabrication .Embedded firmware design approaches , Embedded firmware Development Languages ,Programming in Embedded C . Integration and testing of Embedded Hardware and Firmware , Safe & robust Design, Reliability, Faults, errors & Failure, Functional Design, Architecture Design, Prototyping.

Unit -IV

Embedded System Development Environment

Integrated Development Environment (IDE) , Types of files Generated on Cross- Compilation , Disassembler / Decompiler, Simulators, Emulators and Debugging, Boundary Scan.

Unit – V

Embedded Product Development Lifecycle(EDLC) and Trends in Embedded Industry

What is EDLC ,Objectives of EDLC , Different phases of EDLC , EDLC Approaches-Linear or waterfall model , Iterative Model , Prototyping/Evolutionary Model, Spiral Model . Processor trends in Industry , Embedded OS Trends , Development Language trends Open Standards, Frameworks and Alliances , Bottlenecks.

References:

1. Shibu, Introduction to Embedded System:, TMH
2. Barrett ,Embedded Systems :Design and Applications ,Pearson Education
3. Rajkamal, Embeded System, TMH
4. Vahid ,Givargis ,Embedded System Design ,Wiley
5. Balbno, Embedded Micro Computer System Cengage Learning
6. Siewert, Real Time Embeded System &
7. Peckol, Embeded System, Willey Indi