2055
M.E. (Electronics and Communication Engineering)
Second Semester
ECE-1201: Embedded System Design

Time allowed: 3 Hours   Max. Marks: 50

*NOTE: Attempt **five** questions in all, including Question No. I which is compulsory and selecting two questions from each Part.*

x-x-x

Q1) a) List and briefly explain any two characteristics of embedded systems.   (2)
     b) What is the function of the Interrupt Service Routine (ISR) in embedded systems?   (2)
     c) What are two major challenges faced in Wireless Sensor Networks?   (2)
     d) Differentiate between SoC and ASIC in embedded design.   (2)
     e) List the interrupts in PIC16 according to their priority.   (2)

PART –A

Q2) a) Classify embedded systems based on functionality and performance. Also explain the   (5)
        steps involved in system-level design of an embedded system?
     b) Describe the architecture and instruction set of PIC 16F8XX microcontroller.   (5)
Q3) a) Write program in assembly or embedded C language to blink LED ON and OFF   (5)
        with time delay of 5µs.
     b) Explain interfacing of seven segment display using PIC16F8XX.   (5)
Q4) Explain the modeling concepts used in software development for single and   (10)
     multiprocessor embedded systems. How does program modeling help in system analysis
     before implementation?

PART –B

Q5) a) Discuss features of Intel MMX series.   (4)
     b) Explain the basics of FPGA and its role in high-level logic synthesis. Also elaborate on   (6)
        data parallel issues using SIMD and MIMD models
Q6) Describe the architecture of a Wireless Sensor Node. Explain any two embedded   (10)
     applications where Wireless Sensor Networks are utilized effectively.
Q7) What is a System-on-Chip (SoC)? How does it differ from traditional processor-based   (10)
     designs? Discuss with reference to embedded processors like ARM and Intel MMX.

x-x-x