

Exam.Code:0970
Sub. Code: 34551

2056

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 Unit

x-x-x

I. Answer the following:

- a) What is a PIC microcontroller? Mention one of its key features.
- b) Define System on Chip (SoC) with an example.
- c) What is an interrupt in a microcontroller?
- d) Define single-processor and multiprocessor systems.
- e) Define context switching in RTOS.

(5×2)

UNIT - I

- II. a) Explain the classification and characteristics of embedded systems.
b) Describe the concepts and processes of system-level design of embedded systems.
(2x5)
- III. a) Write an embedded C program to interface an LED with a microcontroller and make it blink with a delay.
b) Explain the role of timers and counters in embedded systems.
(2x5)
- IV. a) Explain program modeling concepts in embedded systems.
b) Discuss event-driven models and modeling of multiprocessor systems.
(2x5)

UNIT - II

- V. a) Explain the architecture of a System-on-Chip (SoC) with reference to ARM-based systems.
b) Provide an overview of embedded processors, highlighting features of MIPS and Intel MMX series.
(2x5)

P.T.O.

(2)

- VI. a) Explain the basics of FPGA, including its architecture and working.
b) Provide an overview of RTOS, including scheduling and real-time constraints. (2x5)
- VII. a) Explain the architecture of a wireless sensor node with diagram.
b) Discuss applications of embedded systems in wireless sensor networks, along with challenges. (2x5)

x-x-x