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BT-8/M-18 38015

EMBEDDED SYSTEM DESIGN

ECE-424-E

Option I

Time : Three Hours] [Maximum Marks : 100

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) What are Embedded Microcontroller and Embedded Microprocessor ? Explain with an application example. **5**

   (b) Write at least ten differences between RISC and CISC. Explain in detail, how the RISC core improves that peformance of the MCU. **15**

2. (a) With the help of diagram explain advantages and disadvantages of Harvard architecture over Princeton architecture. **10**

   (b) Discuss function and purpose of the following features : **10**

   (i) Timers (ii) I/O pins.

Unit II

3. Using pin diagram briefly explain function of each pin of PIC 16C74 MC. **20**

4. With suitable diagrams explain pipelining and various CPU register in PIC Microcontroller. **20**

Unit III

5. Explain circuit and timing diagram of Input and Output port expansion. **20**

6. Write short notes on the following : **10+10=20**

   (a) Timer 2 Scalar Initialization

   (b) SPI.

Unit IV

7. Write an assembly language program for each : **6+7+7=20**

   (a) Subroutine

   (b) RAM direct addressing

   (c) Timer interrupts.

8. Describe, how to design an ultrasonic distance measuring system and pressure sensor system using microcontroller. **20**