

Roll No.

Total Pages : 03

BT-8/D-14

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EMBEDDED SYSTEM DESIGN

ECE-424-E

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 is Embedded System ? How do embedded microcontrollers differ from Embedded Microprocessor ? Explain with their application. 8
- (b) What are different ways of classifying the types of micro-controllers ? Explain different types of memories used in Micro-controllers. 12

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P.T.O.

- 2. Explain various characteristics of Micro-controller : 4×5=20
 - (a) Clocking
 - (b) Timers
 - (c) Interrupts
 - (d) I/O Pins
 - (e) Peripherals.

Unit II

- 3. (a) With the help of diagram explain architecture and various CPU registers of PIC16C6X/7X Micro-controllers. 15
- (b) Explain the addressing modes of PIC16C6X/7X micro-controllers. 5
- 4. Write the meaning, result of the following instruction, status flags affected, giving at least one example for each : 4×5=20
 - (a) movlw K
 - (b) comf f, F(W)
 - (c) x or wf f, F(W)
 - (d) rrf f, F(W)
 - (e) btfss f, b.

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Unit III

5. Explain with diagram of data handling circuitry, initialization and use of UART in PIC16C6X/7X microcontrollers and also discuss how PIC uart interface to a personal computer. 20
6. (a) Explain how SPI mode interface to the external devices. 10
- (b) With the help of circuit and timing diagram explain output port expansion of PIC16C6X/7X micro-controller. <http://www.kuonline.in> 10

Unit IV

7. (a) Write assembly program for : 5+5
- (i) RAM direct addressing
- (ii) Stack Operation.
- (b) Design a pressure sensor system using microcontroller and explain. 10
8. Design a ultrasonic distance measuring system and mouse wheel turning system using micro-controller. 20