Unit III

5. (a) Write necessary hardware and function-pseudocode to :

(i) Send control word, to initialize LCD display

(ii) Send a character to display on LCD. **5**

(b) Discuss RS-232 protocol. **5**

(c) How SPI Works ? Discuss SPI read and write mode. **5**

Or

6. (a) Discuss the following applications based on AVR microcontroller :

DTMF, RF ID **5**

(b) Write an AVR program to initialize the SPI for master, Mode 0, with CLCK frequency=Fosc/16, and transfer 'G' via SPI repeatedly. The received data should be displayed on port A. **5**

(c) Differences between RS232 and RS485. **5**

No. of Printed Pages : 05 Roll No. .....

H51

B.Tech. EXAMINATION, May 2019

(Eighth Semester)

(B. Scheme) (Main & Re-appear)

ECE426B

EMBEDDED SYSTEM DESIGN

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks. All parts of a question must be done at one place. Assume necessory info./Data.

Unit I

1. (a) What are the components of Embedded System Hardware ? **5**

(b) What are the Criteria's for choosing a microcontroller ? **5**

(c) Explain Harvard architecture in the AVR. **5**

Or

2. (a) Explain in various events that takes place when a processor executes an instruction. How pipelining improves the execution speed ? **5**

(b) Single processor and general purpose processors. **5**

(c) Briefly describe the major elements of the embedded system development life cycle. **5**

Unit II

3. (a) Interrupts *vs*. Polling. **5**

(b) With example, give alternatives to disabling interrupts. **5**

(c) Explain need for power down mode of AVR microcontroller with proper example. **5**

Or

4. (a) Implement ATM time out using watch dog timer. Give timer structure, main pseudo-code and watch dog reset routine. **5**

(b) Write a program that :

(i) After 4-external clocks turns on a LED connected to a the OC0 pin

(ii) toggles the OC0 pin every 4 pulses. **5**

(c) Describe the VAR connection to the stepper motor and code a program to rotate it continuously. **5**

Unit IV

7. (a) Explain with an example the mail boxes in an embedded system with Real Time Operations. **5**

(b) Explain about the interrupt routine rules used in RTOS environment. **5**

(c) Explain Embedded Software Development Tools in details. **5**

Or

8. (a) Explain about the interrupt routine rules used in RTOS environment. **5**

(b) Explain the advantages and disadvantages of using larger number of tasks in RTOS. **5**

(c) What is Operating System ? Explain a scheme to invoke system call. **5**

Unit IV

7. (a) Explain with an example the mail boxes in an embedded system with Real Time Operations. **5**

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(c) Explain Embedded Software Development Tools in details. **5**

Or

8. (a) Explain about the interrupt routine rules used in RTOS environment. **5**

(b) Explain the advantages and disadvantages of using larger number of tasks in RTOS. **5**

(c) What is Operating System ? Explain a scheme to invoke system call. **5**