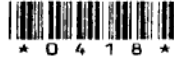


M.E. First Semester (Electronics & Tele.) (Full Time) (C.G.S.- New)
13335 : Elective - I : Real Time Embedded System 1 ENTC 5

P. Pages : 2

Time : Three Hours



AW - 3901

Max. Marks : 80

- Notes :
1. Due credit will be given to neatness and adequate dimensions.
 2. Assume suitable data wherever necessary.
 3. Illustrate your answer necessary with the help of neat sketches.

SECTION – A

1. a) Describe the following terms in connection with embedded system. 8
 - 1) Microcontroller
 - 2) DSP
 - 3) ASIP
 - 4) ASSP
- b) Explain the concept of Thumb instructions in ARM Processor. 5

OR

2. a) Differentiate between Embedded systems & general computing systems. 7
- b) Explain the different classifications of Embedded systems. Give an example for each. 6
3. Explain the modern program development tools for embedded system using high level languages and the cross Compilers/Assemblers. Also state necessity of embedding assembly code in high level languages. 13

OR

4. a) Explain importance of declaration static, extern, void, interrupts in embedded C. 8
- b) What are the limitations of chara data types? Explain with example. 5
5. Write a C program to read analog input from Pin ADO.1 of LPC2148 μ C and display value in volts on LCD display. Assume that LCD is connected to Pins Po. 16 to Po. 19 in & Bit data mode and Po. 20 & Po. 21 are connected to Rs and E Pins of LCD controller. Use ADC in software polling mode. 14

OR

6. a) Describe the timer hardware behind LPC 2148 with various initialization register. 7
- b) Draw and explain an interfacing of stepper motor with ARM. Write a program for rotate motor in clockwise direction. 7

SECTION – B

7. a) Describe the various inter task communication methods. 8
b) Compare between threads & process. 6

OR

8. a) Explain various Non – Preemptive Scheduling algorithms. 8
b) Explain shared memory based IPC. 6
9. a) Explain Rate Monotonic algorithm. 7
b) Define the terms priority inversion, priority inheritance & priority ceiling inheritance. 6

OR

10. a) Define critical section of task. What are the ways by which critical section run by blocking other process? 6
b) Describe various debugging components in RTOS. 7
11. a) What is 'White Box Testing'? Enumerate the advantages of white box testing with brief examples. 7
b) Discuss the ways of computing appropriate stack sizes for task. 6

OR

12. Discuss the following issues in Hardware – software co - design : 13
i) Model Selection
ii) Architecture Selection
iii) Programming logic selection
iv) Partitioning system requirements into hardware & software.
