

FACULTY OF INFORMATICS**B.E. 4/4 (IT) II-Semester (Main) Examination, April / May 2013****Subject : Embedded Systems****Time : 3 Hours****Max. Marks: 75****Note: Answer all questions of Part - A and answer any five questions from Part-B.****PART – A (25 Marks)**

1. Give 8051 Microcontroller architecture. (3)
2. What is an interrupt? How it is serviced? (3)
3. Distinguish between process task and thread. (2)
4. What are semaphores? (2)
5. Differentiate between Mov X and Mov C instructions of 8051. (3)
6. Differentiate between an emulator and in circuit emulator (ICE) with a diagram. (3)
7. Differentiate SJMP, AJMP, and LJMP of 8051. (2)
8. Give two bus protocols that can be implemented on an ARM processor. (2)
9. Distinguish between serial and parallel communications. (3)
10. Give I²c protocol. (2)

PART – B (5x10=50 Marks)

- 11.(a) Give a functional block diagram of 8051 Microcontroller. Describe various registers present in 8051 Microcontroller. (5)
- (b) Explain with an example, the bit level addressing capacity of 8051 Microcontroller. (5)
- 12.(a) Describe how a 4-digit seven-segment display is interfaced to 8051 micro controller with a suitable diagram. (6)
- (b) Describe the SFRs that handle the interrupts in 8051 Microcontroller. (4)
- 13.(a) Explain preemptive and cooperative masking. (5)
- (b) Explain the interrupt routines handled procedure in RTOS. (5)
- 14.(a) Describe the main features of Micro C/OS-II RTOS. What is a target system? (5)
- (b) What are the basic functions performed by a real time operating system? (5)
- 15.(a) Describe a real time scheduling algorithm. (5)
- (b) What is priority inversion? How is it solved? (5)
16. Describe the problem of elevator control. Give the interfacing details showing the microcontroller and related peripherals. Explain how a program can be developed for this elevator control. (10)
17. Write short notes on any **two** of the following: (5+5)
 - (a) CAN protocol
 - (b) SHARC Bus
 - (c) Arithmetic and logical instructions in ARM processor.