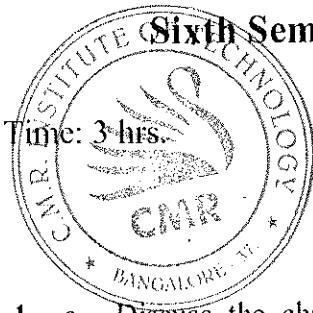


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10EE665



Sixth Semester B.E. Degree Examination, June/July 2016

**Embedded Systems**

Max. Marks: 100

Time: 3 hrs.

**Note:** Answer FIVE full questions, selecting at least TWO questions from each part.

**PART – A**

- 1 a. Discuss the characteristics of different types of ROMs and RAMs used in Embedded systems. (08 Marks)
- b. Define addressing mode. Explain with an example, various types of addressing modes of 68HC11 microcontroller. (08 Marks)
- c. What are the various issues to be considered while designing a Cordless barcode scanner? (04 Marks)
- 2 a. Classify the embedded systems and explain the skills required for an embedded system designer. (08 Marks)
- b. Explain briefly various issues to be consider for selecting DAC in embedded system design. (08 Marks)
- c. Explain various registers available in 68HC11 microcontrollers. (04 Marks)
- 3 a. With neat block diagram and necessary waveforms explain 8 bit Ramp ADC. (08 Marks)
- b. Explain the sample and hold circuit with diagram and briefly explain its necessity. (08 Marks)
- c. Define the following with respect to data acquisition system. (04 Marks)
  - i) Accuracy
  - ii) Resolution
  - iii) Precision
  - iv) Reproducibility.
- 4 a. Explain three main design technologies. How are these helpful to designers? (10 Marks)
- b. Explain the various design metrics of an Embedded system. (10 Marks)

**PART – B**

- 5 a. Give a comparison of characteristics of various software architecture. (08 Marks)
- b. Discuss about the problems associated with the use of semaphores. (08 Marks)
- c. What is an RTOS? Explain how RTOS is different from desktop machine operating system. (04 Marks)
- 6 a. Explain Round Robin architecture with interrupts with the help of its pseudocode. Also discuss the drawbacks of this architecture. (08 Marks)
- b. Define the following data structures used in C. When can they be used? Give examples for each i) Queue ii) Stack iii) Array iv) Tree. (08 Marks)
- c. What is a reentrant function? List the rules to check if a function is re-entrant or not. (04 Marks)
- 7 a. With a neat circuit diagram, explain the isolated H-bridge used to drive the motor in both direction and also explain the digital logic circuit used with an H-bridge. (10 Marks)
- b. With neat diagrams, explain the memory mapped I/O and isolated I/O types of computer architecture. (04 Marks)
- c. Explain the following with respect to serial IO i) Simplex communication ii) half Duplex communication iii) Full duplex communication. (06 Marks)
- 8 a. Design a circuit to interface 8K×8 bit static RAM to 68HC11 microcontroller from 8000 memory location. Draw read and write timing diagram. (10 Marks)
- b. Explain how hardware debouncing is done using capacitor. Draw necessary waveforms. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42-8 = 50, will be treated as malpractice.