OF THEMPSET



## Sixth Semester B.E. Degree Examination, June/July 2018 Embedded Systems

Time: 3 hrs. Max. Marks: 100

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

## PART – A

- a. On what basis, embedded systems are classified? Explain each classification with example.

  Also give the skills required for an embedded system designer. (08 Marks)
  - b. Explain the registers available in 6808 microcontroller.
  - c. Explain the different memories used in embedded system. (06 Marks)

(06 Marks)

- 2 a. What is single chip mode and expanded mode of operation of 6811 microcontroller? Explain giving the block diagram of Motorola Evaluation Board (EVB). (10 Marks)
  - b. With near diagram, explain the architecture of MC68HC11 microcontroller. (10 Marks)
- a. Explain how a 12-bit successive approximation ADC can be implemented using software.

  Also give the hardware interface required for the same. (10 Marks)
  - b. Discuss different interfacing approaches of 8-bit ADC to a microcontroller (06 Marks)
  - c. What is the necessity of sample and hold circuit? Explain its working with a circuit diagram.

    (04 Marks)
- 4 a. Explain three main design technologies. How are these helpful to designers (08 Marks)
  - b. Explain the software hardware trade off? What are the advantages and disadvantages of software implementation instead of hardware implementation? (06 Marks)
  - c. List the various design metrics of an embedded system. (06 Marks)

## PART - B

- 5 a. With a Pseudocode, explain the Round Robin with Interrupt Architecture. Mention its advantages and Disadvantages. (10 Marks)
  - b. What are the advantages of high level language over assembly language? (06 Marks)
  - c. Differentiate functions and Macros. (04 Marks)
- 6 a. Explain the shared data problem and methods of protecting the shared data in real time systems. (10 Marks)
  - b. What are the different types of semaphores? Briefly explain the priority inversion and deadly embrace situation when using semaphores for programming. (10 Marks)
- 7 a. Define:
  - i) Data Framing ii) Band Rate iii) Simplex communication
  - iv) Half Duplex communication v) Full Duplex communication.
  - With reference to serial communication with examples. (10 Marks)
  - b. What is switch denounce? Discuss how a capacitor can be used to eliminate switch bounce when pressed and released. (10 Marks)
- 8 a. Explain the general approach to interfacing a memory to the 6811 microcontroller, with a neat block diagram. (10 Marks)
  - b. Describe the three approaches to interfacing multiple keys to a 8-bit parallel port. (10 Marks)

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