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Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Embedded Systems

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Classify the embedded system and explain the skills required for an embedded system designer. (10 Marks)
- b. With a neat block diagram, explain the architectural features of 6811 micro controller. (10 Marks)
- 2 a. What is single chip mode and expanded mode of operation of 6811 microcontroller? Explain the expanded mode of operation of 6811 microcontroller with the help of Motorola EVB. (10 Marks)
- b. Explain the different types of memories used in embedded system in detail. (10 Marks)
- 3 a. State Nyquist theorem and explain how it is used to determine the sampling frequency. (06 Marks)
- b. What is the necessity of sample and hold circuit? Explain its working with a circuit diagram. (06 Marks)
- c. With reference to a data acquisition system, define: (i) Accuracy (ii) Precision (iii) Resolution (iv) Repeatability. (08 Marks)
- 4 a. Explain the three main design technologies. How are these helpful to designers? (08 Marks)
- b. List the various design metrics of an embedded system. (06 Marks)
- c. Briefly explain the software-hardware trade off. Give the advantages of software implementation and hardware implementation. (06 Marks)

PART – B

- 5 a. Explain C program elements. (06 Marks)
- b. With a pseudocode, explain the function queue scheduling architecture. Discuss the characteristics. (10 Marks)
- c. List and explain the various types of semaphores. (04 Marks)
- 6 a. Explain the shared data problem and methods of protecting shared data, in real time systems. (10 Marks)
- b. What is a task? Describe the three states in which a task can exist. Explain the switching of task from one state to another with a block diagram. (10 Marks)
- 7 a. What is switch bounce? Discuss how capacitor eliminates switch bounce when pressed and when released. (10 Marks)
- b. Define: (i) Data framing (ii) Simplex communication (iii) Half duplex (iv) Full duplex (10 Marks)
- 8 a. With neat figures, explain memory mapped I/O and isolated I/O types of computer architectures. (10 Marks)
- b. Explain the general approach to interfacing a memory to the 6811 microcontroller, with a neat block diagram. (10 Marks)

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