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Seventh Semester B.E. Degree Examination, Dec.09/Jan.10
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. With a neat block diagram, explain the architecture of MC68HC11 microcontroller. (12 Marks)
- b. Explain different types of ROMs. (08 Marks)
- 2 a. With necessary circuit diagrams explain:
 - i) 3 – bit unsigned summing DAC. (12 Marks)
 - ii) 3 – bit DAC with an R – 2R ladder. (08 Marks)
- b. With a neat diagram, explain 2 – bit flash ADC. (08 Marks)
- 3 a. Explain why sample and hold circuit is required? Mention how external capacitor is selected for S/H circuit. (08 Marks)
- b. Explain 6808 ADC system. (12 Marks)
- 4 a. Discuss the various software hardware tradeoffs. (08 Marks)
- b. Compare different types of memory with respect to read speed, write speed and write times. Also list applications of each type of memory. (12 Marks)

PART – B

- 5 a. With an algorithm, explain function – queue – scheduling architecture. (10 Marks)
- b. Explain RTOS architecture. List out advantages and disadvantages of the same. (10 Marks)
- 6 a. What is a semaphore? How it helps in protecting shared data? (06 Marks)
- b. Explain semaphore variants. (08 Marks)
- c. What are reentrant functions? Write the rules used to decide if a function is a reentrant or not. (06 Marks)
- 7 a. Differentiate between :
 - i) Half duplex and full duplex communication
 - ii) Synchronous and asynchronous communication. (08 Marks)
- b. Explain how hardware debouncing is done using capacitor. Draw necessary waveforms. (12 Marks)
- 8 a. Explain architecture of a computer with memory mapped I/O and isolated I/O. (08 Marks)
- b. Interface 8K x 8 – bit static RAM to 6811 microcontroller. Draw read and write timing diagrams. (12 Marks)

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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.