USN | | | | | | | | | | 06CS74

Seventh Semester B.E. Degree Examination, June/July 2015
Embedded Computing Systems

Time: 3 hrs. Max. Marks:100

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

PART - A

1 a. Define embedded systems and explain with a neat block diagram the components of embedded system. (08 Marks)
   b. Explain embedded SOC, with a neat block diagram. (06 Marks)
   c. A 10 – bit ADC has reference voltage $V_{ref-} = -1.024V$, $V_{ref+} = +2.047V$. What will be the output when the inputs are i) -2.56 V ii) 0.512 V iii) 2.047V? (06 Marks)

2 a. Describe i) HDLC protocol ii) SDIO iii) RS232C iv) VART. (08 Marks)
   b. Explain briefly the skills required for designing an embedded system. (06 Marks)
   c. Explain any six design metrics used in embedded system. (06 Marks)

3 a. Explain the following terms related to embedded hardware units :
      i) Clock oscillator circuit ii) System timer iii) Watch dog timer. (06 Marks)
   b. Explain i) CAN ii) USB. (06 Marks)
   c. Explain HTTP in detail. (08 Marks)

4 a. Explain network driver program without interruption. (08 Marks)
   b. Explain DMA controller, with a neat block diagram. (06 Marks)
   c. How the various interrupt sources are classified? (06 Marks)

PART - B

5 a. Explain with an example the Finite State machine model. (08 Marks)
   b. How does counting semaphore is different from mutex? Describe in detail. (06 Marks)
   c. Explain the problems of sharing the data by multiple tasks and routine with an example. (06 Marks)

6 a. What are the design principles of RTOS to design an embedded system? Explain them. (08 Marks)
   b. Explain co-operative scheduling model. (06 Marks)
   c. What are the methods to meet hard – real time deadlines. (06 Marks)

7 a. Explain preemptive scheduling model in detail with an example. (08 Marks)
   b. What is the importance of device management in an OS for an embedded system? (06 Marks)
   c. What are the function of kernel in RTOS? Explain the memory managing strategy. (06 Marks)

8 a. What do you mean by integrated development environment? Explain in detail. (08 Marks)
   b. With a neat block schematic diagram, explain how would you get an embedded software into the target system. (06 Marks)
   c. Explain with a block diagram, Linking and Locating software. (06 Marks)

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