Seventh Semester B.E. Degree Examination, June/July 2014
Embedded Computing Systems

Time: 3 hrs.

Max. Marks:100

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

PART – A

1 a. Give the characteristics and constraints of embedded system. (04 Marks)
   b. Explain the challenges in embedded computing system design. (08 Marks)
   c. Define design methodology. Explain the embedded system design process. (08 Marks)

2 a. Differentiate between the Harvard and von Neumann architecture. (05 Marks)
   b. Define ARM processor. Explain advanced ARM features. (07 Marks)
   c. What is pipelining? Explain the C55x of a seven stages pipeline with a neat diagram of ARM instructions. (08 Marks)

3 a. Write the major components of bus protocol. Explain the burst read transaction with a timing diagram. (08 Marks)
   b. Describe : i) Timer   ii) Cross compiler   iii) Logic analyzer. (06 Marks)
   c. With neat sketch, explain the glue logic interface. (06 Marks)

4 a. Explain the circular buffers for embedded programs. (04 Marks)
   b. With a neat sketch, explain the role of assemblers and linkers in compilation process. (08 Marks)
   c. Explain with example, the techniques in optimizing. (08 Marks)

PART – B

5 a. What is RTOS? List and explain the different services of RTOS. (10 Marks)
   b. Describe the concept of multithreading and write the comparision between thread and process. (10 Marks)

6 a. Define blocking and non blocking communication. Explain the two styles of interprocess communication, with a example. (10 Marks)
   b. What are the assumptions for the performance of a real system running processes? Mention the factors affect context switching time and interrupt latency. (10 Marks)

7 a. With a neat sketch, explain the CAN data frame format and typical bus transactions on the I^{2}c bus. (10 Marks)
   b. Explain the Ethernet packet format and IP packet structure. (10 Marks)

8 a. What is a simulator? Explain the features, advantages and limitations of simulator based debugging. (10 Marks)
   b. What are the improvements over firmware software debugging? Explain. (10 Marks)

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