Seventh Semester B.E. Degree Examination, Aug./Sept.2020

Embedded Computing 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. Briefly describe the importance of requirement in embedded computing system design. **(08 Marks)**

   b. Show how a set speed command flows through the refined class structure move from a change on the front panel to the required changes air the train.
   (i) Show it in the form of a collobration diagram for major subsystems of the train controller system.
   (ii) Show it in the form of a sequence diagram for transmitting a control I/P. **(12 Marks)**

2 a. Explain the major data instructions in ARM. **(10 Marks)**

   b. Define interrupt. Explain interrupts in ARM7 and steps involved when responding to an interrupt ARM 99B. **(10 Marks)**

3 a. Describe basic building block of BUS Protocols in the four cycle hand shake. **(08 Marks)**

   b. Draw a state diagram for update time and explain. **(08 Marks)**

   c. Explain component design and testing. **(04 Marks)**

4 a. For the following Arithmetic Expression $a*b+5*(C-D)$, draw the graph, data flow graph and generate ARM code for the same. **(10 Marks)**

   b. Define FSK and FSK detection scheme with diagram. **(05 Marks)**

   c. Explain class diagram for the modern. **(05 Marks)**

PART – B

5 a. Explain with a neat diagram basic components of an O.S. and their interfaces. **(10 Marks)**

   b. Explain the difference between GPOS and RTOS. **(05 Marks)**

   c. Explain the basic functions of real time Kernel. **(05 Marks)**

6 a. What is process in the O.S. context and explain the structure of a process. **(10 Marks)**

   b. Write a multithread application to print "Hello I am in main thread" from the main thread and "Hello I am in new thread" five times each using Pthread_Create( ) and Pthread_Join( ) PoSix primitives. **(10 Marks)**

7 a. Explain the concept of memory mapping objects for IPC and message passing techniques for IPC. **(10 Marks)**

   b. Explain with diagram the concept of mailbox based indirect messaging for IPC. **(10 Marks)**

8 a. Define IDE. With a neat diagram, explain the embedded system development environment. **(08 Marks)**

   b. Explain the various details stored in an Object file, Map file, List file and Hex file generated during the process of cross compiling in embedded 'C' file. **(12 Marks)**

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