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10CS72

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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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.