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10EC842

Eighth Semester B.E. Degree Examination, June/July 2018
Real Time Operating 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. Write any six key features that an RTOS should have. (06 Marks)
b. Explain briefly the history of embedded systems and write the pseudo code for basic real time service. (08 Marks)
c. Differentiate between pre-emptive and non-pre-emptive scheduling. (06 Marks)
- 2 a. Using service utility function differentiate between the following. Also give an example for each:
(i) Hard real time service and isochronous service.
(ii) Soft real time service and anytime service.. (10 Marks)
b. Write the state transition diagram and state transition table for a thread of execution including all possible states. (10 Marks)
- 3 a. Explain RM-LUB sufficient feasibility test by taking the example of two services. (10 Marks)
b. Describe the algorithms for determination of N and S feasibility. (10 Marks)
- 4 a. Explain the worst case execution time of a service. (10 Marks)
b. Explain execution efficiency and pipelining concept. (10 Marks)

PART – B

- 5 a. Explain the dead lock and live lock. (10 Marks)
b. What is priority inversion? How an unbounded priority inversion can be converted to a bounded one. (10 Marks)
- 6 a. Explain briefly the mixed hard and soft real time services. (10 Marks)
b. Describe the 3 Firmware components and any 3 RTOS system software mechanisms. (10 Marks)
- 7 a. Explain the basic concepts of drill down tuning. (10 Marks)
b. Explain method to find path length, efficiency and calling frequency using C code to compute Fibonacci sequence. (10 Marks)
- 8 a. With the help of a block diagram, explain low-end PIC micro MCU programmer. (12 Marks)
b. Write note on RTOS based digital clock and thermometer. (08 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 equat.ons written eg, 42+8 = 50, will be treated as malpractice.