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10EC842

Eighth Semester B.E. Degree Examination, Aug./Sept. 2020
Real Time Operating System

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 and explain the pseudocode for Basic Event Driven software service. **(08 Marks)**
b. What are the advantages of hardware acceleration? Show the changes in RTS time line with H/W acceleration. **(07 Marks)**
c. List the important features of RTOS. **(05 Marks)**

2 a. Define the terms :
i) Latency
ii) Queue Depth
iii) CPU Bound Services. **(06 Marks)**
b. Explain the following Graphs with respect to RTS.
i) Isochronal utility
ii) Soft real time utility. **(04 Marks)**
c. Draw and explain the transitional diagrams for all possible service states. **(10 Marks)**

3 a. Describe the pre-emptive fixed priority RM with an example of RM LUB. **(06 Marks)**
b. With reference to RM LUB differentiate between :
i) Sufficient ii) Necessary and sufficient test. **(05 Marks)**
c. Draw the following schedules using RM, EDF and LLF schedule for
$T_1 - 2$ $C_1 - 1$
$T_2 - 5$ $C_2 - 1$
$T_3 - 7$ $C_3 - 1$
$T_4 - 13$, $C_4 - 2$ **(09 Marks)**

4 a. Explain the worst – case execution time of a service. **(10 Marks)**
b. Explain ECC Memory Interface. **(10 Marks)**

PART – B

5 a. Explain Quality of service in Real Time Systems. **(07 Marks)**
b. What is priority Inversion? How unbounded priority inversion can be converted to bounded one. **(07 Marks)**
c. Explain the term Blocking, Deadlock, Rive lock and critical section with example. **(06 Marks)**

6 a. What do you understand by Firmware component? Explain with diagram the device driver firmware interface. **(08 Marks)**

b. What is a debugger? Differentiate between the hardware and software Break point. **(08 Marks)**

c. What is Kernel Schedular Tracing and what are the practices followed in different RTOS for its implementation. **(04 Marks)**

7 a. Explain the drill down tuning in detail. Explain with diagram the performance profile data mining concept. **(10 Marks)**

b. Explain the methods for building performance monitoring capability into software. **(06 Marks)**

c. List the basic methods for optimizing code segments. **(04 Marks)**

8 a. Describe the term reliability with the help of the dual string cross strapped subsystem inter connection. **(08 Marks)**

b. What do you mean by Reliable and Available software? **(04 Marks)**

c. With the help of the circuit diagram, explain operation of a basic RTOS on a PIC18C452. **(08 Marks)**

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