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10MT761

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021

Real Time 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. Define real time system. Explain the different classification of RTS with examples. **(10 Marks)**

b. Explain the following types of programming: (i) Multi tasking (ii) Real time **(06 Marks)**

c. Differentiate between clock based and event based tasks. **(04 Marks)**

2 a. Compare batch processing and continuous processing. **(05 Marks)**

b. What is a DDC? What are the advantages of DDC over analog control? Discuss PID control algorithm. **(10 Marks)**

c. List out the responsibilities of a control engineer in designing the suitable computer system. **(05 Marks)**

3 a. Write the block diagram of a single chip micro computer and explain the following blocks:
(i) Interrupt controller
(ii) Series communication
(iii) EPROM **(06 Marks)**

b. Explain a simple digital input and output interfaces. **(10 Marks)**

c. Why is memory protection important in RTS? What methods can be used to provide memory protection? **(04 Marks)**

4 a. What are the major requirements of CVTCLASS? Explain. **(10 Marks)**

b. Explain the use of co-routines showing an example. **(06 Marks)**

c. Explain scope and visibility of a variable. **(04 Marks)**

PART – B

5 a. With a neat block diagram, explain typical structure of RTOS. **(10 Marks)**

b. What is task management? Explain the typical task state dices. **(10 Marks)**

6 a. With a neat diagram, explain the general structure of IOSS. **(06 Marks)**

b. Describe in brief mutual exclusion. **(04 Marks)**

c. Explain the issues of synchronization and communication in inter task communication. **(10 Marks)**

7 a. Explain foreground and background system with a flow chart. **(10 Marks)**

b. Explain with diagram, how data will be shared with common memory. **(05 Marks)**

c. Explain software design for RTS using software module. **(05 Marks)**

8 a. Show the outline of abstract modeling approach of Ward and Mellor and explain. **(10 Marks)**

b. Explain functional specifications with respect to a drying oven. **(05 Marks)**

c. Explain Yourdon methodology. **(05 Marks)**

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