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10EC/TE762

Seventh Semester B.E. Degree Examination, Aug./Sept. 2020
Real – Time Systems

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions, selecting atleast TWO questions from each part.

PART – A

- 1 a. Define RTS. Classify RTS based on time constraints. (08 Marks)
b. With a neat diagram, explain computer control system showing hardware and software interface. (06 Marks)
c. Explain the following :
i) Clock – based tasks
ii) Event based tasks
iii) Interactive systems. (06 Marks)
- 2 a. Explain Batch processes and continues processes with examples. (06 Marks)
b. With a neat diagram, explain supervisory control, with the example of evaporation plant. (08 Marks)
c. i) Write a short note on Human – Computer Interface (HCI).
ii) Explain the benefits of a computer control system. (06 Marks)
- 3 a. Explain about single – chip micro computers and micro controllers with neat diagram. (05 Marks)
b. With neat diagrams, explain analog interface for input and output operations. (07 Marks)
c. Explain with neat diagrams :
i) Interrupt input mechanism
ii) Multi – level interrupts. (08 Marks)
- 4 a. Explain the following features of real time programming languages.
i) Security
ii) Readability
iii) Efficiency. (09 Marks)
b. Explain the declaration process of variables and constants. (05 Marks)
c. Explain the following data type :
i) Sub – range type
ii) Derived types. (06 Marks)

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PART – B

- 5 a. Explain about real time multi – tasking operating system with neat diagram, and list the functions provided by the multitasking operating system. (07 Marks)
b. Explain cyclic and pre-emptive scheduling strategies. (05 Marks)
c. With a neat diagram, explain task state diagram and explain each states. List the functions of task management. (08 Marks)

- 6 a. Explain non partitioned and partitioned arrangement for memory management with neat diagrams. (04 Marks)
- b. Explain the following, with necessary diagrams : (08 Marks)
- i) Serially reusable code
 - ii) Re – entrant code.
- c. Explain the following : (08 Marks)
- i) Data transfer without synchronization
 - ii) Liveness.
- 7 a. Explain single program approach with flow chart. (08 Marks)
- b. Explain the basic software module with reference to preliminary design. (04 Marks)
- c. Explain foreground/background approach with flowchart. (07 Marks)
- 8 a. Explain the general arrangement of drying oven along with input/output details and also explain the functional specifications. (10 Marks)
- b. Explain architecture model in case of Hatley and Pirbhai method with neat diagram. (05 Marks)
- c. Explain the outline of abstract modeling approach of ward and Mellor method. (05 Marks)

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