

CBCS Scheme

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BANGALORE - 560 037

16/17EVE/ELD/EIE24

Second Semester M.Tech. Degree Examination, June/July 2018 Real Time Operating System

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Describe the six real time service utility functions with graphs and examples. (12 Marks)
b. Distinguish between rate monotonic and deadline monotonic policies for scheduling. (04 Marks)

OR

- 2 a. Draw and explain the real time service timeline with and without hardware acceleration. (06 Marks)
b. Explain the different states of a thread and explain the different state transitions by using state transition diagram. (06 Marks)
c. Explain thread safe reentrant function. (04 Marks)

Module-2

- 3 a. With reference to RMLUB differentiate between
i) Sufficient ii) Necessary and sufficient conditions for feasibility tests. (06 Marks)
b. Explain the dynamic priority policies with example. (06 Marks)
c. Explain scheduling point test and completion time test. (04 Marks)

OR

- 4 a. With the help of the timing diagram, explain the alternatives to rate monotonic policies. (12 Marks)
b. Explain the ways to handle the missed deadlines. (04 Marks)

Module-3

- 5 a. Briefly explain the following:
i) Pipelining technique (06 Marks)
ii) Physical Memory Hierarchy. (06 Marks)
b. Encode the following data using ECC/Hamming coding "1 1 0 0 0 1 0 0". Prepare the table of coding. (06 Marks)
c. Explain Flash file systems. (04 Marks)

OR

- 6 a. Explain the three types of cache organization with diagram. (06 Marks)
b. Explain the following:
i) Deadlock
ii) Critical section
iii) Priority Inversion. (06 Marks)
c. Explain the concept of quality of service. (04 Marks)

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.

Module-4

- 7 a. Briefly explain the three firmware components in real time operating systems. (06 Marks)
b. Explain the RTOS system software mechanisms. (06 Marks)
c. Explain the following terms briefly:
i) Exceptions and asserts
ii) Single step debugging types. (04 Marks)

OR

- 8 a. Explain kernel schedules traces. (06 Marks)
b. Explain the checking return codes in RTOS. (06 Marks)
c. Explain hardware and software breakpoints. (04 Marks)

Module-5

- 9 a. How are threads created? (04 Marks)
b. Explain message queue. (06 Marks)
c. Explain semaphores by using a program. (06 Marks)

OR

- 10 a. How are process created and terminated? Explain with one example. (06 Marks)
b. Explain multithread. (04 Marks)
c. Explain shared buffer applications involving inter task / thread communication. (06 Marks)

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