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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Second Semester, M. Tech – VLSI Design and Embedded System (MECE)

Semester End Examination; June - 2017

Real Time Operating System

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

- 1 a. Explain the Real time service. Write the pseudocode for a basic real time service using polling technique. What are the changes to be done in the pseudocode, if the count driven service is to be provided? 10
- b. What is the response time of a real time service? Draw and explain the real time service time line. 10
- 2 a. Describe hand real time service utility, isochronal service utility and best effort service utility, any time service utility with necessary diagrams. 12
- b. With the help of pseudocode, explain thread safe reentrant function. 8

UNIT - II

- 3 a. Explain the following : 10
- i) Physical memory hierarchy ii) Shared memory.
- b. Why RM LUB is sufficient test? Prove RM LUB mathematically. 10
- 4 a. Explain the worst case execution time of a service. 8
- b. Explain flash file system and simple pipelining technique. 10
- c. Calculate the utility of the CPU resource achievable for the task with $T_1 = 2$, $T_2 = 5$, $C_1 = C_2 = 1$. 2

UNIT - III

- 5 a. With a neat diagram, explain dead lock and live lock. 10
- b. Explain the following : 10
- i) Critical section to protect shared resource
- ii) Priority Inversion.
- 6 a. Explain how missed deadline can be handled in soft real time? 6
- b. Explain quality of service. 6
- c. Explain the following : 8
- i) Blocking
- ii) Mixed hard and soft real time service.

UNIT - IV

- 7 a. Explain communication and synchronization application in detail. 10
- b. Briefly describe the following :
- i) Device driver firmware interface 10
 - ii) Reentrant application libraries.
- 8 a. Write short notes on :
- i) Exception and asserts 10
 - ii) Single step debugging.
- b. Explain test accesses port and trace port. 10

UNIT - V

- 9 a. Explain Drill down tuning. 10
- b. Mention the method for optimizing code segments. 10
- 10 a. Explain reliability and availability, their similarities and differences. 10
- b. With a neat diagram, explain RTOs based digital clock and thermometer application based on PIC microcontroller. 10

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