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Seventh Semester B.E. Degree Examination, June/July 2013

Real Time Systems

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Give two definitions for real time system. (04 Marks)
- b. Explain different classifications of RTS based on synchronization between external process and internal tasks of the computer. (08 Marks)
- c. Explain hard and soft RTS with relevant equations. (08 Marks)
- 2 a. Compare batch processing and continuous processing. (05 Marks)
- b. With a neat diagram, explain distributed systems with its advantages. (10 Marks)
- c. Write a note on supervisory control systems. (05 Marks)
- 3 a. The clock on computer generates an interrupt for every 20 ms. Draw a flow chart for interrupt service routine, which has to keep a 24 hour clock in terms of hours, minutes and seconds. (08 Marks)
- b. Explain a simple digital input and output interfaces. (10 Marks)
- c. Write a note on different LAN topologies. (02 Marks)
- 4 a. Explain scope and visibility of a variable. (04 Marks)
- b. What are the basic language requirements for RT language? Explain. (10 Marks)
- c. What is CUTLASS? What are the requirements of CUTLASS? (06 Marks)

PART – B

- 5 a. Explain different scheduling strategies. (06 Marks)
- b. Three cyclic tasks A, B, C are required to run at 1 tick, 2 ticks and 3 ticks respectively (1 tick = 20 ms). Assuming tasks A, B, C consumes 5 ms, 8 ms and 10 ms respectively. Write task activation diagram for priority order. (Context switching time = 0).
i) A (highest), B, C ii) B (highest), A, C (06 Marks)
- c. What is code sharing? Explain serially reusable and re-entrant code. (08 Marks)
- 6 a. With a neat diagram, explain the general structure of IOSS. (07 Marks)
- b. Explain the problem of shared memory. How semaphores are used to overcome this problem? (09 Marks)
- c. Explain Liveness. (04 Marks)
- 7 a. Explain foreground and background system with a flowchart. (10 Marks)
- b. Differentiate pool and channel. (04 Marks)
- c. Explain software design for RTS using software module. (06 Marks)
- 8 a. Explain functional specifications with respect to a drying oven. (07 Marks)
- b. Explain Yourdon methodology. (05 Marks)
- c. With a relevant diagram, explain Ward and Mellor's method. (08 Marks)