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12EC118

**M.Tech. Degree Examination, June / July 2014**  
**Advanced Embedded Systems**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions.**

- 1
  - a. Explain elements of typical embedded systems. (08 Marks)
  - b. Differentiate between Harvard Architecture and von – Neumann architecture. (08 Marks)
  - c. Explain SRAM cell implementation. (04 Marks)
- 2
  - a. Explain Operational Quality Attributes to be considered in embedded system design. (06 Marks)
  - b. Explain different types of program memory. (06 Marks)
  - c. Explain with diagram I2C Bus and SPI bus interfacing. (08 Marks)
- 3
  - a. Explain fundamental issues in Hardware software co design. (10 Marks)
  - b. Explain any three computational models in embedded system design. (10 Marks)
- 4
  - a. Explain super loop based approach. (08 Marks)
  - b. Explain with block diagram, assembly language to machine language conversion process. (08 Marks)
  - c. Explain fundamental building blocks of UML. (04 Marks)
- 5
  - a. Explain with diagram OS Architecture and its services. (08 Marks)
  - b. Explain Monolithic Kernel. (06 Marks)
  - c. Explain multiprocessing and multitasking. (06 Marks)
- 6
  - a. Explain basic functions of Real time Kernel. (08 Marks)
  - b. What is IPC? Give an overview of different IPC mechanisms adopted by Kernel? (06 Marks)
  - c. Four processes with process IDs P1, P2, P3, P4 with estimated completion time 3, 6, 4, 2 milliseconds respectively enters the ready queue together in the order P1, P2, P3, P4. Calculate the waiting time, turn around time for each process, average waiting time and average turn around time for Round Robin scheduling Algorithm with time slice = 2 millisecond. (06 Marks)
- 7
  - a. Define Device Drivers and explain its features. (08 Marks)
  - b. Explain functional requirements, while choosing an RTOS for embedded system design. (06 Marks)
  - c. Explain deadlock. (06 Marks)
- 8
  - a. Explain features of IDE. (06 Marks)
  - b. Explain files generated during the cross compilation. (08 Marks)
  - c. Explain Javabased Embedded application development. (06 Marks)

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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.