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Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019

Embedded Computing Systems

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1
 - a. Define embedded system. Explain the embedded system design process. (06 Marks)
 - b. Explain the hardware and software architecture for the moving map display. (06 Marks)
 - c. Write the sequence diagram for transmitting a control input in model train controller. (08 Marks)
- 2
 - a. What is the difference between the Harvard and von Neumann architectures? (06 Marks)
 - b. Explain the basic ARM programming model. (06 Marks)
 - c. Write the UML collaboration diagram for the data compressor. Explain Huffman coding for text compression. (08 Marks)
- 3
 - a. Define a bus. Explain with a neat diagram bus with a DMA controller. (06 Marks)
 - b. With a neat sketch explain the internal organization of a memory device. (06 Marks)
 - c. Explain :
 - i) Timers and controller
 - ii) A/D and D/A converter
 - iii) Key board
 - iv) Display. (08 Marks)
- 4
 - a. Discuss models of program in design and analysis. (06 Marks)
 - b. Explain program optimization techniques. (08 Marks)
 - c. Explain program level performance analysis. (06 Marks)

PART – B

- 5
 - a. Explain the architecture of RTOS with suitable example. (08 Marks)
 - b. Discuss process, threads and CPU metrics. (06 Marks)
 - c. Briefly explain rate monotonic scheduling and earliest – Deadline first scheduling. (06 Marks)
- 6
 - a. Explain interprocess communication mechanisms. (10 Marks)
 - b. Discuss the theory of operation and requirements in telephone answering machine. (10 Marks)
- 7
 - a. With a neat sketch, explain OSI model for network. (08 Marks)
 - b. Explain distributed embedded architecture with a neat diagram. (06 Marks)
 - c. Explain :
 - i) Internet applications
 - ii) Internet security
 - iii) Sensor networks. (06 Marks)
- 8

Write short notes on the following :

 - a. IDE
 - b. Simulator and debugger
 - c. BMW 850i brake and stability control
 - d. Cache memory. (20 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.