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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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