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

(An Autonomous Institution affiliated to VTU, Belagavi)

Seventh Semester, B.E. - Electronics and Communication Engineering

Semester End Examination; Dec. - 2019

Embedded and Real Time Systems

Time: 3 hrs *Max. Marks: 100*

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

UNIT - I

1 a.	Distinguish between Embedded System and General Computing System.	8
b.	Discuss the various classifications of Embedded System.	6
c.	List the major applications of Embedded System.	6
2 a.	With a neat block diagram, explain elements of an Embedded System.	7
b.	Distinguish between RISC and CISC processor.	6
c.	Discuss the role of transistor based relay driving circuit in embedded applications.	7

UNIT - II

3 a.	Explain characteristics of an Embedded System.	6
b.	Discuss quality attributes of Embedded System.	6
c.	Illustrate the functionality of the various blocks of washing machine with a neat figure.	8
4 a.	What is hardware software co-design? Explain the fundamental issues in co-design.	8
b.	Explain FSM model for automatic seat belt warning system.	6
c.	Discuss 'Things' in UML building blocks.	6

UNIT - III

5 a.	Illustrate the need and role of Kernel. Explain its various functionalities.	10
b.	Calculate the Waiting time and Turnaround Time (TAT) for each processor and the average waiting time and turnaround time of three processor, estimated completion time is 10, 5, 7 ms respectively, (P_1, P_2 P_3). If the processor enters the ready queue together the order P_2, P_1 P_3.	10
6 a.	Illustrate the concept of multiprocessing and multi-testing in embedded system with relevant examples.	10
b.	Three processors P_1, P_2 and P_3 with estimated completion time 10, 5 and 7 ms respectively enter the ready queue together. Calculate the waiting time and turnaround time for each processes and the average waiting time and turnaround time in SJF algorithm.	10

UNIT - IV

7 a.	Discuss two embedded firmware design approaches.	10
b.	Explain the requirements of an embedded application developer.	10

Contd…2

8 a. Deliberate on the following:

i) Simulator 10

ii) Integrated Development Environment [IDE]

b. Explain types of files generated on cross-compilation. 10

UNIT - V

9 a. Discuss different product enclosure techniques. 10

b. Explain following:

i) System on chip 10

ii) Reconfigurable processor

10 a. Discuss strategic alliances, open source used in mobile industry. 10

b. Explain bottlenecks faced by the embedded industry. 10

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