U.S.N ☐☐☐☐☐☐☐☐☐☐

P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belagavi)
Second Semester, M.Tech. - VLSI Design and Embedded Systems (MECE)
Semester End Examination; May/June - 2019
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.	Define the following : i) Release time ii) Deadline iii) Timing constraint	6
b.	Discuss the following in real time systems context : i) Tardiness ii) Hard and Soft deadline	6
c.	Explain the various hard timing constraints that have to be specified in the design of real time systems.	8
2 a.	Discuss the various temporal parameters that characterize a job in real time context.	8
b.	With an example, illustrate how a task graph can be used to identify the order of execution of jobs?	8
c.	Explain the importance of preemptivity of jobs.	4

UNIT - II

3 a.	Which are commonly used approaches to schedule a real time system? Explain with suitable example. How weighted Round Robin approach can be used to schedule high speed switched network?	8
b.	With suitable example, illustrate the non-optimality of non-preemptive EDF algorithm.	6
c.	List the various merits and demerits of priority driven scheduling approach.	6
4 a.	Explain the important characteristics of a cyclic scheduler.	6
b.	With an illustrative example, explain stack scheduling.	8
c.	Discuss the pros and cons of clock driven scheduling.	6

UNIT - III

5 a.	Compare Fixed priority and Dynamic priority algorithm.	6
b.	By taking suitable example, compare RM and DM algorithm.	8
c.	Explain how time demand analysis method can be used to check whether a task can be feasibly scheduled by the given scheduling algorithm.	6
6 a.	Discuss the various reasons for a job to be non-premptable.	8
b.	Explain tick scheduling with suitable illustrations.	6
c.	Explain Schedulability of fixed priority tasks.	6

UNIT - IV

7 a. Explain the rules of basic priority ceiling protocol.   6

b. Explain the concept of multiple unit resources access control.   8

c. With suitable illustrations, explain the differences between priority inheritance and priority ceiling protocols.   6

8 a. Explain the use of;

   i) Priority ceiling   12

   ii) Pre-emption ceiling protocols in dynamic priority systems

b. Write a note on stack based priority ceiling protocol.   8

UNIT - V

9 a. Explain MPCP resource model with an example.   8

b. With a diagram, explain inter processor communication architectures.   6

c. Write a note on task assignment based on execution time requirement.   6

10 a. Explain the model of real time communication system.   8

b. Discuss the role of packet switched networks in communication.   6

c. Explain fixed priority scheduling in CAN.   6

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