

Total No of Questions: [12]**SEAT NO. :****[Total No. of Pages : 2]*****B.E. 2008 (Real Time Systems):414450******(Elective - III) (Semester - II)******Time: 3 Hours******Max. Marks : 100*****Instructions to the candidates:**

- 1) Answers to the two sections should be written in separate answer books.
- 2) Answer any three questions from each section.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Figures to the right side indicate full marks.
- 5) Use of Calculator is allowed.
- 6) Assume Suitable data if necessary

SECTION I

Q1)	a)	What are the various factors that are to be considered while estimating the program run-time in RTS? Describe analysis of source code, drive lower bounds and upper bounds with suitable example	[8]
	b)	Explain different issues in real time computing. Draw block diagram for real time computer.	[8]
		OR	
Q2)	a)	Consider a traffic light controller system. A traffic light will be normally green for G Seconds, yellow for Y seconds, and red for R seconds. During night for certain period of time the intersection will automatically suspend normal services and it will flash yellow. Consider intersection for two way streets <ol style="list-style-type: none">i) Find accomplishment levelii) Find hierarchical view performance	[8]
	b)	Describe in brief the effect of following in estimation of run time in a program. <ol style="list-style-type: none">1. Source code2. Use of cache	[8]
Q3)	a)	Describe the priority inheritance protocol. What are the advantages of this protocol?	[6]
	b)	Why priority inversion mechanism is not suited for real time applications. Write appropriate solution for this problem.	[6]
	c)	How does the priority ceiling protocol overcome the problem of deadlock that occurs due to priority inheritance.	[6]
		OR	
Q4)	a)	State the assumptions made for the implementation of the rate monotonic scheduling algorithm. What is the easy schedulability test for this algorithm?	[6]
	b)	Consider : Task 1 = (p ₁ ,e ₁)=(2,0.9) Task 2 = (p ₂ ,e ₂)=(5,2.3) <ol style="list-style-type: none">i) Find total processor utilizationii) Find necessary and sufficient condition.	[8]
	c)	Explain the classification of Real Time Scheduling with example.	[4]
Q5)	a)	What are the various benefits of packages?	[8]
	b)	What is optimistic concurrency control? Describe the following policies related to the optimistic algorithm in the presence of transaction priorities: <ol style="list-style-type: none">i. Sacrifices Policyii. Wait Policy	[8]

		OR	
Q6)	a)	Explain following policies with respect to task scheduling: a. Task Dispatching policy b. Entry queuing policy	[8]
	b)	Write short notes (any two) a. Hard Real Time Databases b. Disk Scheduling Algorithms c. Maintaining serialization consistency	[8]
		SECTION II	
Q7)	a)	Discuss the various communication medium used in real time networking.	[5]
	b)	Explain different methods of sending messages in real time network	[5]
	c)	Write a short note on any two: 1. Wormhole routing 2. Polled bus protocol 3. Wavelength Division multiplexing Network	[8]
		OR	
Q8)	a)	Write short notes on any two: 1. Timed token protocol 2. Deadline based protocol 3. Hierarchical round robin protocol	[10]
	b)	Explain VTCSMA algorithm with flow chart	[8]
Q9)	a)	List and explain the capabilities of RTOS	[6]
	b)	Explain in detail what is interrupt latency	[4]
	c)	Explain in detail timer function support system in RT Linux	[6]
		OR	
Q10)	a)	Explain in detail capabilities of VXWorks along with specific API for time services	[8]
	b)	Describe which scheduling algorithm is used in RT Linux as against standard Linux	[4]
	c)	Write short note on split interrupt handling.	[4]
Q11)	a)	What do you mean by fault latency? Discuss the causes of failures in real time systems?	[6]
	b)	How the fault types are classified? Discuss output behavior classification.	[10]
		OR	
Q12)	a)	Describe the following structure for hardware redundancy : Any two 1. Static pairing 2. N-modular redundancy 3. Information redundancy	[10]
	b)	Explain exponential distributed fault latency with example	[6]