Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – III • EXAMINATION – SUMMER • 2014

Subject code: 730203 **Date: 05-06-2014**

Subject Name: Real Time Systems

Time: 02:30 pm - 05:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Define the following terms: Release Times, Deadlines, Timing Constraints Tardiness, Response Time, Jitter and Lateness.	**07**
	(b)	What are the Misconceptions about Real time system? Explain any real time system with flow diagram.	**07**
Q.2	**(a)**	A cyclic scheduler is to be used to run the following set of periodic task on uniprocessor: T1= (1, 4), T2= (1, 5), T3= (1, 20), and T4= (2, 20). Select an appropriate frame size.	**07**
	(b)	Explain Scheduling hierarchy with neat diagram. List out the condition must be satisfies by a valid scheduler and explain any one?	**07**
		OR	
	(b)	Compare the hard real time system and soft real time system with example?	**07**
Q.3	**(a)**	Explain the basic priority-inheritance protocol with its rules and properties?	**07**
	(b)	What is Foreground and Background scheduler? There is only one periodic Foreground task T_f :(e_f=100, p_f=50) and Background task be T_b: (e_b=1000). Compute the completion time for the Background task?	**07**
		OR	
Q.3	**(a)**	Explain the basic priority-ceiling protocol with its rules and how to avoid deadlock using priority-ceiling protocol?	**07**
	(b)	What are Rate monotonic algorithms? Explain necessary and sufficient condition for a given set of periodic task with example, check it is schedulable or not under RMA.	**07**
Q.4	**(a)**	What is CORBA? Explain it with reference to real time system.	**07**
	(b)	What is fault-tolerance? Explain its type and what is the possible structure for performing fault-tolerance?	**07**
		OR	
Q.4	**(a)**	For a given periodic task: T1=(e=2, p=5), and T2=(e=4, p=7) i) What is the total utilization of a system? ii) Construct EDF schedule and show missed deadlines if any.	**07**
	(b)	What is DRTS? Explain Global scheduling with various policy for load migrating from one node to another.	**07**
Q.5	**(a)**	Explain the different types of networks in real time communication?	**07**
	(b)	What is resource reclaiming in multiprocessor real time systems? Also explain properties of reclaiming algorithms?	**07**
		OR	
Q.5	**(a)**	Explain the real time task with example?	**07**
	(b)	What is real time Database? Explain its type and design issue for database design in real time database.	**07**

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