Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER • 2013

Subject code: 710105N **Date: 06-01-2014**

Subject Name: Real Time Computing

Time: 10.30 am – 01.00 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)** What is missile guidance system? Is it hard or soft real time system? Why? **07**

(b) What are common properties of any valid schedule? Also explain feasible and optimal schedule. **07**

Q.2 **(a)** A system contains four periodic tasks. **07**

T_1 (4, 1) T_2(5, 1.8) T_3(20, 1) T_4(20, 2).

(i) Find suitable frame size for clock driven scheduling.

(ii) What is total utilization of system?

(iii) Make complete clock driven schedule in first hyper period.

(b) Compare Amdahl's law with Gustafson's law in detail. **07**

OR

(b) Discuss any seven selection criteria for real time kernels. **07**

Q.3 **(a)** Discuss about non-optimality of EDF algorithm with suitable example. **07**

(b) A system contains three periodic tasks. **07**

T_1 (4, 2) T_2(5, 2) T_3(20, 5).

Make schedule using RM in first hyper period and also indicate missing deadlines (if any).

OR

Q.3 **(a)** Three periodic tasks are given **07**

T1(5,5,5,10) T2(0,7,1,2) T3(0,13,2,5)

(i) Find total utilization of system.

(ii) Draw DM schedule in internal [0,25]

(b) With suitable example explain how average response time of periodic jobs is improved in clock driven scheduling? **07**

Q.4 **(a)** Explain various states of real time thread & draw state transition diagram for the same. **07**

(b) What do you mean by priority ceiling resource access control protocol? Explain with suitable example. **07**

OR

Q.4 **(a)** What do you mean by priority inheritance resource access control protocol? Explain with suitable example. **07**

Q.4 **(b)** How to find preemption ceiling of a given resource? Write scheduling rule, priority inheritance rule and allocation rule of preemption ceiling protocol. **07**

Q.5 **(a)** Define: (i) local blocking time (ii) remote blocking time (iii) remote preemption delay (iv) deferred blocking time **07**

	(b)	Explain the features of RTLinux.	**07**
		OR	
Q.5	**(a)**	Explain by which features of Windows NT, it is not suitable for real time applications?	**07**
	(b)	Explain any four code smells & their refactoring.	**07**

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