Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII • EXAMINATION – WINTER 2013

Subject Code: 171005 **Date: 03-12-2013**

Subject Name: Embedded Systems

Time: 10:30 TO 01:00 **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 do you mean by embedded system? Discuss the various components of embedded System design.	**07**
	(b)	Which are the basic features adopted from RISC (Reduced Instruction Set Computer) architecture to enhance the performance of ARM architecture, explain in short two of them.	**07**
Q.2	**(a)**	Discuss with examples any two of the following ARM instructions. i) MLA ii) ORR iii) LDMIA	**07**
	(b)	Discuss the Thumb programmer's model of ARM architecture.	**07**
		OR	
	(b)	Compare and discuss in short the watch dog timer and real time clock feature of embedded systems.	**07**
Q.3	**(a)**	Which is the various serial communication protocols used in embedded system design? Discuss in short two of them.	**07**
	(b)	Explain in short Bluetooth and Zig-Bee wireless protocol used in embedded systems.	**07**
		OR	
Q.3	**(a)**	Which are the various parallel communication protocols used in embedded system design? Discuss in short two of them.	**07**
	(b)	Discuss the difference between Process, Thread and Task with respect to real time operating system (RTOs).	**07**
Q.4	**(a)**	Explain the concept of semaphore used in embedded system software development; also lists various types of semaphores.	**07**
	(b)	What do you mean by socket functions and RPC functions with respect to RTOs and show its applications.	**07**
		OR	
Q.4	**(a)**	Discuss the basic functions of a Real Time Operating Systems (RTOs), explain in short the process management function of RTOs.	**07**
Q.4	**(b)**	Explain in short the cooperative scheduling model with example of the RTOs task scheduling.	**07**
Q.5	**(a)**	How RTOs manages the memory, give the memory management strategy of RTOs in embedded system design.	**07**
	(b)	What is the advantage of Timer and Event functions with respect to RTOs, explain in short with few functions related to Timer and Event.	**07**
		OR	
Q.5	**(a)**	How RTOs manages the devices and I/O subsystems, give the device management strategy of RTOs in embedded system design.	**07**
	(b)	Discuss the Interrupt handling of RTOs environment, also show how Interrupt source calls executes.	**07**

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