

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019

Subject Code: 2171005

Date: 26/11/2019

Subject Name: Embedded Systems

Time: 10:30 AM TO 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.

		MARKS
Q.1	(a) Define the embedded system and give classification of it.	03
	(b) Explain UART protocol for serial communication.	04
	(c) Explain various components of embedded system hardware and give example of any one embedded system with necessary diagram.	07
Q.2	(a) Define the following term a. RTC b. Watchdog Timer	03
	(b) Explain interrupt latency.	04
	(c) Explain I ² C bus communication protocol with necessary diagram.	07
	OR	
	(c) Explain various features of IrDA and Bluetooth protocol with necessary diagram for wireless and mobile system.	07
Q.3	(a) Explain the steps involved during the context switching.	03
	(b) Define the task and explain the various states of task with necessary diagram.	04
	(c) Explain various interrupt service (handling) mechanism used in embedded system.	07
	OR	
Q.3	(a) Explain different types of interrupt sources.	03
	(b) Explain the feature of device driver and give classification of it.	04
	(c) Explain Direct Memory Access controller with necessary diagram.	07
Q.4	(a) Describe the various uses of RTOS in embedded system.	03
	(b) Define semaphore and discussed the problem that can be arise while using semaphores.	04
	(c) Write short notes on socket functions.	07
	OR	
Q.4	(a) Define the following term a. Binary semaphore b. Counting semaphore c. P and V semaphore	03
	(b) Explain priority inversion problem and deadlock situation in shared data approach.	04
	(c) Explain Preemptive scheduling model of RTOS.	07
Q.5	(a) Write the difference between Hard Real Time and Soft Real Time System with an example.	03
	(b) Explain the multiplexing scheme in MSP430 processor for the port pins.	04
	(c) Explain cooperative scheduling model of RTOS.	07
	OR	
Q.5	(a) Describe the clock system of MSP430 processor	03
	(b) Describe the methods of saving and optimizing power needs in embedded system.	04
	(c) Explain MSP430 RISC CPU architecture.	07
