Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VI (NEW) EXAMINATION – WINTER 2021

Subject Code:3161009 Date:04/12/2021

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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	"Increasing the frequency of an embedded system increases the power dissipation" Justify the statement	**03**
	(b)	What is RTOS ? Describe types of RTOS with two examples.	**04**
	(c)	List down the components available on SoC and describe them with a neat diagram.	**07**
Q.2	**(a)**	Define RTC and Watchdog Timer	**03**
	(b)	Explain UART protocol in Serial Communication.	**04**
	(c)	Differentiate GPP , ASIP and Single purpose processor with respect to embedded system using specific application	**07**
		OR	
	(c)	Describe the various skills required for an embedded system designer as per embedded system classification.	**07**
Q.3	**(a)**	List down the steps executed before handling an Interrupt in an embedded system.	**03**
	(b)	Explain Semaphores	**04**
	(c)	Enumerate various I/O types of an embedded system and explain them with examples.	**07**
		OR	
Q.3	**(a)**	Explain Interrupt latency and deadline.	**03**
	(b)	Explain the features associated with Bluetooth and Zigbee devices.	**04**
	(c)	Explain DMA Controller	**07**
Q.4	**(a)**	List down the services provided by RTOS.	**03**
	(b)	Write a note on IPC.	**04**
	(c)	Describe memory and file management in RTOS	**07**
		OR	
Q.4	**(a)**	Differentiate : Function and ISR	**03**
	(b)	What is Process Control Block? What are the fields included in PCB ?	**04**
	(c)	Explain Device driver mechanism in an embedded system.	**07**
Q.5	**(a)**	List the features of MSP430 microcontroller	**03**
	(b)	Explain task scheduling in RTOS	**04**
	(c)	Explain how the timers of MSP430 can be configured for PWM generation.	**07**

OR

Q.5	**(a)**	Describe low power mode of MSP30.	**03**
	(b)	Describe the various sources of clock in MSP430 processor	**04**
	(c)	Write a C code to display HELLO on common anode seven segment LED interfaced with GPIO pins of MSP430. Show necessary diagram.	**07**

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