Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (NEW) - EXAMINATION – SUMMER 2018

Subject Code: 2180808 Date: 30/04/2018

Subject Name: Embedded Systems(Departmental Elective - III)

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.**

Q.1	**(a)**	Define: [1] Firmware [2] Cache [3] Interrupt	**03**
	(b)	Differentiate: 1. Digital Signal Processor (DSP) v/s General Purpose Processor (GPP) 2. RAM v/s ROM	**04**
	(c)	Explain various software tools for designing the Embedded System.	**07**
Q.2	**(a)**	Classify Embedded systems along with their applications.	**03**
	(b)	How do your write a device driver? List the steps involved in writing a device Driver?	**04**
	(c)	Explain any three wireless and mobile system protocols.	**07**
		OR	
	(c)	Explain any three serial communication bus protocols.	**07**
Q.3	**(a)**	Explain Watchdog timer in brief.	**03**
	(b)	Which one is better? I/O busy-wait approach or ISR method. Justify your answer.	**04**
	(c)	Explain the concept of DMA with block diagram.	**07**
		OR	
Q.3	**(a)**	Define: [1] Process [2] Thread [3] Task	**03**
	(b)	What are the parameters available in TCB of a Task? Why should each task has distinct TCB?	**04**
	(c)	State the characteristics of Function, ISR and Task in brief.	**07**
Q.4	**(a)**	Define: [1] Pipes [2] Sockets [3] Signals	**03**
	(b)	Write a short note on Mailbox.	**04**
	(c)	Define Semaphore. How can the semaphore be used for guarding the Critical Section. Explain with example.	**07**
		OR	
Q.4	**(a)**	Why does and OS provide two modes, user mode and supervisory mode?	**03**
	(b)	List the pros and cons of fixed and dynamic block allocations by the OS.	**04**
	(c)	Enlist the services of an Operating System.	**07**
Q.5	**(a)**	Define network OS. How does it differ from conventional OS?	**03**
	(b)	Enlist the features of MSP430.	**04**
	(c)	Explain various task scheduling models available in an RTOS?	**07**
		OR	
Q.5	**(a)**	Explain File System Organization of an OS in brief.	**03**
	(b)	Explain the priority inversion problem with an example.	**04**
	(c)	What is the advantage of using a signal as an IPC? Enlist the situations which warrant use of signal.	**07**

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