

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER-VII (NEW) - EXAMINATION – SUMMER 2018**

**Subject Code:2171005**

**Date:01/05/2018**

**Subject Name:Embedded Systems**

**Time:02.30 PM to 05.00 PM**

**Total Marks: 70**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks

	<b>MARKS</b>
<b>Q.1</b> (a) Enlist hardware units of an embedded system.	<b>03</b>
(b) Classify Embedded System.	<b>04</b>
(c) Describe the components present on SoC for the design of an embedded system.	<b>07</b>
<b>Q.2</b> (a) Explain Watchdog timer.	<b>03</b>
(b) Explain Serial Bus Communication Protocols.	<b>04</b>
(c) Describe the features associated with Bluetooth and Zigbee Protocols used in wireless and mobile systems.	<b>07</b>
<b>OR</b>	
(c) Compare serial and parallel communication. Explain the buses used for serial communication.	<b>07</b>
<b>Q.3</b> (a) Explain difference between level-triggered and edge-triggered interrupts.	<b>03</b>
(b) Enlist IO port types.	<b>04</b>
(c) Write short note on DMA controller.	<b>07</b>
<b>OR</b>	
<b>Q.3</b> (a) Explain interrupt latency.	<b>03</b>
(b) Explain ISR concept in interrupt.	<b>04</b>
(c) Write short note on Device Driver.	<b>07</b>
<b>Q.4</b> (a) Explain the differences between Hard Real Time and Soft Real Time System.	<b>03</b>
(b) Explain Memory management service provided by RTOS.	<b>04</b>
(c) Explain a Timer module of MSP430 with various modes of operation associated with it.	<b>07</b>
<b>OR</b>	
<b>Q.4</b> (a) Explain concept of Semaphores.	<b>03</b>
(b) Explain the importance of a processor and its architecture in Embedded System Design.	<b>04</b>
(c) What is the significance of Mailbox in RTOS? Describe the functions provided by RTOS in association with Mailbox.	<b>07</b>
<b>Q.5</b> (a) Enlist service provided by RTOS.	<b>03</b>
(b) Enlist RTOS task scheduling models.	<b>04</b>
(c) Write short note on basic architecture of MSP430.	<b>07</b>
<b>OR</b>	
<b>Q.5</b> (a) Describe the clock system of MSP430 processor.	<b>03</b>
(b) Explain the multiplexing scheme in MSP430 processor for the port pins.	<b>04</b>
(c) Explain the use of timer for generating Pulse Width Modulated Waveform using MSP430.	<b>07</b>

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