GUJARAT TECHNOLOGICAL UNIVERSITY
ME – SEMESTER II (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2725404   **Date: 24/05/2016**

Subject Name: Mixed Signal Controllers

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)**	Answer the following questions in relation with MSP430 CPU.	**07**
		1. Define: Resolution and Accuracy.	
		2. Explain the use of Constant Generator.	
		3. Explain the function of DMAxSZ register in DMA controller.	
		4. Specify the condition for Brownout Reset.	
		5. Explain the use of OSC OFF bit in Status Register.	
		6. Hardware multiplier does not interfere with CPU activities– Justify.	
		7. Explain SBC (.B or .W)dst instruction.	
	(b)	Mention the conversion modes of ADC and Explain anyone in detail.	**07**
Q.2	**(a)**	Explain the Capture –Compare modes of timer.	**07**
	(b)	Explain all the sources of clocks in MSP430 CPU.	**07**
		OR	
	(b)	Describe the addressing modes of MSP430 CPU.	**07**
Q.3	**(a)**	Write a C Program to Configure DAC to generate a triangular wave.	**07**
	(b)	With the help of a block diagram, explain the operation of Comparator in MSP430 CPU.	**07**
		OR	
Q.3	**(a)**	Explain the registers of DAC12.	**07**
	(b)	Explain all the registers of Hardware multiplier. Write a C program to multiply two 16 bit signed numbers.	**07**
Q.4	**(a)**	Specify the conditions for all Low power modes and Explain the function of DCO in MSP430.	**07**
	(b)	Explain the use of Analog to Digital Convertor in digitizing multiple analog channels and Write a C program for Multiple Channel in Sequence.	**07**
		OR	
Q.4	**(a)**	What is the difference between a real instruction and emulated instruction? Give three examples of emulated instruction along with their real equivalents.	**07**
	(b)	What is the need of watchdog timer in MSP430? Differentiate between the function of watchdog timer in watchdog mode and interval mode.	**07**
Q.5	**(a)**	Explain all the addressing modes in association with DMA Controller	**07**
	(b)	Explain the Design of FIR filter Using multiplier, timer and DMA of MSP430.	**07**
		OR	
Q.5	**(a)**	Describe the characteristics of Burst-Block Transfer mode in DMA controller. Explain an application in which this mode can be useful.	**07**
	(b)	Explain the block diagram of DMA Controller with the use of important special function registers.	**07**

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