Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER VII– • EXAMINATION – WINTER 2016

Subject Code: 172001 **Date: 29/11/2016**

Subject Name: Microcontrollers & Embedded systems

Time:10:30 AM TO 1:00 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)**	Interface a stepper motor with 8051. Write the 8-step sequence for rotation.	**07**
	(b)	Explain the bit configuration of INTCON & PIE1 registers.	**07**
Q.2	**(a)**	Define baud rate. Explain the data framing protocol for serial transmission in 8051?	**07**
	(b)	Interface a multi-channel ADC with 8051.	**07**
		OR	
	(b)	Interface DAC with 8051 and generate sine wave output.	**07**
Q.3	**(a)**	Draw & explain the programming model of PIC18F452.	**07**
	(b)	Explain the concept of current sinking & current sourcing in case of LED interfacing.	**07**
		OR	
Q.3	**(a)**	Explain the pin functions of PORTA & PORTB of PIC18F452.	**07**
	(b)	Explain the concept of stack & stack pointer in PIC18F452 with an example.	**07**
Q.4	**(a)**	Draw & explain the H-bridge circuit for DC motor interfacing.	**07**
	(b)	What functions are performed by CCP modules in PIC18F452? Explain bit pattern of T1CON register.	**07**
		OR	
Q.4	**(a)**	List the machine control instructions in PIC18F452. What is the difference between subroutine & a macro?	**07**
	(b)	Explain the logical & bitwise operators in C with examples.	**07**
Q.5	**(a)**	Write a C code to display “Hi-Tech” on LCD using 8051.	**07**
	(b)	Write an ALP to convert from BCD to binary for PIC microcontroller.	**07**
		OR	
Q.5	**(a)**	Write a C code to generate 75% PWM on P2.7 using Timer1. XTAL=12MHz.	**07**
	(b)	Write an ALP to generate an interrupt every millisecond using Timer2 if MCU clock frequency is 10MHz.	**07**

****