Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2018

Subject Code: 2173203 **Date: 15/11/2018**

Subject Name: Microprocessor and Microcontroller

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.**

			MARKS
Q.1	**(a)**	Write a short note on microprocessors.	**03**
	(b)	Discuss AVR flag register in detail.	**04**
	(c)	Explain the Pin Diagram of the 8085 microprocessor.	**07**
Q.2	**(a)**	Explain PORT A functionality of ATMEGA32.	**03**
	(b)	How Microcontrollers are differing than Microprocessor?	**04**
	(c)	Explain Harvard architecture of AVR controller.	**07**
		OR	
	(c)	Explain architecture of the 8051 microcontroller.	**07**
Q.3	**(a)**	Explain the following instruction with example. 1.ORI 32H 2. INX D 3. SBB B.	**03**
	(b)	Explain Generation of the Control signal of the 8085 microprocessor.	**04**
	(c)	Write a short note on AVR Family	**07**
		OR	
Q.3	**(a)**	Compare RISC and CISC.	**03**
	(b)	Design a microprocessor memory interfacing system for 8Kbyte RAM with starting address 0000H.Immediately connect 4Kbyte EEPROM.	**04**
	(c)	A switch is connected to pin PB2. Write a program to monitor the status of the SW and perform the following. 1. If SW = 0, send the letter 'N' to PORT D. 2. If SW = 1, send the letter 'Y' to PORT D.	**07**
Q.4	**(a)**	Explain rotate instructions of AVR controller with example.	**03**
	(b)	Explain different steps for executing an interrupt.	**04**
	(c)	Write an assembly program to toggle only the PORT B. 4 bit continuously every 70µs. Use Timer 0, Normal mode and 1:8 prescaler to create the delay. Assume XTAL=8MHz.	**07**
		OR	
Q.4	**(a)**	What is the role of DDR register in inputting data for AVR Controller?	**03**
	(b)	Write an AVR C program to toggle all the pins of Port B continuously by using the Ex-OR operator.	**04**
	(c)	Explain the addressing mode for the AVR Controller.	**07**
Q.5	**(a)**	Give comparison serial versus parallel data transfer.	**03**
	(b)	Write a short note on AVR Data type.	**04**

	(c)	Explain interfacing of 4x4 matrix keyboard with microcontroller. Write program to read key-press event and display key-code on LEDs connected at port P0.	**07**

OR

Q.5	**(a)**	With Fosc =8 MHz, Find the UBRR value needed to have the following baud rates. 1. 9600 2. 4800 3. 2400	**03**
	(b)	Write an assembly program for the AVR to transfer the letter 'G' serially at 9600 baud, continuously. Use 8-bit data and 1 stop bit. Assume XTAL=8MHz.	**04**
	(c)	Explain I2C Bus protocol.	**07**

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