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.   **03**
1. 9600   2. 4800   3. 2400

    (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**

****