Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019

Subject Code: 2173203 **Date: 23/11/2019**

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 AVR Family	**03**
	(b)	Differentiate Microprocessor and Microcontroller.	**04**
	(c)	Draw and Explain architecture of the 8085 microprocessor	**07**
Q.2	**(a)**	Why bus demultiplexing is required in processors and controllers. Explain bus demultiplexing with neat sketch.	**03**
	(b)	Explain AVR status register in detail.	**04**
	(c)	Explain the Pin Diagram of the 8051 microprocessor.	**07**
		OR	
	(c)	Design a microcontroller memory interfacing system for 4Kbyte RAM with starting address 0000H.Immediately connect 2Kbyte EEPROM. Use 3-8 decoder and if gate is required.	**07**
Q.3	**(a)**	Why it becomes necessary to make different segments of one program? Explain the use of subroutines with suitable example.	**03**
	(b)	Write a short note on C Data types for the AVR C	**04**
	(c)	Explain and Draw the control signal generation in 8085 Microprocessor	**07**
		OR	
Q.3	**(a)**	What is Assembler directive? Explain .EQU and .SET assembler directive with example.	**03**
	(b)	Write a Program to get data from the PIN B and send it to the I/O register of PORT C Continuously.	**04**
	(c)	Draw pin configuration of ATmega32 and Explain function of any four pin.	**07**
Q.4	**(a)**	Explain following instruction with example: SBI, SEZ, LDS	**03**
	(b)	Explain programming steps to Program Timer 0 in normal mode.	**04**
	(c)	Write a program to transmit the message "GTU" serially at 9600 baud rate, 8 bit data and 1 stop bit. Do this forever.	**07**
		OR	
Q.4	**(a)**	Explain Rotate Instructions with example for the AVR controller.	**03**
	(b)	Explain the interfacing of 4x4 matrix key board with AVR.	**04**
	(c)	Draw and explain TCCR0 register in AVR in brief.	**07**
Q.5	**(a)**	Explain Flag register of 8085 Microprocessor.	**03**
	(b)	Explain interfacing of AVR with an optoisolator.	**04**
	(c)	Write a program to generate a delay of 70µs. (Consider XTAL= 8 MHz, Timer 2)	**07**
		OR	

Q.3 **(a)** With Fosc =8 MHz, Find the UBRR value needed to have the following baud rates. **03**

1. 9600
2. 4800
3. 2400

(b) List various sources of AVR interrupts and their priorities. Explain steps in enabling an interrupt. **04**

(c) A switch is connected to pin PA7(PortA.7). Write a program to monitor the status of the SW and perform the following. **07**

1. If SW = 0, the stepper motor moves clockwise.
2. If SW = 1, the stepper motor moves anti clockwise.

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