

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.5 (a) With $F_{osc} = 8 \text{ MHz}$, 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 (Port A.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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