Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI(NEW) EXAMINATION – WINTER 2022

Subject Code:3160914 Date:13-12-2022

Subject Name:Microprocessors and Microcontrollers

Time:02:30 PM TO 05:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	For 8051 μc operations define: pulse, state and machine cycle**.**	**03**
	(b)	Draw programming model of 8085 microprocessor and explain flag register in brief.	**04**
	(c)	A 10 bytes of data string is stored at starting from memory location 50h. Write an assembly language program for 8051 μc to find out maximum value from this data string and store that value at register B .	**07**
Q.2	**(a)**	What is the function of following pins in 8085: HOLD, READY & RESET OUT	**03**
	(b)	Draw and explain in brief timing diagram for instruction MVI A, 32h.	**04**
	(c)	List various processing modes of ARM processors with classification and explain complete ARM register set.	**07**
		OR	
	(c)	Write assembly language program for 8051 μc to count number of 0's and 1's in a byte stored in external memory location C500H. Draw flowchart.	**07**
Q.3	**(a)**	Discuss the internal RAM structure of 8051**.**	**03**
	(b)	Discuss various addressing modes of 8051 microcontroller assembly language programming.	**04**
	(c)	Write a for assembly language program for 8051 μc to toggle all bits at PORT 2 with a time delay of 20 ms without using timers.	**07**
		OR	
Q.3	**(a)**	Explain basic differences (1) Van neuman and Harvard architecture (2) CISC and RISC.	**03**
	(b)	What are tri-state devices & why they are essential in bus oriented system?	**04**
	(c)	Explain the operation of the following instructions of 8051 microcontroller in detail: (i) MOVX (ii) CJNE (iii) DJNZ (iv) XCHD	**07**
Q.4	**(a)**	Differentiate between SJMP, AJMP and LJMP for 8051 μc programming.	**03**
	(b)	How baud rate can be set in 8051 microcontroller for serial communication?	**04**
	(c)	Explain the role of SBUF & SCON registers in serial transfer in 8051.	**07**
		OR	
Q.4	**(a)**	List out steps in executing an interrupt for 8051 μc.	**03**
	(b)	Explain IE register in brief.	**04**

	(c)	Write a C program using interrupts to make timer 0 to generate a square wave of 5 KHz frequency on P0.1. Assume XTAL =11.0592 MHz.	**07**
Q.5	**(a)**	Explain editor, assembler, compiler and linker**.**	**03**
	(b)	What is the normal operating frequency of ADC0804? When interfacing ADC0804 with 8051 μc, what care need to be taken if CLK input is from 8051 μc?	**04**
	(c)	Draw interfacing diagram of 8051 μc to DAC808. For the same connection, consider a switch SW connected to pin P0.1. Write an 8051 μc program: When SW =0, the DAC output gives a staircase waveform otherwise no action when SW=1.	**07**

OR

Q.5	**(a)**	In what way is the ADC0808 is different from ADC0804?	**03**
	(b)	Draw interfacing diagram for interfacing of DC motor to 8051 μc using optoisolator and using a MOSFET transistor.	**04**
	(c)	Discuss the interfacing of seven segment display with 8051 with necessary diagram.	**07**

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