GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–V (NEW) EXAMINATION – WINTER 2022

Subject Code:3152409   **Date:09-01-2023**
Subject Name:Microcontrollers Architecture, Interefacing and Applications
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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	(a)	Explain 4 X 1 multiplexer with diagram.	03
	(b)	Explain how the use of such programmable IC is useful in Power Electronics converter design.	04
	(c)	Draw and explain RAM and ROM architecture of 8051 IC.	07
Q.2	(a)	Draw pinout of 8051 microcontroller IC.	03
	(b)	List out various addressing mode of 8051.	04
	(c)	Explain any three logical instructions with example.	07
		OR	
	(c)	Explain any three arithmetic instructions with example.	07
Q.3	(a)	Define bits of IE register.	03
	(b)	Explain indirect addressing mode with example.	04
	(c)	Draw connection diagram of LCD interface with 8051 microcontroller and give flow chart for LCD interface.	07
		OR	
Q.3	(a)	Define bits of TCON register.	03
	(b)	Write short note on assembler directives of 8051 microcontroller.	04
	(c)	Explain interfacing of 4 X 3 keyboard with 8051 with necessary diagrams.	07
Q.4	(a)	List three 16 bit registers of 8051.	03
	(b)	Explain JZ and CJNE instructions.	04
	(c)	State difference between interrupt and polling ? Explain external interrupts of 8051.	07
		OR	
Q.4	(a)	Define bits of TMOD register.	03
	(b)	Explain 8051 timer operation in mode 2 .	04
	(c)	Explain use of stack and stack pointer with respect to PUSH & POP instructions.	07
Q.5	(a)	State steps for execution of program in event of interrupt.	03
	(b)	Write an assembly language program to read bit P1.0 and send it to P2.7 after inverting it.	04
	(c)	Explain interfacing of ADC 0808 with 8051 with necessary diagrams.	07
		OR	
Q.5	(a)	List registers related to serial data transfer with 8051.	03
	(b)	Where assembly language program is more efficient than C language program ?	04
	(c)	Write a C program to generate pulse of 75 % duty cycle with any random time period.	07

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