Question Paper

MANIPAL ACADEMY OF HIGHER EDUCATION

FIFTH SEMESTER B.TECH END SEMESTER MAKEUP EXAMINATIONS, DEC 2022

MICRO-CONTROLLERS [ICE 3152]

Marks: 50 **Duration: 180 mins.**

A

Answer all the questions.

Instructions to Candidates: Answer ALL questions Missing data may be suitably assumed

1)		Show the contents of the PSW register after the execution of the following instructions. [CO1] [PO3] [BL4]	(2)
	A)	MOV A, #0BFH ADD A, #1BH	
	B)	Differentiate between LJMP and SJMP instructions. [CO2] [PO4] [BL4]	(3)
	C)	For an 8051 microcontroller with an oscillator frequency of 22MHz, generate a delay of 5ms using loop inside loop delay. [CO3] [PO3] [BL3]	(5)
2)		Create a square wave of 50% duty cycle on bit0 of port1 using a delay subroutine. [CO3] [PO3] [BL3]	(2)
	A)		
	B)	Write a note on accessing memory using various addressing modes. [CO2] [PO5] [BL1]	(3)
	C)	Write a note on the basic registers of timers. [CO3] [PO4] [BL1]	(5)
3)		Using timer0, create a square wave of 50% duty cycle on P1.5. [CO3] [PO4] [BL3]	(2)
	A)		
	B)	Write a note on data framing in serial communication using a near diagram. [CO3] [P04] [BL1]	(3)
	C)	Write a program to generate two square waves - one of 5KHz frequency at P1.5 and another of frequency 25KHz at P2.3, using timer interrupts. Assume XTAL = 22MHZ. [CO3] [PO4] [BL3]	(5)
4)		Using a neat block diagram, explain the interfacing between an 8051 microcontroller and a character LCD display. [CO5] [PO5] [BL1]	(2)
	A)		
	B)	Differentiate between CISC and RISC machines based on their instruction execution time and further establish the concept of pipelining in processors with a neat diagram. [CO4] [PO5] [BL3]	(3)
	C)	Explain the concept of PWM. How can PWM be used to control the workings of AC and DC motors? [CO5] [PO4] [BL3]	(5)
5)		Write a brief note on the various operating modes of ARM7 TDMI. [CO4] [PO5] [BL1]	(2)
	A)		
	B)	Explain how PINSEL registers are used to select GPIO functions. Develop the code for LPC2148 to generate a square wave at P0.4-P0.7 with 75% duty cycle. [CO4] [PO5] [BL3]	(3)
	C)	What are exception groups? Explain the different types of exception groups in ARM7 and write a note on entering exception mode. [CO4] [PO5] [BL2]	(5)

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