Question Paper

Exam Date & Time: 30-Dec-2022 (02:30 PM - 05:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

FIFTH SEMESTER B.TECH MAKE-UP EXAMINATIONS, DEC-2022/JAN-2023

MICROCONTROLLER BASED SYSTEMS [BME 3154]

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

A

Answer all the questions.

Instructions to Candidates:

1. *Missing data may be suitably assumed*
2. *Draw neat diagrams wherever necessary*

1)		How do you enable and disable interrupts in the 8051 microcontroller?	(3)
	A)		
	B)	What are the applications of register B and DPTR in the 8051 microcontroller?	(3)
	C)	How do you make use of Timer-1 to generate an interrupt to the 8051 microcontroller every 1 mS? Illustrate.	(4)
2)		Develop a logic for the 8051 microcontroller to implement an 8-bit ring counter. Make use of appropriate instructions of the 8051.	(4)
	A)		
	B)	How do you make use of logical instruction ORL to pack data? Illustrate with an example.	(3)
	C)	Is it possible to implement software interrupts in the 8051? Justify your answer with an appropriate illustration.	(3)
3)		Develop a readable C- program for the 8051 microcontroller to send 10 elements of an array present in the internal data memory to Port-1.	(4)
	A)		
	B)	Write an assembly language program for the 8051 to separate odd and even elements present in an array of 100 elements beginning at address 8100H.	(3)
	C)	Develop a subroutine to decimally increment the 16-bit register DPTR.	(3)
4)		How do you expand hardware interrupt of the 8051? Illustrate.	(3)
	A)		
	B)	Interface two 4 KB ROM chips and two 4 KB SRAM chips to the 8051 microcontroller such that the internal program memory is bypassed. Depict the interface circuit and the address allocation table.	(4)
	C)	Design an interface to drive single-digit common-anode seven-segment display, and to display "8" continuously.	(3)
5)		Design an 8051 system to acquire Lead-II ECG for diagnosis purpose. Make use of appropriate	(4)

devices to build the system.

A)

B) How do you build a token counter using a microcontroller? Illustrate. (3)

C) Design a real-time clock to keep track of Hour and Minute of time using the 8051 microcontroller and RTC DS12887. (3)

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