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MANIPAL INSTITUTE OF TECHNOLOGY Manipal University FOURTH SEMESTER B.Tech. (E & C) DEGREE END SEMESTER EXAMINATION - April/May 2017 SUBJECT: MICROCONTROLLERS AND APPLICATIONS (ECE - 3284)

TIME: 3 HOURS

MAX. MARKS: 50

Instructions to candidates

- Answer **ALL** questions.
- Missing data may be suitably assumed.

1A.	With neat diagram explain the architectural features of 8051 microcontroller
1B.	Describe the function of following 8051 Instructions:
	DAA ii) CPL A iii) SETB bit
1C.	Discuss the function of each bit in Interrupt Enable register of 8051 microcontroller
	(5+3+2)
2A.	Draw the interfacing diagram of temperature sensor with 8051 microcontroller and explain its working.
2B.	Discuss the function of each bit in TMOD register. Find the value of TMOD to program timer 0 in mode 2, use 8051 XTAL for the clock source, and use instructions to start and stop the timer.
2C.	Program the 8051 to receive bytes of data serially, and put them in P1. Set the baud rate at 4800.8 bit data, and 1 stop bit.
	(5+3+2)
3A.	Write a program to transfer the message "MIT" serially at 9600 baud, 8bit data, 1 stop bit .Do it continuously.
3B.	With neat diagram explain the working of congestion free elevator control using microcontroller.
3C.	Write a program to perform the following:
	i) Keep monitoring the P1.2 bit until it becomes high
	ii) When P1.2 becomes high, write value 45h to port0
	iii) Send high-to low pulse to P2.3
	(5+3+2)
4A.	The 8051 counts the number of people walking through a secured door. The movement of people using the door is sensed using electronic sensors which give a pulse output for each person who walks across the sensor. The 8051 must count the pulses and display the total using LED's in port 0 and port 1.
4B.	Assuming XTAL=11.0592MHz, write a program to generate a square wave of 50 Hz frequency on pin P2.3.
4C.	With XTAL=11.0592 MHz, find the TH1 value needed to have the following baud rates:

	9600 ii) 2400 iii) 1200	
	(5+3+2)	
5A.	Interface Analog to digital converter to 8051 microcontroller. Write a program to convert analog data into digital.	
5B.	3. Assume that 5 BCD data items are stored in RAM locations starting at 40H, write a program to find the sum of all the numbers. The result must be in BCD.	
5C.	List and explain interrupts available in 8051 microcontroller.	
	(5+3+2)	