

MANIPAL UNIVERSITY

SCHOOL OF INFORMATION SCIENCES FIRST SEMESTER Master of Engineering - ME (Embedded Systems / Automotive Embedded Systems / Embedded Systems and Instrumenation) DEGREE EXAMINATION - NOVEMBER 2017 DATE : Tuesday, November 21, 2017 TIME : 10:00AM - 1:00PM

Microcontrollers and its Applications [ESD 613]

Marks: 100

Duration: 180 mins.

Answer all the questions.

1)	Explain programming model of 8051 with suitable block diagram (10 MARKS)	(10)
2)	Explain Conditional and Unconditional Jump Instruction in 8051 with examples. (10 MARKS)	(10)
3)	Explain the following in 8051.	(10)
	(5 + 5 MARKS)	
	a. Timer Mode 1 b. Timer Mode 3	
4)	Write an ASM program that continuously gets 8-bit data from P0 and sends it to P1 while simultaneously creating a square wave of 200 μ s period on Pin 2.1. Use timer 0 to	(10)
	create the square wave. Assume XTAL=11.0592 MHz (10 MARKS)	
5)	Explain the following. a. List the differences between parallel and serial communication. (5+5 MARKS) b. Explain the role of SCON register in serial communication?	(10)
6)	a .Briefly explain the features of RISC included in ARM processor b. Briefly explain Exceptions and Interrupts of ARM 7 processor (5+5 MARKS)	(10)
7)	Explain following modes of ARM 7 processor	(10)
	a.User	

	b.SVC c.IRQ d.FIQ e.ABT	
	(2 * 5 MARKS)	
8)	Explain the Load and store Instructions of ARM 7 with relevant example and also comment on Pre indexing and Post indexing addressing modes ? ($7 + 3$ MARKS)	(10)
9)	Briefly explain Registers required to configure on chip Timer of LPC 2148 (10 MARKS)	(10)
10)	Assuming that Temperature sensor is interfaced to Analog input 0(ad0) of on chip ADC and LED is interfaced to MAT 0 (match out pin of timer0). Write a C program to receive character serially through UART at 9600 baud rate. If you receive a character 'A' serially through uart then program ADC to read value from temperature sensor and transfer that value serially through Uart at 9600 baud rate or else if you receive character 'B' serially through uart ,program Timer to toggle match output pin mat0 for every 200ms delay time period.	(10)

(10 MARKS)

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