Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

FIFTH SEMESTER B. TECH. (INSTRUMENTATION AND CONTROL ENGG.)

END SEMESTER DEGREE EXAMINATIONS, DECEMBER - 2018

SUBJECT: **MICROPROCESSORS AND MICROCONTROLLERS** [ICE 3104]

TIME: 3 HOURS **MAX. MARKS: 50**

Instructions to candidates

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

1A	What do you mean by assembler directives? Explain with examples.	2
1B	What are the differences between microprocessor and microcontroller systems? Draw a block schematic to support your answer.	3
1C	Explain the function of the following pins of 8051 microcontroller. i) XTAL1 and XTAL2 ii) ALE iii) PSEN iv) EA v)RST	5

2A	What is the content of PSW register after the execution of the following instructions?
	MOV A,#0BFh
	ADD A, #1Bh
		2

2B	Write an ALP to toggle the bits of port 1 with a suitable delay which depends on the value stored in R0. Show the delay calculations.	3
2C	Consider an array of 10 numbers stored in the internal memory from 40h. Write ALP to add all the even numbers and store the sum in memory location 50h and 51h. Also add all the odd numbers and store the sum in 52h and 53h.	5
3A	Explain the different modes of operation of timers in 8051.	2
3B	What are the registers used for serial communication using 8051. Explain.	3
3C	Write a note on interrupts in 8051. Mention their vector addresses. Explain how enabling and disabling of interrupts is done.	5
4A	Explain the base plus offset and base plus index addressing in ARM processors.	2
4B	Illustrate the stack operations in ARM processors.	3
4C	Write a note on ARM programmer's model. Explain the different registers, including CPSR.	5
5A	What is the function of timer counter (TR) and pre scale register (PR) in LPC2148?	2
5B	In LPC2148, six single edge controlled and three double edge controlled PWM outputs are possible. Justify the statement.	3
5C	Assuming suitable parameters write code to program LPC2148 for LED dimming using PWM feature.	5

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