MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

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

END SEMESTER DEGREE EXAMINATIONS, NOVEMBER - 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	Mention any two criteria for choosing a microcontroller.	2
1B	What do you mean by assembly language programming? Write the general structure of an assembly language instruction and explain.	3
1C	Draw the block diagram and explain the architectural features of 8051 microcontroller.	5
2A	With the help of an example explain the following instructions: i) ACALL ii) DJNZ	2
2B	Write an ALP to exchange the contents of 2 arrays in the internal memory of 8051.	3
2C	What is stack? With the help of suitable illustrations explain the operations of stack. What is the role of stack in call instructions?	5
3A	Compare the advantages and limitations of serial communication over parallel communication. What will the XTAL frequency for a serial communication at baud rate of 9600 and TH loaded with FD hex?	2
3B	Assuming XTAL=11.0592MHz, write an ALP to generate a square wave of 2kHz, on pin P1.4.	3
3C	Explain the meaning of different interrupts in 8051 and the steps in executing them. Write the format of Interrupt enable (IE) register and mention the function of each bit.	5
4A	Explain briefly the CPSR of ARM processor.	2
4B	What do you mean by pipelining? Explain the three stage pipelining in ARM processor.	3
4C	Mention the different addressing modes in ARM processor. Explain any two modes with examples.	5
5A	Mention any four features of LPC2148.	2
5B	Draw a sample single edge controlled and double edge controlled PWM waveform and explain how match register values affect the PWM waveforms.	3
5C	What are the different registers used in LPC2148 for GPIO programming. Write the code for LPC2148 to generate a square waveform at P0.0-P0.3, with 50% duty cycle.	5

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