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MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

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

END SEMESTER DEGREE EXAMINATIONS, NOVEMBER - 2019

SUBJECT: MICROPROCESSORS & MICROCONTROLLERS [ICE 3104]

TIME: 3 HOURS MAX. MARKS: 50

Instructions to candidates :*Answer ALL questions and missing data may be suitably assumed.*

1A. Explain the structure of an assembly language program.

1B. Compare the general purpose microprocessor system with microcontroller system.

1C. With the help of a neat block diagram, explain the different features of 8051 Microcontrollers.

(2+3+5)

2A. Write an 8051 program to monitor bit P2.7. When it is low, send 55h to port 0 continuously.

2B. What do you mean by stack? Illustrate how stack is accessed in 8051 Microcontrollers.

2C. Consider an array of 15 numbers stored in the internal memory from 30h onwards. Write ALP to pick up all the numbers greater than 0Ch and store them in memory location starting from 50h. Numbers less than 0Ch should be stored from 60h onwards.

(2+3+5)

3A. Explain how baud rate for serial communication can be doubled in 8051.

3B. What do you mean by interrupts in 8051? Compare interrupts and polling.

3C. Explain the format of TMOD register. Write an 8051 program to transmit the message “YES” and “NO” continuously at 9600 baud from serial port to PC using mode 2.

(2+3+5)

4A. Highlight any four features of ARM processors.

4B. What are the different modes of addressing included in register indirect addressing in ARM processors. Explain each with an example.

4C. Explain the ARM programmer’s model with description of different registers in it.

(2+3+5)

5A. What is the importance of prescale register in LPC2148?

5B. What are the different types of PWM outputs in LPC2148? Explain how match registers are used to generate these PWM outputs.

5C Explain how the PINSEL registers are used to select GPIO functions. Develop the code for LPC2148 to generate a square waveform at P0.4 - P0.7, with 75% duty cycle.

(2+3+5)

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