IN504M - Microcontroller & Interfacing

P. Pages : 2

Time : Three Hours

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Max. Marks : 80

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Notes : 1. All questions carry marks as indicated.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.

1. a) Describe the internal architecture of the 8051 microcontroller with a block schematic diagram. **8**

b) Enlist the various flags in the PSW register. Discuss the functions of each flag. **8**

OR

2. a) Explain the structure of internal RAM of 8051. **8**

b) Explain the difference between MOV, MOVX and MOVC instruction with examples. **8**

3. a) Write a program to divide the contents of an A with the contents of B register and store the remainder in 60H and quotient in 61H. **8**

b) Write a program to add the values of locations 50H and 51H and store the result in locations 52H and 53H. Set PC as 0000H using assembler directive ORG and end the program with assembler directive END. **8**

OR

4. a) Describe the functions of integrated development environment. **8**

b) Write a short note on 'software development tools'. **8**

5. a) Explain the sequence of operation when any interrupt occurs. **8**

b) Describe the working of timers in 8051 with count calculations. **8**

OR

6. a) Interface the 8255 PPI with 8051 microcontroller such that the control word register is selected for address 1003H. Find the address of port A, port B and port C. **8**

b) Enlist the interrupts associated with microcontroller 8051 with their vectored addresses and also explain IE and IP registers with their respective 8 bit pattern. **8**

7. a) Interface 8051 microcontroller with DAC and write a program to display a triangular waveform. **8**

	b)	Interface 8051 microcontroller with Analog to Digital Converter 0809. Write a program to read ten samples from channel no. 3 of ADC 0809 and store the received data into RAM locations starting from 30H.	**8**

<div align="center">**OR**</div>

8.	a)	Write a program to toggle the bits of port 1 with a delay of 10 ms.	**8**
	b)	Interface LCD with 8051 microcontroller and write a program to display 'HELLO WORLD'.	**8**
9.	a)	Draw and explain the detailed architecture of Arduino and enlist some real time examples of Arduino.	**8**
	b)	Draw the detailed interface of Arduino uno with IR sensor.	**8**

<div align="center">**OR**</div>

10.	a)	Draw the detailed interface of Arduino uno with LCD 16x2.	**8**
	b)	Draw the detailed interface of Arduino uno with seven segment display.	**8**

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