



- 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) Why all four register banks of 8051 microcontroller is having identical names as R0-R7. **8**

**OR**

- 2.** a) Explain why data pointer (DPTR) is 16 bit wide and the stack pointer is 8 bit wide in 8051? **8**

- b) What are the different addressing modes supported by the 8051? Explain with examples. **8**

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

- b) Write 8051 instructions to set 4 LSBs of contents of 20H and store the result into 30H. **8**

**OR**

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

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

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

- b) How does the 8051 determine which interrupt to service when there are several pending interrupts? **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) Write a short note on 'Software delay' and 'Hardware delay'. **8**

- 7.** a) Interface LCD with 8051 microcontroller and write a program to display 'HELLO WORLD'. **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**

**OR**

- 8.** a) Write a program to toggle the bits of port 1 with a delay of 10 ms. **8**
- b) Draw and explain the structure of Port 0 and Port 1. **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**

**OR**

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

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