



- 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 RO-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 an 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

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| 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

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| 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 |
