



(03 Hours)

(80 Marks)

N.B:1. Question No. 1 is compulsory.

2. Attempt **any Three** from remaining questions.
3. Assume suitable data wherever necessary.
4. Figure to right indicates full marks.

1. Attempt **any five** questions-

- a) Explain Von Neuman and Harvard architecture.
- b) Give comparisons between 8051 microcontroller families.
- c) Explain bit addressable memory of 8051.
- d) Explain in brief the simulator.
- e) Explain in short SPI.
- f) Interface EEPROM to 8051 using I²C protocol and write a program to read data from memory.

2. a) Explain the Port structures of 8051 microcontroller. 10
- b) Write a program to create a square wave of 50% duty cycle on P1.5 bit of 8051 Microcontroller. Timer0 is used to generate the time delay. Analyze the program. 10

3. a) Draw and explain addressing modes of 8051 with instruction example. 10
- b) Draw and explain the interfacing of Analog to Digital Conversion (ADC) with 8051 and write a program code to show this conversion. 10

4. a) Explain the function of following registers are used in 8051 microcontroller- 10
(i) PSW, (ii) DPTR, (iii) PC and (iv) SP.
- b) Explain the operation of Timer2 in 8051. 10

5. a) Draw and explain complete interfacing diagram of Data Acquisition System with 8051 microcontroller. 10
- b) In a semester, a student has to take six courses. The marks of the student (out of 25) are stored in RAM locations 47H onwards. Write a program to find the average marks and output it on port1 using 8051 microcontroller. 10

FW-Con. 10271-16.

TURN OVER

6. Attempt any two-

20

- a) Interface 7-segment display with 8051 and write a program to display 0-9 counter with a predetermined delay.
- b) Write a program to transfer a letter 'Y' serially at 9600 baud continuously, and also to send a letter 'N' through port 0, which is connected to a display device.
- c) Draw and explain block diagram of 8051 microcontroller. State technical features of 8051 microcontroller.