DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2018

MICROCONTROLLER AND INTERFACING

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. What is stack ?

2. List the two possibilities of reading a port of 8051.

3. Name the register that provides control and status information about counters.

4. Define the resolution of an 8 bit ADC.

5. What is in stack pointer at power up ?   (5 × 2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Draw the format of Program Status Word Register of 8051.

2. Write a program to transfer 10 bytes of data starting at RAM locations 40H to RAM location starting at 60 H.

3. Explain Rotate instructions in 8051.

4. Explain TMOD register.

5. Explain Mode 0 Operation of Timer 0 of 8051.

6. Write the steps to get data from analog input of ADC into the microcontroller.

7. Draw the interfacing diagram of Keyboard with 8051.   (5 × 6 = 30)

2

Marks

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks)

UNIT — I

III   (a) Draw the block diagram of 8051 and explain.   12

      (b) How does the 8031 differ from the 8051.   3

OR

IV   (a) Enumerate any six difference between microcontroller and microprocessor.   12

      (b) Draw the structure of port-1.   3

UNIT — II

V   (a) Explain the various addressing modes of 8051.   10

      (b) List any five conditional jump instructions.   5

OR

VI   (a) Differentiate between LJMP and SJMP Instructions in 8051.   5

      (b) Explain briefly the interrupts in 8051 and indicate their vector addresses.   10

UNIT — III

VII   (a) List the steps to program the 8051 to transfer data serially.   10

      (b) How to generate time delay using timer 1 in mode 2 operation ?   5

OR

VIII   (a) Explain PCON register of 8051.   10

      (b) Write a program to transfer letter "P" serially at 4800 baud rate continuously.   5

UNIT — IV

IX   (a) With diagram and a sample program explain interfacing of DAC with 8051.   10

      (b) What is key debouncing ?   5

OR

X   (a) Sketch a microcontroller (8051) based temperature control system and explain its working.   12

      (b) What is conversion time of an ADC ?   3