TED (15/19) 4043

(Revision-2015/19)

A23 -02684

Reg.No.............................

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## DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, APRIL- 2023

## MICROCONTROLLER AND INTERFACING

[Maximum marks: 100]                                                                              (Time: 3 Hours)

### PART – A

### Maximum marks : 10

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

1. List any four features of  8051 micro controller.

2. Write the instructions to configure port 1 as input and port 2 as output.

3. Write the use of  IP register.

4. Compare timer and counter operations.

5. Write the need of interfacing IC circuit.                                                  (5 x 2 = 10)

### PART – B

### Maximum marks : 30

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

1. Compare microprocessors and micro controllers.

2. Explain data memory organization in 8051 with a diagram.

3. Explain different interrupt types in 8051.

4. Write an assembly  language program to divide two 8 bits numbers.

5. Draw the format of  TMOD register and write the instruction line to configure
   timer 0 as counter and timer 1 as timer in mode 2.

6. Draw the format of  SCON special function register and write the function
   of  each bit.

7. Draw and explain the interfacing  of  ADC with 8051.                          (5 x 6 = 30)

### PART – C

### Maximum marks : 60

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

### UNIT –I

III. (a) Explain the internal architecture of  8051 with a block diagram?                (8)

(b) Draw the pin diagram of 8051 and write the function of RXD and TXD pins. (7)

**OR**

IV.(a) Explain program memory organization in 8051 with a figure. (6)

  (b) Draw port 1 architecture of 8051 and write its functioning. (9)


**UNIT-II**

V.(a) Explain different addressing modes of 8051. (10)

  (b) Write an assembly language program for switching on and off an led connected at

    P1.5 using INTO external interrupt. (5)

**OR**

VI. (a) Explain different instruction set in 8051. (9)

  (b) Draw the format of IE special function register and write the function of each bit. (6)


**UNIT-III**

VII. (a) Explain timer/counter operation in 8051 with a diagram. (8)

  (b) Draw the format of PCON register and explain the function of each bit. (7)

**OR**

VIII.(a) Explain about serial transmission and reception in 8051 using necessary diagram. (8)

  (b) Write an ALP to generate square wave at P1.5 with delay program using

    timer0 interrupt. (7)


**UNIT-IV**

IX. (a) Explain interfacing of LCD to 8051 and explain about it. (7)

  (b) Explain the interfacing of temperature control system with 8051 with a diagram. (8)

**OR**

X. (a) Draw the interfacing of stepper motor with 8051 and write an ALP to run the motor in

    clockwise direction. (8)

  (b) With a block diagram explain the interfacing of water level indicator with 8051. (7)


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