

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/  
COMMERCIAL PRACTICE, APRIL - 2024**

**MICROCONTROLLER AND PLC**

[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. Name any two 16 bit registers in 8051 microcontroller.
2. Define asynchronous serial communication.
3. Write the function of Program Counter.
4. List any 2 features of PIC18 microcontroller.
5. Write any two applications of PLC.

(5 x 2 = 10)

**PART – B**

**Maximum marks: 30**

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

1. Explain PSW in 8051.
2. Describe interrupts in 8051.
3. Explain any four logical operations of 8051 Microcontroller.
4. Explain the difference between jump and call instruction in 8051.
5. Write down four important steps to program timer I in mode 1.
6. Draw the interfacing circuit of a stepper motor with 8051 MC.
7. Draw the block diagram of PLC.

(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) Describe internal memory of 8051. (8)
- (b) Sketch the 8051 DIP chip and indicate pin functions. (7)

**OR**

- IV.** (a) Discuss the structure of IP and IE register. (8)  
(b) Explain the alternate functions of PORT 3 pins in 8051. (7)

**UNIT - II**

- V.** (a) Explain addressing modes of 8051. (7)  
(b) Write an ALP to move 10 bytes of data from data RAM locations 45H to 54H and transfer them to location 70H to 79H. (8)

**OR**

- VI.** (a) Write an Assembly Language Program (ALP) to add two 8 bit numbers. (7)  
(b) Explain PUSH and POP instructions in 8051. (8)

**UNIT - III**

- VII.** (a) Construct the block diagram of 8255 Program peripheral interface. (8)  
(b) Draw and explain the interfacing of relay with 8051. (7)

**OR**

- VIII.** (a) List any 7 features of PIC microcontroller. (7)  
(b) Explain different modes of operation of 8255. (8)

**UNIT – IV**

- IX.** (a) Explain different types of PLC programming languages. (8)  
(b) Discuss the operation of PLC. (7)

**OR**

- X.** (a) Draw the ladder diagram of star delta starter. (7)  
(b) Compare PLC and relay panel. (8)

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