

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

**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 the ports of 8051.
2. Which are the two 16-bit registers of 8051?
3. To which addressing mode does the instruction MOV A,@R0 belong?
4. State the timers available in 8051.
5. What is a transducer?

(5 x 2 = 10)

**PART – B**

**Maximum marks: 30**

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

1. List the features of 8051 microcontroller.
2. Discuss any six Arithmetic instructions of 8051 microcontroller.
3. Explain PCON register.
4. Draw the interfacing diagram of DC motor with 8051 microcontroller.
5. Write the steps to program timer 1 in mode 1 operation.
6. Mention the different types of interrupts available in 8051.
7. Describe the program memory organization of 8051 microcontroller.

(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) Draw and explain the pin diagram of 8051 microcontroller. (9)
- (b) Describe the data memory organization of 8051 microcontroller. (6)

**OR**

- IV.** (a) Draw and explain the block diagram of 8051 microcontroller. (9)  
(b) List any six differences between a microcontroller and a microprocessor. (6)

**UNIT - II**

- V.** (a) Illustrate IE and IP register. (12)  
(b) What does the instruction DIV AB do? (3)

**OR**

- VI.** (a) Describe the addressing modes of 8051. (10)  
(b) Explain the steps for handling an interrupt. (5)

**UNIT - III**

- VII.** (a) Write a program to transmit "G" serially at 9600 baudrate continuously. (5)  
(b) Discuss the SCON and TCON registers of 8051. (10)

**OR**

- VIII.** (a) Describe the various timer modes of 8051 microcontroller. (10)  
(b) Discuss the TMOD register of 8051. (5)

**UNIT – IV**

- IX.** (a) Discuss the interfacing of stepper motor with 8051 with the help of a neat diagram and program. (10)  
(b) List the steps for obtaining the output from an ADC. (5)

**OR**

- X.** With the help of a diagram and program, explain the 4x4 keypad interfacing with 8051 microcontroller. (15)

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