

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2025**

MICROCONTROLLER PROGRAMMING AND APPLICATIONS

[Maximum Marks: 75]

[Time: 3 Hours]

PART-A

I. Answer 'all' the following questions in one word or one sentence. Each question carries 'one' mark.

(9 x 1 = 9 Marks)

		Module Outcome	Cognitive level
1.	The number of I/O ports in 8051 is.....	M1.01	R
2.	PSEN stands for.....	M1.01	R
3.	The counter/timer operation is selected by.....bit in TCON register.	M2.01	R
4.	Which register is responsible for enabling and disabling the interrupt?	M2.02	R
5.	MOVA, #34h is an example for.....addressing mode.	M3.01	R
6.	State the function of instruction RLA.	M3.02	R
7.	State whether the following statement is true or false. "A PUSH operation will cause the stack pointer to decrement its value."	M3.02	U
8.	A 16x2 LCD uses.....number of data pins.	M4.01	R
9.	List the classification of stepper motor.	M4.07	R

PART-B

II. Answer any 'eight' questions from the following. Each question carries 'three' marks.

(8 x 3 = 24 Marks)

		Module Outcome	Cognitive level
1.	List any three features of 8051.	M1.01	U
2.	Explain Stack pointer.	M1.04	U
3.	Explain SCON register.	M1.04	U
4.	Explain Mode 3 operation of Timer.	M2.01	U
5.	Explain Machine cycle in 8051.	M2.01	U
6.	Comment on the priority of Interrupts.	M2.02	U
7.	Differentiate MOV and MOVX instruction.	M3.02	U
8.	Differentiate RRA and RRC instructions.	M3.02	U
9.	Draw the interfacing diagram of ADC with 8051.	M4.03	U
10.	Draw the interfacing diagram of 16x2 LCD with 8051.	M4.01	U

PART-C

Answer 'all' questions from the following. Each question carries 'seven' marks.

(6 x 7 = 42 Marks)

		Module Outcome	Cognitive level
III.	Explain the Internal RAM organization of 8051. OR	M1.03	U
IV.	Draw and explain the pin details of 8051.	M1.01	U
V.	Explain the different types of Interrupts in 8051. OR	M2.02	U
VI.	Explain TCON and TMOD registers.	M2.01	U
VII.	Explain the data transfer instructions in 8051. OR	M3.02	U
VIII.	Write an assembly language program to convert HEXA to ASCII.	M3.03	A
IX.	Explain the addressing modes of 8051. OR	M3.01	U
X.	Write an assembly language program to sort an array in descending order.	M3.03	A
XI.	With the help of diagram, explain the interfacing of 4x4 keyboard with 8051. OR	M4.02	U
XII.	With the help of diagram, explain the interfacing of DAC with 8051.	M4.03	U
XIII.	Explain the interfacing of temperature sensor LM35 with 8051 with neat sketches. OR	M4.04	U
XIV.	Explain the interfacing of Opto isolator with 8051 with neat sketches.	M4.06	U
