

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/  
COMMERCIAL PRACTICE, APRIL - 2026**

**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 1 mark**

**(9 x 1 = 9 Marks)**

		Module outcome	Cognitive level
1	8051 has ..... bytes of working registers in its internal RAM.	M1.01	R
2	ALE stands for .....	M1.04	R
3	List the four modes of operation of Timer.	M2.01	R
4	Out of the five interrupts, the one with highest priority is.....	M2.02	R
5	Write any four addressing modes used to access data in 8051.	M3.01	R
6	State the function of instruction RR A.	M3.02	R
7	Write the syntax of instruction CJNE.	M3.02	R
8	List the three control lines used for LCD interfacing.	M4.01	R
9	Define step angle in stepper motor.	M4.07	R

**PART B**

**II. Answer any eight questions from the following. Each question carries 3 marks.**

**(8 x 3 = 24 Marks)**

		Module outcome	Cognitive level
1	Explain the dual function of PORT 3.	M1.01	U
2	Explain Program counter.	M1.04	U
3	Explain Program Status Word register.	M1.04	U
4	Explain Counter mode in Timers.	M2.01	U
5	Explain Interrupt service routine.	M2.02	U
6	Explain the operation of stack.	M2.03	U
7	Explain PUSH and POP instruction.	M3.02	U
8	Differentiate XCH and XCHD instructions.	M3.02	U
9	Draw the interfacing diagram of DAC with 8051.	M4.03	U
10	Draw the interfacing diagram of Opto isolator with 8051.	M4.06	U

**PART C**

**Answer all questions. Each question carries seven marks**

**(6 x 7 = 42 Marks)**

		Module outcome	Cognitive level
III	Draw and explain the pin details of 8051. <b>OR</b>	M1.01	U
IV	Explain the architecture of 8051 with the help of a block diagram.	M1.02	U
V	Explain the different timer modes of operation of 8051. <b>OR</b>	M2.01	U
VI	Describe the serial data communication in 8051.	M2.04	U
VII	Explain the addressing modes of 8051. <b>OR</b>	M3.01	U
VIII	Write an assembly language program to find the largest number in an array.	M3.03	A
IX	Briefly explain the arithmetic and logical instructions in 8051. <b>OR</b>	M3.02	U
X	Write an assembly language program to sort an array in ascending order.	M3.03	A
XI	With the help of diagram, explain the interfacing of 16x2 LCD with 8051. <b>OR</b>	M4.01	U
XII	With the help of diagram, explain the interfacing of ADC with 8051.	M4.03	U
XIII	Explain the interfacing of DC motor with 8051 with neat sketches. <b>OR</b>	M4.07	U
XIV	Explain the interfacing of stepper motor with 8051 with neat sketches.	M4.07	U

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