TED (21) 4082
(Revision-2021)

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

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	Write the function of RST pin of 8051	M1.01	U
2	What is the size of internal RAM of 8051?	M1.03	R
3	List the external hardware interrupts of 8051.	M2.02	R
4	What is the use of stack in 8051?	M2.03	U
5	Define addressing mode.	M3.01	U
6	The instruction ADD A, R7 is an example of which addressing mode.	M3.01	U
7	Write an example of a data transfer instruction.	M3.02	U
8	Name an ADC chip for interfacing with 8051.	M4.03	R
9	How many data lines are there in a 16 x 2 alphanumeric LCD?	M4.01	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	Draw the PSW of 8051 and list its bits.	M1.04	U
2	Write the dual functions of pins: ALE/$\overline{PROG}$ and $\overline{EA}$/Vpp	M1.01	U
3	Draw the TCON register and list its bits.	M1.01	U
4	Describe the idle mode in 8051.	M2.05	U
5	Define interrupt and list the interrupts from higher to lower priority in 8051.	M2.02	U
6	With examples, describe immediate and direct addressing modes of 8051.	M3.01	U
7	With examples, describe the following instructions: (i) CPLA (ii) SWAPA (iii) CLRA	M3.02	U
8	Write 8051 instructions to copy the value 55H to accumulator and copy the data in accumulator to the location pointed by R0.	M3.02	A
9	Write any three LCD commands with its corresponding Hex Code	M4.01	U
10	Draw the interfacing diagram of ADC with 8051.	M4.03	U

PART C

Answer all questions. Each question carries seven marks

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	List all the pins of 8051.	M1.01	U
	OR		
IV	Describe the internal RAM organization of 8051	M1.03	U
V	With a diagram, describe the block diagram of microcontroller 8051	M1.02	U
	OR		
VI	Describe about Stack pointer and Program Counter of 8051.	M1.04	U
VII	Draw the TMOD register and describe the mode 0 and mode 1 operation of timer.	M2.01`	U
	OR		
VIII	Write the steps in programming 8051 to receive data serially.	M2.04	U
IX	Write an ALP to find square of a number present in 9000H and store the square in 9001H and 9002H.	M3.03	A
	OR		
X	Write an ALP to divide two numbers present in 4000H and 4001H and store the quotient and remainder in 4002H and 4003H respectively.	M3.03	A
XI	With examples, explain the rotate instructions of 8051.	M3.02	U
	OR		
XII	With examples, explain ANL, ORL and XRL logic instructions of 8051.	M3.02	U
XIII	With necessary diagram, explain the interfacing of LM35 with 8051	M4.04	U
	OR		
XIV	With necessary diagram, explain the interfacing of DC Motor with 8051.	M4.07	U

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