

**GURU NANAK INSTITUTE OF TECHNOLOGY**  
**An Autonomous Institute under MAKAUT**  
**2020-2021**  
**MICROPROCESSOR AND MICROCONTROLLER**  
**EC502**

**TIME ALLOTTED: 3 Hours**

**FULL MARKS: 70**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable*

**GROUP – A**

**(Multiple Choice Type Questions)**

Answer any **ten** from the following, choosing the correct alternative of each question: **10×1=10**

		<b>Marks</b>	<b>CO No</b>
1.	(i) In 8085, 16-bit address bus, which can address upto? (a) 16KB (b) 32KB (c) 64KB (d) 128KB	1	CO1
	(ii) No. of machine cycles in CALL are (a) 2 (b) 3 (c) 4 (d) 5	1	CO2
	(iii) What is SIM? (a) Select interrupt mask. (b) Sorting interrupt mask. (c) Set interrupt mask. (d) None of these.	1	CO2
	(iv) The relation among Instruction cycle (IC), Fetch cycle (FC) and Execution cycle (EC) is (a) IC=FC-EC (b) IC=FC+EC (c) IC=FC+2EC (d) EC=IC+FC	1	CO1
	(v) What will be the contents of DE & HL register pairs respectively after executing following instructions: LXI H, 2500H LXI D, 0200H DAD D XCHG (a) 0200H, 2500H (b) 0200H, 2700H (c) 2500H, 0200H (d) 2700H, 0200H	1	CO2
	(vi) 8051 Microcontroller family has a RAM of (a) 64 bytes (b) 128 bytes (c) 64 KB (d) 1 MB	1	CO5
	(vii) Which of the following 8085 instruction will require	1	CO1

	maximum T-states for execution?		
	(a) XRI byte		
	(b) STA address		
	(c) JMP address		
	(d) CALL address		
(viii)	Which of the following sequence of operations conforms to an instruction cycle?	1	CO2
	(a) Decode, Fetch, Execute		
	(b) Fetch, Decode, Execute		
	(c) Execute, Fetch, Decode		
	(d) Fetch, Execute, Decode		
(ix)	Which stack is used in 8085 microprocessor?	1	CO1
	(a) FIFO		
	(b) LIFO		
	(c) LILO		
	(d) LILO		
(x)	Addressing mode of RAL is	1	CO2
	(a) Immediate addressing mode		
	(b) Register addressing mode		
	(c) Implicit addressing mode		
	(d) None of the above		
(xi)	ROM has the capability to perform _____	1	CO1
	(a) Read operation only		
	(b) Write operation only		
	(c) Both read and write operation		
	(d) Erase operation		
(xii)	How many 16-bit registers are there in 8051 microcontroller?	1	CO5
	(a) 1		
	(b) 2		
	(c) 3		
	(d) None		

**GROUP – B**

**(Short Answer Type Questions)**

Answer any *three* from the following: **3×5=15**

		<b>Marks</b>	<b>CO No</b>
2.	Draw the architecture of 8085 microprocessor.	5	CO1
3.	Draw and explain how to interface a 2kB memory chip with 8085 $\mu$ P.	5	CO1
4.	(a) Write down the differences between 8085 and 8086 $\mu$ Ps.	2	CO3
	(b) Explain the process of instruction pipelining in 8086 $\mu$ P.	3	CO4
5.	Write a program for 8085 microprocessor to show square of a number at the output.	5	CO2
6.	(a) Differentiate between SRAM and DRAM.	2	CO5
	(b) Classify and discuss different types of ROM.	3	CO1

**GROUP – C**

**(Long Answer Type Questions)**

Answer any *three* from the following: **3×15=45**

		<b>Marks</b>	<b>CO No</b>
7.	(a) Differentiate between high-level and low-level language with examples. What are the functions of compiler and interpreter?	5	CO1
	(b) Write a program to clear the initial flags. Load data byte FF <sub>H</sub> into the accumulator and add 01 <sub>H</sub> to the byte FF <sub>H</sub> by using the instruction ADI. Mask all the flags except the CY flag and display the CY flag at PORT0. Repeat the program by replacing the ADI instruction with the INR instruction and the byte 01 <sub>H</sub> with the NOP instruction. Display the flag at PORT1. Explain the results.	5	CO2
	(c) Draw and explain the elements of a typical timing diagram for 8085 microprocessor.	5	CO1
8.	(a) Discuss about the memory segmentation in 8086 microprocessor along with its advantages.	5	CO3
	(b) What are the significance of segment address and offset address in 8086 microprocessor? If the CS register contains ABCD <sub>H</sub> and the IP register contains 0046 <sub>H</sub> . Find the 20-bit physical address.	5	CO4
	(c) Draw and describe 8086 microprocessor architecture.	5	CO3
9.	(a) Differentiate between Hardware and Software interrupts. Discuss about maskable and Non-maskable interrupts of 8085 μP with examples.	5	CO1
	(b) Draw and describe 8085 microprocessor Pin diagram.	5	CO1
	(c) What is the role of counter in the operation of microprocessor? Calculate the total number of T-states and overall time delay for the following program: MVI B, FFH LOOP: DCR B JNZ LOOP	5	CO2
10.	(a) Differentiate between Microprocessor and Microcontroller.	5	CO5
	(b) Describe the Pin diagram of 8051 Microcontroller.	5	CO5
	(c) What is the operation carried out when 8051 executes the instructions i) MOVC A, @A + DPTR ii) MOV R1, #20H	5	CO4
11.	Write short note on <i>any three</i> :		
	(a) I/O mapping	5	CO3
	(b) Storage memory	5	CO1
	(c) Addressing modes in 8085 μP	5	CO1
	(d) Flags in 8086 microprocessor	5	CO4
	(e) Role of support IC chips	5	CO7