

**GURU NANAK INSTITUTE OF TECHNOLOGY**  
**An Autonomous Institute under MAKAUT**  
**2020-2021**  
**MICROPROCESSOR AND MICROCONTROLLER(Backlog)**  
**EE504**

**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) The function of ADSTB in 8257 controller is same as-	1	CO1
a) ALU		
b) ALE		
c) AEN		
d) none of the these		
(ii) When the instruction SHLD is executed, number of T- states required are-	1	CO1
a) 10		
b) 14		
c) 13		
d) 16		
(iii) If the crystal with 8085 is 2 MHz, the time required to execute an instruction of 20 T- states is,	1	CO1
a) 20μs		
b) 10μs		
c) 40μs		
d) 5μs		
(iv) Which one of the following instructions of 8085 microprocessor is used to convert the hexadecimal no into binary in accumulator	1	CO4
a) EI		
b) CMA		
c) HLT		
d) DAA		
(v) 8051rocontroller has how many 16 bit registers?	1	CO3
a) 3		
b) 1		
c) 0		
d) 2		
(vi) For 8255 PPI, the bi-directional mode of operation is supported in-	1	CO5
a) Mode 1		
b) Mode 2		
c) Mode 0		
d) either (a) or (b)		

**B. TECH/EE/ODD/SEM-V/EE504/R16/2020-2021**

- |        |  |   |        |
|--------|--|---|--------|
| (vii)  | RRC instruction in 8085 microprocessor rotates the accumulator content<br>a) through carry flag<br>b) without carry flag<br>c) through auxiliary carry flag<br>d) without auxiliary carry flag | 1 | CO4    |
| (viii) | Which one is non maskable interrupt?<br>a) INTR<br>b) TRAP<br>c) RST5.5<br>d) RST7.5   | 1 | CO1    |
| (ix)   | The address bus of 8086 is<br>a) 8 bit<br>b) 16 bit<br>c) 32 bit<br>d) 20 bit processor  | 1 | CO2CO2 |
| (x)    | If MN/MX is high, the 8086 operates in<br>a) minimum mode<br>b) maximum mode<br>c) both (A) and (B)<br>d) medium   | 1 |        |
| (xi)   | Through which of the following pins can the 8085A microprocessor communicate with serial devices?<br>a) 2 & 3<br>b) 4 & 5<br>c) 6 & 7<br>d) 8 & 9  | 1 | CO1    |
| (xii)  | A single instruction to clear the lower four bits of the accumulator in 8085 microprocessor<br>a) XRI 0FH<br>b) ANI FOH<br>c) ANI OFH<br>d) XRI F0H  | 1 | CO4    |

**GROUP – B**

**(Short Answer Type Questions)**

(Answer any *three* of the following)

**3 × 5 = 15**

- |    |  | <b>Marks</b> | <b>CO No</b> |
|----|--|--------------|--------------|
| 2. | (a) Explain with example, the difference between memory mapped I/O & peripheral mapped I/O.                              | 4            | CO1          |
|    | (b) What is Stack?   | 1            | CO1          |
| 3. | (a) Write an assembly language program to exchange the contents of DE & HL register pairs using PUSH & POP instructions. | 3            | CO4          |
|    | (b) Define Instruction cycle and Machine cycle.  | 2            | CO1          |

**B. TECH/EE/ODD/SEM-V/EE504/R16/2020-2021**

4.	(a)	Briefly describe about different flags in 8086 microprocessor.	2	CO2
	(b)	How 'pipelining' is achieved in 8086 microprocessor?	2	CO2
	(c)	How many address lines are there in 8086 and how many of them are multiplexed?	1	CO2
5.	(a)	Explain the following instructions with example: i. LDA 8050 <sub>H</sub> ii. RRC	4	CO4
	(b)	What do you mean by compiler?	1	CO1
6.	(a)	What is Program Status Word (PSW) in 8051? Explain bit-wise.	5	CO3

**GROUP – C**

**(Long Answer Type Questions)**

Answer any *three* of the following)

**3 × 15 = 45**

			<b>Marks</b>	<b>CO No</b>
7.	(a)	What is tri state? Why is it important?	3	CO1
	(b)	Can an Input Port and an Output Port have the same address? Justify.	4	CO4
	(c)	What is the function of a Sub- routine? How a Sub-routine handled in microprocessor?	3	CO1
	(d)	The following block of data is stored in the memory locations from XX55H to XX5AH. Write a program to transfer the data to the locations XX80H to XX85H in the reverse order. Data(H) : 37, A2, 14, 78, 97, 1B.	5	CO1
8.	(a)	Explain the process of generation of physical address in 8086.	5	CO4
	(b)	Draw the flag register of 8086 and explain the functions of each flag.	5	CO2
	(c)	What are SFRs in 8051?	5	CO3
9.	(a)	What is Interrupt?	1	CO1
	(b)	Distinguish between S/W interrupts and H/W interrupts in Intel 8085?	2	CO1
	(c)	Draw the Timing diagram of OUT instruction of Intel 8085 microprocessor.	6	CO4
	(d)	Why are the Program Counter and Stack Pointer 16-bit?	2	CO1
	(e)	What is Zero Power Ram?	2	CO1

**B. TECH/EE/ODD/SEM-V/EE504/R16/2020-2021**

- (f) Specify the register contents and the flag status as the following instructions are executed. Specify also the data at PORT 0. 2 CO4  
Initial contents
- |               |            |
|---------------|------------|
| MVI A, (F2 H) | A = (00) H |
| MVI B, (7A H) | B = (FF) H |
| ADD B         | S = 0      |
| OUT PORT 0    | Z = 1      |
| HLT           | CY = 0     |
- 10 (a) Write down the 8255 Control Word Format for I/O Mode. 3 CO5  
(b) Write the BSR Control Aord to set bit PC<sub>4</sub> IN 8255A. 3 CO5  
(c) Explain how bidirectional communication can be done between two computer using 8255A. 4 CO5  
(d) What is the purpose of DMA Controller? 3 CO5  
(e) Explain the task of the signals given below: 2 CO5  
i) HOLD  
ii) HLDA
11. Write short notes: (any three) 3x5=15
- |  |   |     |
|--|---|-----|
| (a) Memory segmentation in 8086  | 5 | CO2 |
| (b) 8253 IC  | 5 | CO5 |
| (c) Timers in 8051   | 5 | CO3 |
| (d) PIC microcontroller  | 5 | CO5 |
| (e) Asynchronous and Synchronous data transmission using SID and SOD pins of 8085 microprocessor | 5 | CO1 |