International Islamic University Chittagong

Department of Electrical and Electronic Engineering

B. Sc. Engineering in EEE

Midterm Examination, Spring 2023

Course Code: **EEE 3505** Course Title: **Microprocessor & Interfacing**

Time: 1 hour 30 minutes Full Marks: 30

(i) Answer all the questions. The figures in the right-hand margin indicate full marks.

(ii) Course Outcomes (COs) and Bloom's Levels are mentioned in additional Columns.

Course Outcomes (COs) of the Questions	
CO1	Explain the architecture and operation of microcomputer and microprocessor.
CO2	Learn assembly language programming.
CO3	Design various microprocessor-based systems according to practical applications.

Bloom's Levels of the Questions						
Letter Symbols	**R**	**U**	**Ap**	**An**	**E**	**C**
Meaning	Remember	Understand	Apply	Analyze	Evaluate	Create

1) a)	Draw the block diagram of a 6 KB RAM with interface of 8 bit 8086 microprocessor using linear decoding technique. Also find the addresses memory block.	CO1	Ap	5
1) b)	How many bits are necessary to address 1MB memory? How does the microprocessor use the program counter to execute programs sequentially?	CO1	E	5
2) a)	What are the functions of Execution unit of 8086 micrprocessor? Describe the Queue operation of 8086 Microprocessor.	CO1	R	5
2) b)	**A. Correct** from the following instructions if you find any wrong, (i) MOV DS, AX (ii) MUL AL, 08 (iii) XCHG ES, 1000H (iv) IN BL, DX			
	B. Suppose that DS=1300H, SS=1400H, BP=1500H, SP=1200 BX=0100H, ES=1000; SI=0100H and LIST=0008H. Determine the physical address accessed by each of the following instructions: (i) MOV DL,05[BX][SI] (ii) MOV CL, LIST [SP] (iii) MOV CX, ES:[BP]	CO2	E	5
	OR			
2) a)	What are the general purpose registers in 8086 microprocessor? Describe the four general purpose registers of 8086 Microprocessor.	CO1	R	5
2) b)	**A. Correct** from the following instructions if you find any wrong, (i) INC [BX] (ii) DIV 05H (iii) MOV CS,[1000] (iv) PUSH 08H			
	B. Suppose that DS=1300H, SS=1400H, BP=1500H, SP=1200 BX=0100H, ES=1000; SI=0100H, DI=0200H and START=0006H. Determine the physical address accessed by each of the following instructions: (i)MOV DL,02[SP][DI] (ii) MOV CX, ES:[SP] (iii) MOV [START],CX	CO2	E	5

3)	a)	What is meant by PUSH and POP operation in the stack? Differentiate between instruction MOV and IN operation with proper example.	CO2	An	5
3)	b)	i. Suppose that a 16 bit microprocessor has a 16 bit stack pointer and uses a 16 bit register in order to access the stack from the bottom. Assume that initially the stack pointer and the 16 bit register contain 20C5 and 0120 respectively. After a PUSH operation what are the contents of the stack pointer? What are the contents of 20C6 and 20C7?	CO2	E	5
		ii. If [DF]=0, [DS]=3000H, [SI]=0020H, [ES]=5000H, [DI]=0040H, [30020]=30H, [30021]=05H, [50040]=06H, [50041]=20H. What will happen after **MOVSW**?			
		iii. If DS= 1000H, DI = 1000H; [11000]=02, [11001]=05, [11002]=03, [11003]=01; what will be the value of **BX** after **LDS BX, [DI]**?			