

Patuakhali Science and Technology University
Department of Computer Science and Information Technology
5th Semester (Level-3, Semester-I), Midterm Examination of B.Sc. Engg.(CSE), January-June/2022,
Session: 2019-20
Course Code: CIT-311 Course Title: Microprocessor and Assembly Language
Full Marks: 15 Duration: 50 minutes

[Figures in the right margin indicate full marks]

Answer all the following questions.

1. Write down the steps to execute a machine instruction. Illustrate the Intel 8086 Microprocessors organization. 2 5
2. Define memory segment. Write down the features of 80286 microprocessor. 2 2
3. Write down the difference between physical and logical memory. A memory location has physical address 80FD2h. In what segment does it have offset BFD2h? 2 3
4. Which Intel microprocessor addresses 1T of memory? What is the purpose of the microprocessor in a microprocessor-based computer? 2 2
5. Determine the memory location addressed by the following real mode 80286 register combinations: DS = 1000H and DI = 2000H also draw the diagram of memory access. 2 3



Microprocessor

Patuakhali Science and Technology University

Department of Computer Science and Information Technology

5th Semester (Level-3, Semester-I) Midterm Examination of B.Sc. Engg. (CSE), January-June/2021, Session: 2018-19

Course Code: CIE-311 Course Title: Microprocessor and Assembly Language

Full Marks: 15 Duration: 50 minutes

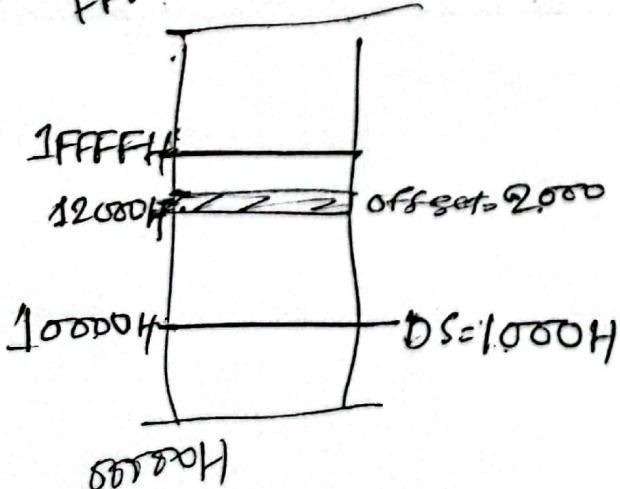
[Figures in the right margin indicate full marks]

Answer all the following questions.

- Answer all the following questions.

 - What is a von Neumann machine? Write down the major difference between Intel 8085 and 8086 microprocessor. (5) 2
 - What is the difference between an intersegment and intrasegment jump? Show which JMP instruction assembles (short, near, or far) if the JMP THERE instruction is stored at memory address 10000H and the address of THERE is: 2
 - i. 10020H
 - ii. 1000H
 - iii. 11000H
 - Convert an 8B91E904CH from machine language to assembly language. If a MOV SI[BX+2] instruction appears in a program, what is its machine language equivalent? (4) 3
 - What will be the CS:IP of physical address BCDEFH where CS=FFF0? How is the local descriptor table addressed in the memory system? (2) 3
 - Which register locates the global descriptor table? Describe the content of the segment register at protected mode memory addressing. (2) 3
 - Explain the instruction with respect to 8086 microprocessor MOV AX, [BX]. (3) 2

Explain the instruction with respect to 8085



86 microprocessor MOV AX, [BX]. (3) 2

Patuakhali Science and Technology University

Department of Computer Science and Information Technology

5th Semester (Level-3, Semester-I), Midterm Examination of B.Sc. Engg.(CSE), January-June/2020, Session: 2017-18
Course Code: CIT-311 Course Title: Microprocessor and Assembly Language
Full Marks: 15 Duration: 50 minutes

[Figures in the right margin indicate full marks]

Answer all the following questions.

1. What is wrong with the **MOV DS,SS** instruction? What do the following MOV instructions accomplish? 5

- i. MOV AX,BX
- ii. MOV BX,AX
- iii. MOV ESP,EBP
- iv. MOV RAX,RCX

(3)

2. What is the difference between an intersegment and intrasegment jump? Show which JMP instruction assembles (short, near, or far) if the JMP THERE instruction is stored at memory address 10000H and the address of THERE is: 5

- i. 10020H
- ii. 11000H
- iii. 0FFE9H
- iv. 30000H

(2)

3. Convert an 8B9E004CH from machine language to assembly language. If a MOV SI,[BX+2] instruction appears in a program, what is its machine language equivalent? 5

(4)

Course Title: Microprocessors and Assembly Language
Credit Hours: 3.00, Course Code: CIT-311, Session: 2013-2014

Marks: 15

Time: 45 Min.

N.B. Answer the following questions. (Split answers are highly disapproved)

1. Is RAM a peripheral? Explain your answer. 2
2. Traditional computer system has 3-category (data, address, control) buses. If a designer tries to design a computer by using more or less than 3-category buses, explain the problems for this case. 3
3. Shortly mention the evolutionary scenario of computing device. Also describe the working procedure of EPROM and EEPROM. 4
4. Why is the protected mode necessary in computer? How does the descriptor table identify itself as global or local? 3
5. Explain the role of segment register. Suppose CS>FFFF and IP>FFFF, calculate the memory address with respect to 8086. 3

Mid Term Exam of Microprocessors and Assembly Language (CIT-311), Session: 2015-2016
Time: 40 Min.

Marks: 15

1. i) Which physical address is represented by: EFFF:1234H ③
ii) What will be the CS:IP of physical address BCDEFh where CS=FFF0? ②
2. Describe the content of segment register at protected mode memory addressing. Distinguish between real and protected mode memory addressing. ②
3. Define program invisible register. Give the flag status of flag register after performing the following operation. ②

ABCD

xA

②

4. Mention address lines of 8086. How does queue of 8086 speed up the processing? ②

(Figure in the right margin indicates full marks. Split answering of any question is not recommended.)
 Answer any 5 of the following questions. Answer must be brief, relevant and neat.

- 1 a) i. How can you determine the microprocessor as 8-bit or 16-bit or 32 bit or 64 bit? 2
 ii. Distinguish between 8085 and 8086. 2
- b) i. Mention the role of segment register during protected mode operation. 2
 ii. Distinguish microcontroller and microprocessor. 2.5
- c) i. Shortly describe 82C55 PPI with its operational modes. 1.5
 ii. Why is memory decoding necessary in computer system? 2
- d) Criticize the statement "More registers integration produce faster CPU". 1.5
- 2 a) i. Compare PROM, EPROM, and EEPROM. 2.5
 ii. Give the evolution of microprocessor from mechanical era to present (with important advancement). 2
- b) i. How does the DMA speed up CPU performance? 2
 ii. Distinguish between SRAM and DRAM. 2
- c) i. Why is stepper motor so called? 1.5
 ii. "All coprocessors are peripherals, but all peripherals are not coprocessors"-Explain this statement. 2.5
- d) "CPU actually works on binary digits"- Explain this statement. 2
- 3 a) i. Suppose you would like to transfer data from your disk drive to a flash drive by using DMA controller. Explain whole procedure in details to complete the activities. 2
 ii. Describe overlapping data movement mechanism of DMA. 2
- b) i. Describe the responsibility of memory management unit in computer system. 3
 ii. Calculate the number of page table entries that are needed for following combinations of virtual address size (n) and page size (P). 1
- | | | |
|----|---------|------|
| n | $P=2^P$ | #PTE |
| 16 | 4K | |
| 64 | 16K | |
- c) i. Define handshaking. 1
 ii. Explain page fault handling mechanism in virtual memory system. 2
- d) "CPU actually works on binary digits"- Explain this statement. 2

- 4 a) Which Intel microprocessor addresses 1T of memory? Draw the block diagram of a computer system. (A) core i3 [3]
- b) What is a displacement? How does it determine the memory address in a MOV DS:[200011], AL. (3) [2]
- c) Explain the difference between the MOV BX, DATA instruction and the MOV BX, OFFSET DATA instruction. (3) [2]
- d) What, if anything, is wrong with a MOV AL,[BX][SI] instruction? Suppose that DS = 120011, BX = 0100H, and SI = 025011. Determine the address accessed by each of the following instructions, assuming real mode operation: (3) [4]

- i. MOV [100H],DL
- ii. MOV [SI+100H],EAX
- iii. MOV DL,[BX+100H]

c) How many bytes are stored on the stack by a PUSH AX? Show which JMP instruction assembles (short, near, or far) if the JMP THERE instruction is stored at memory address 10000H and the address of THERE is: 2 [3]

- i. 10020H
- ii. 11000H
- iii. 0FFEHH
- iv. 30000H

$$\text{address} = DS \times 10 + 10$$

5 a) Write down the formats of the 8086-Core2 instructions. (a) The 16-bit form and (b) the 32-bit form. 4 [2]

b) The effect of the PUSH AX instruction on ESP and stack memory locations 37FFH and 37FEH. [Assume SS=0300, ESP=07FEEH] 4 [2]

c) Draw a diagram and show the LDS BX,[DI] instruction loads register BX from addresses 11000H and 11001H and register DS from locations 11002H and 11003H. This instruction shows at the point just before DS changes to 3000H and BX changes to 127AH. The initial value of DS=1000 and EDI=1000. 4 [3]

d) Convert machine code 8BEC to equivalent assembly instruction. 4 [4]

e) If the start of a segment is identified with .DATA, what type of memory organization is in effect? What values appear in SP and SS if the stack is addressed at memory location 02200H? 4 [3]

6 a) Define DAA and DAS. Show the process of addition with-carry, how the carry flag (C) links the two 16-bit additions into one 32-bit addition. 5 [3]

b) What is wrong with the ADD RCX, AX instruction? If AX=1001H and DX=20FFH, list the sum and the contents of each flag register bit (C, A, S, Z, and O) after the ADD AX, DX instruction executes. 5 [3]

c) What is the difference between the NOT and the NEG instruction? List the number of data items stored in each of the following memory devices and the number of bits in each datum: 5 [3]

- i. 2K x 4
- ii. 1K x 1
- iii. 4K x 8
- iv. 16K x 1
- v. 64K x 4

d) Which type of JMP instruction (short, near, or far) assembles for the following: 6 [3]

- i. if the distance is 0210H bytes
- ii. if the distance is 0020H bytes
- iii. if the distance is 10000H bytes

e) Contrast minimum and maximum mode 8086/8088 operation. Explain the operation of the pin. X [2]

[Figure in the right margin indicates full marks. Split answering of any question is not recommended.]

Answer any 5 of the following questions. Answer must be brief, relevant and neat.

1. a) Define von neumann machine. Write a short report detailing the features of the Itanium 2 microprocessor. (1) [3]

b) What are program-visible registers? In the real mode, show the starting and ending addresses of each segment located by the following segment register values: (2) [4]

 - 1000H
 - 1234H
 - 2300H

c) Which registers are used as an offset address for the string instruction destination in the microprocessor? Find the memory address of the next instruction executed by the microprocessor, when operated in the real mode, for the following CS:IP combinations: (2) [3]

 - CS = 1000H and IP = 2000H
 - CS = 3456H and IP = ABCDH

d) Protected mode memory addressing allows access to which area of the memory in the 80286 microprocessor? Determine the memory location addressed by the following real mode Core2 register combinations: (2) [4]

 - DS = 2000H and EAX = 00003000H
 - DS = 1A00H and ECX = 00002000H
 - DS = C000H and ESI = 0000A000H

2. a) List the 16-bit registers that are used for register addressing. Explain the difference between the MOV BX, DATA instruction and the MOV BX, OFFSET DATA instruction. (2) [3]

b) What is wrong with a MOV [BX],[DI] instruction? Suppose that DS = 0200H, BX = 0300H, and DI = 400H. Determine the memory address accessed by each of the following instructions, assuming real mode operation: (3) [4]

 - MOV AL,[1234H]
 - MOV EAX,[BX]
 - MOV [DI],AL

c) If a near jump uses a signed 16-bit displacement, how can it jump to any memory location within the current code segment? Suppose that DS = 1300H, SS = 1400H, BP = 1500H, and SI = 6100H. Determine the address accessed by each of the following instructions, assuming real mode operation: (3) [3]

 - MOV BAX,[BP+200H]
 - MOV AL,[BP+SI+200H]

d) Develop a sequence of instructions that exchanges the contents of AX with BX, ECX with EDX, and SI with DI. (3) [4]

3. a) How many bytes are stored on the stack by a PUSH AX? Convert an 8B07H and 8B91664C from machine language to assembly language. (4) [3]

b) If AX = 1001H and DX = 20FFH, list the sum and the contents of each flag register bit (C, A, S, Z, and O) after the ADD AX, DX instruction executes. (5) [4]

c) Contrast the operation of a JMP DI with a JMP [DI]. Explain how the near and far CALL instructions function. (5) [3]

1000

62000
1234
62234

On
D. 61

Page 1 of 2

	100	
2	01	<u>A = B</u>
3	10	<u>B = C</u>
4	2000	<u>C = A</u>
5	3000	

$$\begin{array}{r}
 A-10 \\
 B-14 \\
 \hline
 C-12 \\
 D-13 \\
 \hline
 E-14 \\
 \hline
 F-15
 \end{array}$$

What conditions do the QS1 and QS0 pins indicate about the 8086/8088? List the number of data items stored in each of the following memory devices and the number of bits in each datum: [4]

- i. $2K \times 4$
- ii. $1K \times 1$
- iii. $4K \times 8$
- iv. $16K \times 1$
- v. $64K \times 4$

85

BP

Q1
Q0
C
V

4. a) Which type of JMP instruction (short, near, or far) assembles for the following: [3]

- i. if the distance is 0210H bytes
- ii. if the distance is 0020H bytes
- iii. if the distance is 1000H bytes

6

b) Which conditional jump instructions test both the Z and C flag bits? Explain how the LOOP instruction operates. [4]

6

c) Is it possible to add CX to DS with the ADD instruction? Write an instruction that adds BX to DX, and adds the contents of the carry flag (C) to the result. [3]

5

d) Develop a sequence of instructions that adds the 8-digit BCD number in AX and BX to the 8-digit BCD number in CX and DX. (AX and CX are the most significant registers. The result must be found in CX and DX after the addition.) [4]

05

5. a) Continuous motor is familiar to us, but stepper is a digital motor. Why it is digital? How it can be operated through 82C55 PPI? [3]

3

b) Why is DMA used in computer system? Describe channel priority of DMA. [4]

4

c) Why is coprocessor used in computer systems? What is the difference between coprocessors and peripheral devices? [3]

3

d) Briefly describe 82C55 PPI. How it can be programmed? [4]

4

6. a) What is n-bit processor? Describe the relationship among hardware, software and firmware. [3]

3

b) Briefly describe the virtual memory in the computer system. Determine the number of page table entries that are needed for the following combinations of virtual address size (n) and page size (P). [4]

4

n	P = 2^p	#PTE
16	2K	
32	4K	
64	8K	

000 A¹⁶
001 B¹⁶
010 C¹⁶
011 D¹⁶

A¹⁶ DT
B¹⁶
C¹⁶
D¹⁶

c) Mention the function of 8086 queue. 8086 is a 16 bit microprocessor, but its memory mapping is 20 bits. How it is possible? [3]

3

d) Distinguish between 8085 and 8086. Give the flag status of flag register after performing the following operation. [4]

4

1011	1611	3B	00000	00000
20FF	10A000	00AE	100000	00000
3110	2000	250	200000	00000
2000	13600	14800	100000	20000
10	1560	14800	200000	00000
2	14500	14800	120000	00000
1	0500	14800	100000	20000
0	10000	14800	120000	00000

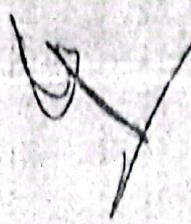
[Figure in the right margin indicates full marks. Split answering of any question is not recommended.]
Answer any 5 of the following questions.

1. a) Explain 16 bit instruction format of 8086. What will be the CS: IP of physical address FBCDEh in 8086? 2+2
- b) For an 80486 descriptor that contains a base address of 0100000Fh, and a limit of 001FFh. What starting and ending locations are addressed by this descriptor considering G=0 and G=1? 3
- c) Describe following instructions with respect to 8086. 4
- i) MOV 43H[SI], BX ①
- ii) MOV CS:[AX], DI ②
- d) "CPU actually works on binary digits". Justify this statement. 3
2. a) Why is memory decoding needed in computer system? Describe 3-state buffer basic input interface. 2+2
- b) Define n -bit processor, 8086 is a 16 bit microprocessor, but its memory mapping is 20 bits. How it is possible? 3
- c) What is descriptor? Describe the access rights byte of descriptor. 2
- d) How does the pointer register work with their corresponding segment registers? 3
3. a) Why is DMA used in computer system? Explain trigger of DMA. 2+2
- b) Describe addressing modes of DSP56300. 3
- c) Give the responsibility coprocessor in computer system? Mention 6 processors with its corresponding coprocessors. 2+2
- d) Explain the priority between a DMA channel and the core. 3
4. a) Distinguish between microcontroller and microprocessor. Give the application of microcontroller. 2+2
- b) Give the features of 8031 microcontroller. Enlist the brands of microcontroller. 2+1
- c) Write short notes with key features of 2+2
- i) Pentium iv
- ii) Core i5
- d) Explain floating gate transistor with respect to EEPROM. 3
5. a) Describe the responsibility of memory management unit in computer system. Determine the number of page table entries that are needed for following combinations of virtual address size (n) and page size (P). 2+2
- | n | P = 2^p | #PTE |
|----|-----------|------|
| 16 | 4K | |
| 64 | 16K | |
- EF205 EF205
- b) What is virtual address? What do you mean by pages in virtual memory system? 1+2
- c) Define handshaking. Distinguish between 8085 and 8086. 2+2
- d) Explain "how does onionskin operating system provide resource protection". 3
6. a) Why is PPI used in computer system? Explain the basic operation of TSR program. 2+2
- b) Compare among mode 0, mode 1 and mode 2 of 82C55PPI. 3
- c) How does the page fault handle in virtual memory system? 4
- d) Describe the role of operating system in virtual memory. 3

TK 20

37/23

CSE = 5th



Patuakhali Science and Technology University

B.Sc. Eng. (CSE) Level-3, Semester-1 Final Examination-2016 (January-June)

Course Code: CIT-311 Course Title: Microprocessors and Assembly Language

Credit Hour: 3.00 Session: 2013-14 Full Marks: 70 Duration: 3 Hours

[Figure in the right margin indicates full marks. Split answering of any question is not recommended.]

Answer any 5 of the following questions. Answer must be brief, relevant and neat.

1. a) Analyze the relationship between microprocessor and microcomputer. 3
b) Define embedded processor. Mention the function of execution unit of a microprocessor 3
c) "All coprocessors are peripherals, but all peripherals are not coprocessors" Explain this statement. 3
d) Which physical address is represented by:
i) FEDC:1234H
ii) FFFF:FFFFH 2
2. a) Why 20 bits address bus in 8086 microprocessor? 2
2. b) Describe the relationship among hardware, software and firmware. 3
2. c) Give the flag status of flag register after performing the following operation:
ABCD
x9A
3. a) There are 4-segment register DS, SS, CS, and ES in 8086. How can the individual register be used in CPU operation. 3
d) Mention the address lines of 80286. Explain the way to achieve multitasking in DOS. 3
e) Distinguish between RAM and cache memory. 2
3. a) Generally number of address pins of a memory device does not match with CPU address pins. How does the mismatch problem overcome in computer system? 3
b) What do you mean by INS and OUT? Explain basic input interface. 3
c) How can we set program in EPROM? Describe 8087 coprocessor. 3
d) Explain the address translation and memory protection mechanism in virtual memory. 3
e) For an 80486 descriptor that contains a base address of 01000000H, a limit of 0FFFFH, and G=0, what starting and ending locations are addressed by this descriptor? 2
4. a) Differentiate among core i3, core i5 and core i7. 3
b) What is handshaking? Distinguish between mode 1 and mode 2 operation of 82C55. 3
c) Explain how 82C55 can be programmed. 3
d) Mention the data transfer types of a DMA controller. How does DMA controller handle unmatched source and destination? 3
e) Distinguish between physical and virtual address. 2

A B C D
X 9 A

A = 10



- ✓ a) Mention the functions of memory management unit. Shortly explain the onion skin CS. 3
- ✓ b) Describe the functions of access rights byte of descriptor table. 3
- ✓ c) Explain the responsibility of segment register in protected mode memory addressing. 2
- ✓ d) Shortly explain 16 bit instruction format of 8086. Describe following instructions with respect to 8086. 6
- i) MOV 43H[SI], BX
 - ii) MOV [AX], DX
 - iii) MOV CS:[AX], DI
- ✓ a) What is virtual memory? Give the capabilities of virtual memory. 3
- ✓ b) Explain the page faults and page hits in virtual memory mechanism. 5
- ✓ c) Distinguish between microprocessor and microcontroller. Give explanation of 8051 with its specification. 4
- ✓ d) Why is environment preservation necessary in multitasking operating system? 2

[Figure in the right margin indicates full marks. Split answering of any question is not recommended.]
Answer any 5 of the following questions.

- a) What is microcomputer? What determines whether a microprocessor is considered an 8-bit, a 16 bit, or a 32 bit device? 3
- b) Describe the functions of the 8086 queue. How does the queue speed up the processing? 3
- c) Describe the operation an 8086 will perform when it executes ADD AX, BX. 3
- d) Which physical address is represented by:
i) A3B0:561EH
ii) FFFF:FFFFH 2
- e) How many address lines does an 8086 have? The 8086 works with 4 segments. How many bytes are contained in each segments? 2
- f) What is the purpose of the segment register in protected mode memory addressing? Distinguish between global descriptor and local descriptor. 3
- g) Give the function of granularity bit of descriptor. For an 8086 descriptor that contains a base address of 01000000H, a limit of 0FFFFH, and G=0, what starting and ending locations are addressed by this descriptor? 3
- h) What is computer memory? Mention its function. Give the basic pin connections of a memory. 3
- i) What do you mean by memory decoder? Distinguish between SRAM and DRAM. 3
- j) Give the advantages of using assembly language over machine language. 2
3. a) What do you mean by IN and OUTS? Why stepper motor is discrete? 3
- b) Define handshaking. Why the programmable peripheral interface is used in computer system? 3
- c) Describe 82C55 PPI. How does it can be programmed? 4
- d) Explain mode 1 operation and mode 2 operation of 82C55. 5
4. a) "EPROM is a nonvolatile one time programmable memory". Justify this statement and describe your judgement. 3
- b) Explain bank switching memory mechanism. 3
- c) "All coprocessors are peripherals, but all peripherals are not coprocessors"-Explain this statement. 4
- d) Explain about 8087 coprocessor. 4
- e) Enlist the data transfer types of a DMA controller. Explain DMA addressing mode. 4
5. a) What is virtual memory? Give the capabilities of virtual memory. 3
- b) Describe channel priority of DMA. 3
- c) Why is the memory management unit necessary in computer system? Briefly describe various problems for implementing the multitasking operating system. 4
- d) Explain page hits and page faults in virtual memory. 4
6. a) 8086 has numerous instructions. Some instruction can be grouped depending on their functional similarity. Briefly describe them. 3
- b) Describe following instructions with respect to 8086. 6
- MOV CL, AL
 - MOV 45H[SI], AX
 - MOV [BX], CX
 - MOV CS:[AX], DI
- c) Give the flag status of flag register after performing the following operation. 3
- 11010
x101
- d) Why is the protected mode memory addressing necessary. 2

[Figure in the right margin indicates full marks. Split answering of any question is not recommended.]
Answer any 5 of the following questions.

1. "CPU actually works on binary digits"- Explain this statement. 3
2. How does the DMA controller handle the unmatched source and destination? 3
3. Why the processor use the protected mode memory addressing and how does the processor use this mode? Distinguish between real and protected addressing mode. 4
4. 8086 has numerous instructions. Some instructions can be grouped depending on their functional similarity. Briefly describe them. 4
5. a) The pointer registers [SP, BP, IP] are in CPU. How does these pointer registers work with their corresponding segment registers? 3
6. b) Why does the handshaking procedure used in computer system? 3
7. c) "Segment register can locate any memory cell as the base address of the respective segment among the whole memory" describe this statement with examples. 4
8. d) Distinguish between 8086 and 80286. What will be the CS:IP of physical address ABCDEh in 8086? 4
9. a) Define n-bit processor. Give the status of flag register of 8086 after performing the following operation. 3
- FDC9
- 0AFD
10. b) 8086 is a 16 bit microprocessor, but its memory mapping is 20 bits. How is it possible? 3
11. c) For an 80486 descriptor that contains a base address of 01000000h, and a limit of 001FFh. What starting and ending locations are addressed by this descriptor considering G=0 and G=1? 4
12. d) Why does the coprocessor used in computer system? Enlist the data transfer types of a DMA controller. 4
13. a) Why AX is called accumulator? What is the role of AX register in CPU operation? 3
14. b) Define coprocessor. Briefly explain about DMA triggering. 3
15. c) Shortly describe 82C55 PPI. How it can be programmed? 4
16. d) Describe following assembly language Instructions with respect to 8086. 4
- i) MOV CL, [AX] 3
- ii) MOV AX, [437AH] 3
- iii) MOV CS:[AX], DI 3
17. a) Describe about two layer onionskin operating systems. 3
18. b) Briefly explain about IN and OUTS. 4
19. c) Why memory management unit is necessary in computer system? 4
20. d) EPROM is a nonvolatile one time programmable memory". Justify this statement and describe your judgment. 4
21. a) Give the comparative discussion of intel dual core over intel pentium processor. 3
22. b) Describe about corei5 or corei7. 4
23. c) What do you mean by multitasking? How can we achieve this in our computer system? 4
24. d) Why virtual memory is used in computer? Explain the virtual memory system of computer. 4

[Figure in the right margin indicates full marks. Split answering of any question is not recommended.]
 Answer any 5 of the following questions.

- 1.** Give the comparative description of the hardware controlled device and the microprogram controlled device. 3
- (a) Differentiate between core i3 and core i5. 3
- (b) "Segment register can locate any memory cell as the base address of the respective segment among the whole memory" describe this statement with examples. 4
- (c) Why coprocessor is used in the computer system? How does the coprocessor interface with the main processor? 4
- 2.** Describe about two layer onionskin operating systems. 3
- (a) Distinguish among PROM, EPROM, and EEPROM. 4
- (b) "CPU actually works on binary digits" - Explain this statement. 4
- (c) Continuous motor is familiar to us, but stepper is a digital motor. Why it is digital? How it can be operated through 82C55 PPI? 4
- 3.** Differentiate between dual core and core 2 duo. 3
- (a) Briefly describe about memory overlay mechanism. 3
- (b) For an 80486 descriptor that contains a base address of 01000000h, and a limit of 001FFh. What starting and ending locations are addressed by this descriptor considering G=0 and G=1? 4
- (c) Describe about SSD. 4
- 4.** Distinguish between 80286 and 8086. 3
- (a) How does the 82C55 can be programmed? 3
- (b) Why memory management is necessary in multitasking system? How can you manage the memory in multitasking system? 4
- (c) Why the protected mode memory addressing is used in the computer system? Distinguish between real and protected addressing mode. 4
- 5.** "All coprocessors are peripherals, but all peripherals are not coprocessors" -Explain this statement. 3
- (a) Distinguish between global descriptor and local descriptor. 3
- (b) Why address decoding is necessary? Shortly describe one technique for this purpose. 4
- (c) Why DMA is used in computer? Explain DMA triggering. 4
- 6.** a) Suppose an application program requires more memory than the available primary memory. How does this problem could be solved? 3
- b) Briefly describe the operation modes of 82C55. 3
- c) Describe following instructions with respect to 8086. 6
- i) MOV CL, [AX]
 ii) MOV 43H[SI], AX
 iii) MOV AX, [437AH]
 iv) MOV CS:[AX], DI
- d) Mention address lines of 80286. What will be the CS:IP of physical address ABCD12H in 8086? 2

18/20/26

Patuakhali Science and Technology University

Department of Computer Science and Information Technology

Semester (Level-1 Semester-1), Final Examination of B.Sc. Engg.(CSE), January-June/2021, Session/2018-19
Course Code: CIT-312 Course Title: Microprocessor and Assembly Language Sessional
Full Marks: 70 Duration: 3.00 Hours

[Figures in the right margin indicate full marks]

Answer all the following questions.

1. Use 8086 Emulator to write Assembly Language code solve the marked question.

- | | | |
|-------|--|----|
| i. | Write a program to print a message using individual letters and ASCII code of letters. | 20 |
| ii. | Write a program to add two numbers as well as form a Fibonacci series. | 20 |
| iii. | Write a program to exchange the value of AX and BX. | 20 |
| iv. | Write a program to Find Square Root of a number | 20 |
| v. | Write a program to print a String | 10 |
| vi. | Write a program to subtract two 8 bit BCD numbers | 20 |
| vii. | Write a program to multiply two 16-bit numbers | 20 |
| viii. | Write a program to subtract two 16-bit numbers with or without borrow | 20 |
| ix. | Write a program to add two 8 bit BCD numbers | 20 |
| x. | Write a program for Binary To Decimal Conversion | 20 |
| xi. | Write a program to find the factorial of a number | 20 |
| xii. | Write a program for Decimal to Binary Conversion | 20 |
| xiii. | Write a program to add two 16 bit numbers | 20 |

2. Microcontroller Based System Design Project

30

3. Viva-Voce

20

Patuakhali Science and Technology University**Department of Computer Science and Information Technology**5th Semester (Level-3, Semester-I), Midterm Examination of B.Sc. Engg.(CSE), January-June/2020, Session: 2017-18

Course Code: CIT-312 Course Title: Microprocessor and Assembly Language Sessional

Full Marks: 15 Duration: 50 minutes

[Figures in the right margin indicate full marks]

Answer all the following questions.

- | | |
|---|----|
| 1. Write a program to print a message using individual letters and ASCII code of letters. | 15 |
| 2. Write a program to add two number as well as form a Fibonacci series. | 15 |
| 3. Write a program to exchange the value of AX and BX. | 15 |
| 4. Write a program to Find Square Root of a number | 15 |
| 5. Write a program to print a String | 15 |
| 6. Write a program to subtract two 8 bit BCD numbers | 15 |
| 7. Write a program to multiply two 16-bit numbers | 15 |
| 8. Write a program to subtract two 16-bit numbers with or without borrow | 15 |
| 9. Write a program to add two 8 bit BCD numbers | 15 |
| 10. Write a program for Binary To Decimal Conversion | 15 |
| 11. Write a program to find the factorial of a number | 15 |
| 12. Write a program for Decimal to Binary Conversion | 15 |
| 13. Write a program to add two 16 bit numbers | 15 |