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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 (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 801:D2h. In what segment does it have offset B1:D2h? (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





Patuakhali Science and Technology University

Department of Computer Science and Information Technology

5th Semester (Level-3, Semester-I) Final Examination of B.Sc. Engg. (CSE)-2022 (January-June)

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

Credit 1hour: 3.00 Session: 2019-20 Full Marks:70 Duration: 3 Hours

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

Write the full question number e.g. 1(B) (i) before the answer paragraph]

Answer any 5 of the following questions.

- 1 (a) How large is the Windows application programming area? Distinguish between microcontroller and microprocessor. Give the features of 8051. 05
- (b) What are program-visible registers? What is the purpose of the IP/EIP register? Determine the memory location addressed by the following real mode 80286/Core2 register combinations:
- DS = 1000H and DI = 2000H
 - DS = 2000H and EAX = 00003000H
 - SS = 8000H and ESP = 00009000H
- (c) What is the flat mode memory system? Protected mode memory addressing allows access to which area of the memory in the 80286 microprocessors? 02
- (d) What are the differences between a register and a memory location? List one special function for each of the data registers AX, BX, CX, and DX. 02
- 2 (a) What is wrong with the MOV BL, CX instruction? List the 16-bit segment registers used with register addressing by MOV, PUSH, and POP. 02
- (b) What is a displacement? How does it determine the memory address in a MOV DS:[2000H],AL instruction? 02
- (c) What do the symbols [] indicate? Suppose that DS = 0200H, BX = 0300H, and DI = 400H. Determine the memory address accessed by each of the following instructions, assuming real mode operation:
 - MOV AL,[1234H]
 - MOV EAX,[BX]
 - MOV [DI],AL 04
- (d) Which base register addresses data in the stack segment? Suppose that DS = 1300H, SS = 1400H, BP = 1500H, and SI = 0100H. Determine the address accessed by each of the following instructions, assuming real mode operation:
 - MOV EAX,[BP+200H]
 - MOV AL,[BP+SI-200H] 04
- (e) What is the difference between an intersegment and intra-segment 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:
i. 10020H
ii. OFFFEH 02
- 3 (a) Describe the purpose of the D- and W-bits found in some machine language instructions. If the register field (REG) of an instruction contains 010 and W = 0, what register is selected, assuming that the instruction is a 16-bit mode instruction? 03
- (b) Identify the default segment registers assigned to the following: 02
- SP
 - EBX
 - DI
 - SI
- (c) If the start of a segment is identified with .DATA, what type of memory organization is in effect? Convert an 8B07H from machine language to assembly language. 04
- (d) What directives indicate the start and end of a procedure? Explain what happens when the PUSH BX instruction executes. Make sure to show where BH and BL are stored. (Assume that SP = 0100H and SS = 0200H.) 03

 Write a program to (i) display a "?", (ii) read two decimal digits whose sum is less than 10, (iii) display them and their sum on the next line, with an appropriate message.

Sample execution:

?27

THE SUM OF 2 AND 7 IS 9

- 4 (a) What is wrong with the ADD RCX, AX instruction? Develop a short sequence of instructions that adds AL, BL, CL, DL, and AH. Save the sum in the DH register. 03
- (b) Explain the difference between the SUB and CMP instruction. Write one or more instructions to do each of the following. Assume overflow does not occur.
- Multiply the value of AL by 8.
 - Divide 32142 by 4 and put the quotient in AX.
- (c) Explain what the JMP AX instruction accomplishes. Also identify it as a near or a far jump instruction. List the five flag bits tested by the conditional jump instructions.
- (d) How many different interrupt types are available in the microprocessor? Explain how the near and far CALL instruction's function.
- (e) If it is a legal instruction, give the values of DX, AX, and CF/OF after MUL BX is executed. Given that, AX contains 0008h and BX contains 0003h. Write assembly code for the following decision structure.
- IF AX < 0
THEN
PUT -I IN BX
END IF
- 5 (a) i. "CPU actually works on binary digits"- Justify this statement.
ii. Enlist the major evolution in computational era with its key technology. 2+2
- (b) Explain the learning outcome from this course. 3
- (c) Give advantages and disadvantages of flags in CPU. Give the flag status of flag register after performing the following operation.

- (d) i. Distinguish between coprocessor and peripheral.
ii. Mention the features of 80287. 1.5+1.5
- 6 (a) Explain the responsibilities of segment register in protected mode memory addressing. If DS=0105H in a protected mode system, which entry, table, and requested privilege level are selected? 4
- (b) i. Why is accumulator so called?
ii. Enlist the differences between 8086 and 8088 microprocessors. 1.5+1.5
- (c) i. Explain handshaking with respect to CPU.
ii. Describe addressing modes of DSP56300. Explain trigger of DMA. 1.5+2.5
- (d) i. How does 82C55 can be programmed?
ii. Distinguish among the various mode of operation of 82C55. 1.5+1.5

mov Ax, 0081H
mov Bx, 0031H
Label: mov Bx, FFFFH.
Label: cmp Ax, 0011H
Label: Page 2 of 2

Microprocesson

Patuakhali Science and Technology University

Patuakhali Science and Technology
Department of Computer Science and Information Technology
(CCF), January-June/2021.

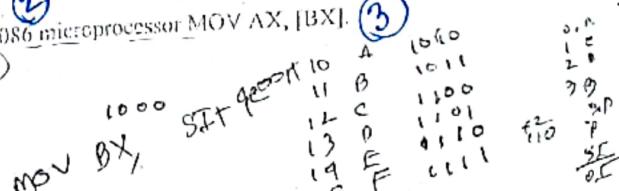
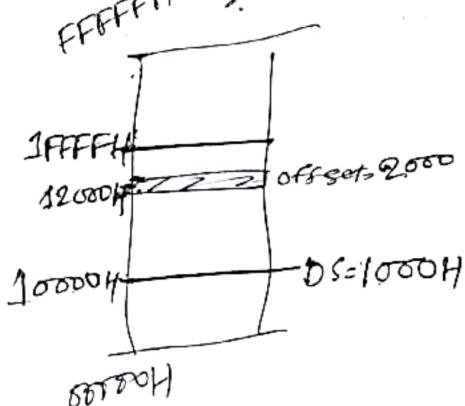
Department of Computer Science and Information Technology
 5th Semester (Level-5, Semester-I), Midterm Examination of B.Sc. Engg.(CSE), January-June/2021, Session: 2018-19
 Course Code: CSE 311, Course Title: Microprocessor and Assembly Language

Full Marks: 15 Duration: 50 minutes

[Figures in the right margin indicate full marks for all the following questions.]

- [Figures in the right margin indicate full marks]
 Answer all the following questions.

 1. What is a von Neumann machine? Write down the major difference between Intel 8085 and 8086 microprocessor. (1)
 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:
 i. 10020H
 ii. 11000H (b) 204 86
 3. Convert an 8B9E004CH from machine language to assembly language. If a MOV S[BX+2] instruction appears in a program, what is its machine language equivalent? (4)
 4. What will be the CS:IP of physical address BCDEFH where CS=FFFF? How is the local descriptor table addressed in the memory system? (2)
 5. Which register locates the global descriptor table? Describe the content of the segment register at protected mode memory addressing. (2)
 6. Explain the instruction with respect to 8086 microprocessor MOV AX, [BX]. (3)



- iii. DI
iv. SI

(c) If the start of a segment is identified with .DATA, what type of memory organization is in effect? Convert an 8B07H from machine language to assembly language. 04

(d) What directives indicate the start and end of a procedure? Explain what happens when the PUSH BX instruction executes. Make sure to show where BH and BL are stored. (Assume that SP = 0100H and SS = 0200H.) 03

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: CTF-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. OFFFEH
- iv. 30000H

(3)

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 discouraged)

- 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=FFF0 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 ②
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

②

Patuakhali Science and Technology University

5th Semester (Level-3, Semester-I) Final Examination of B.Sc. Engg. (CSE) (January-June 2021)

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

Credit Hour : 3.00 Session: 2018-2019 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) 5 i. How can you determine the microprocessor as 8-bit or 16-bit or 32 bit or 64 bit? T 2
 ii. Distinguish between 8085 and 8086. T 2
- b) i. Mention the role of segment register during protected mode operation. Microcontroller 2
 ii. Distinguish microcontroller and microprocessor. Microcontroller 2
- c) 6 i. Shortly describe 82C55 PPI with its operational modes. PPI 2.5
 ii. Why is memory decoding necessary in computer system? T 1.5
- d) 9 Criticize the statement "More registers integration produce faster CPU". T 2
- 2 a) 10 i. Compare PROM, EPROM, and EEPROM. T 1.5
 ii. Give the evolution of microprocessor from mechanical era to present (with important advancement). T 2.5
- b) 12 i. How does the DMA speed up CPU performance? DMA 2
 ii. Distinguish between SRAM and DRAM. T 2
- c) 15 i. Why is stepper motor so called? PPI 1.5
 ii. "All coprocessors are peripherals, but all peripherals are not coprocessors"-Explain this statement. Coprocessor 2.5
- d) 16 "CPU actually works on binary digits"- Explain this statement. T 2
- 3 a) 14 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. DMA 2
 ii. Describe overlapping data movement mechanism of DMA. DMA 2
- b) 15 i. Describe the responsibility of memory management unit in computer system. T 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) 16 i. Define handshaking. PPI 1
 ii. Explain page fault handling mechanism in virtual memory system. 1
- d) 17 "CPU actually works on binary digits"- Explain this statement. T 2
- 4 a) 18 Which Intel microprocessor addresses 1M of memory? Draw the block diagram of a computer system. core i3 3
- b) 19 What is a displacement? How does it determine the memory address in a MOV DS:[200011],AL instruction? 3 2
- c) 20 Explain the difference between the MOV BX, DATA instruction and the MOV BX, OFFSET DATA instruction. 3 2
- d) 21 What, if anything, is wrong with a MOV AL,[BX][SI] instruction? Suppose that DS = 120011, BX = 0100H, and SI = 0250H. Determine the address accessed by each of the following instructions, assuming real mode operation: 3 4

- i. MOV [1001H],DL
 ii. MOV [SI+1001H],FAX
 iii. MOV DL,[BX+1001H]
- 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. OFFFEH
 iv. 30000H

(3)

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

- a) Write down the formats of the 8086-Core2 instructions. (a) The 16-bit form and (b) the 32-bit form. (1) [2]

- b) The effect of the PUSH AX instruction on ESP and stack memory locations 37FFH and 37FEH. [Assume SS=0300, ESP=07FE] (6) [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]

DS + 1000 - 1000
 EDI + 1000 - 1000

- d) Convert machine code 8BEC to equivalent assembly instruction. (1) [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? (1) [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: (3) [3]

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

(6)

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

Patuakhali Science and Technology University

B.Sc. Eng. (CSE) Level-3, Semester-I Final Examination-2020 (January-June)

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

Credit Hour: 3.00 Session: 2017-18 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.

✓ 2(a) Define von neumann machine. Write a short report detailing the features of the Itanium 2 microprocessor. [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: [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: [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: [4]

- DS = 2000H and LAX = 00003900H
- DS = 1A00H and ECX = 00002000H
- DS = C000H and LS1 = 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. [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. [4]

- MOV AL,[1234H]
- MOV LAX,[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 SP = 1600H. Determine the address accessed by each of the following instructions, assuming real mode operation: [3]

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

$$SS \times 16 + BP + 200$$

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

XCHG AX,BX

3. a) How many bytes are stored on the stack by a PUSH AX? Convert an 8B07H and 6B9100H from machine language to assembly language. [3]

b) If AX = 1000H 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. [4]

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

Handwritten notes and calculations related to assembly language and processor architecture, including binary addition, flag register analysis, and instruction sequencing.

What conditions do the Q51 and Q56 pins indicate about the 64Kx8-bit RAM? Explain the data items stored in each of the following memory devices and the number of bits in each datum.

- I. 2K x 4
 II. 1K x 1
 III. 4K x 8
 IV. 16K x 1
 V. 64K x 4

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

- i. if the distance is 00000H bytes
 - ii. if the distance is 0020H bytes
 - iii. if the distance is 10000H bytes

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

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]

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 [4]

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.)

Q3a) Continuous motor is familiar to us, but stepper is a digital motor. Why it is digital? How it can be operated through 82C55 PPI? **PPI**

Q1 b) Why is DMA used in computer system? Describe channel priority scheme.
Q1 c) Why is coprocessor used in computer systems? What is the difference between coprocessors?

25 c) Why is Cepacessor used in microcontroller and peripheral devices? Cepacessor
25 d) Sketch the 8255 PPI. How it can be programmed? PPI

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What is n-bit processor? Describe the relationship among hardware, software and firmware.

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

n	P(2 ⁿ)	PTI
16	2K	
32	4K	
64	8K	

000 A/
001 C/
B/
00

DK

e) Mention the function of 8086 queue. 8086 is a 16 bit microprocessor, but its memory mapping is 32 bit addressable? (9)

e) Difference between 8075 and 8086. Give the flag status of flag register after performing the following instruction.

d) Disassembly following operation				
101	16th	m		00000
20F F	16th	A		00000
311010000		00AF	16000	00000
2000			200	
22000			1600	60
13600		T1600	10000	00000
1500	20-22-2012	(1600)	2000	
19500			2000	
400			2000	
16900			T2000	00000

- iii. DI
iv. SI

(c) If the start of a segment is identified with .DATA, what type of memory organization is in effect? Convert an 8B07H from machine language to assembly language.

Patuakhali Science and Technology University

5th Semester (Level-3, Semester-I) Final Examination of B.Sc. Engg. (CSE)-2018 (January-June)

Course Code: CIT-311 Course Title: Microprocessors and Microcomputers

Credit Hour: 3.00 Session: 2015-16 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.

1. a) Explain 16 bit instruction format of 8086. What will be the CS:IP of physical address FBCDEh in 8086? (2) 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? (2) 3
- c) Describe following instructions with respect to 8086.
- i) MOV 43H[SI], BX (2)
 - ii) MOV CS:[AX], DI (2)
- d) "CPU actually works on binary digits" - Justify this statement. (1) 3
2. a) Why is memory decoding needed in computer system? Describe 3-state buffer basic input interface. (2) 2+2
- b) Define n-bit processor (8086 is a 16 bit microprocessor, but its memory mapping is 20 bits. How is it possible?) (2) 3
- c) What is descriptor? Describe the access rights byte of descriptor. (2) 2+2
- d) How does the pointer register work with their corresponding segment registers? (1) 3
3. a) Why is DMA used in computer system? (Explain trigger of DMA) (DMA) (2) 2+2
- b) Describe addressing modes of DSP56300. (3)
30. c) Give the responsibility coprocessor in computer system? Mention 6 processors with its corresponding coprocessors. (coprocessor) (2) 2+2
31. d) Explain the priority between a DMA channel and the core. (DMA) (2) 2
32. a) Distinguish between microcontroller and microprocessor (Give the application of microcontroller) (controller) (2) 2+2
33. b) Give the features of 8031 microcontroller. Enlist the brands of microcontroller. (controller) (2) 2+2
34. c) Write short notes with key features of
- i) Pentium iv
 - ii) Core i5
- d) Explain floating gate transistor with respect to EPROM. (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+2
- | n | P = 2 ^p | #PTE |
|----|--------------------|------|
| 16 | 4K | |
| 64 | 16K | |
- FB EOF
EF EOF
- 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. (1+2)
35. d) Explain "how does omionskin operating system provide resource protection". (T) (3)
36. a) Why is PPI used in computer system? Explain the basic operation of TSR program. (m) (2+2)
37. b) Compare among mode 0, mode 1 and mode 2 of 82C55PPI. (PPI) (3)
- c) How does the page fault handle in virtual memory system? (4)
- d) Describe the role of operating system in virtual memory. (2) 2

TK 20

37/23

CSE = 5th

Patuakhali Science and Technology University
B.Sc. Eng. (CSE) Level-3, Semester-I 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.

- 42) Analyze the relationship between microprocessor and microcomputer. 3
- 39 b) Define embedded processor. Mention the function of execution unit of a microprocessor. 3
- 41) "All coprocessors are peripherals, but all peripherals are not coprocessors" Explain this statement. 3
- 42) Which physical address is represented by:
i) FEDC:1234H
ii) FFFF:FFFFH 2
- 43) Why 20 bits address bus in 8086 microprocessor? 3
2. a) Describe the relationship among hardware, software and firmware. 3
- 44) Give the flag status of flag register after performing the following operation:
ABCD
x9A
- 45) There are 4-segment register DS, SS, CS, and ES in 8086. How can the individual register be used in CPU operation. 3
- 39 d) Mention the address lines of 80286. Explain the way to achieve multitasking in DOS. 3
- 40 e) Distinguish between RAM and cache memory. 2
- 41 a) Generally number of address pins of a memory device does not matched with CPU address pins. How does the mismatch problems overcome in computer system? 3
- 42 b) What do you mean by INS and OUT? Explain basic input interface. 3
- 43 c) How can we set program in EPROM? (Describe 8087 coprocessor) 3
- 44 d) Explain the address translation and memory protection mechanism in virtual memory. 3
- 45 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
- 44 a) Differentiate among core i3, core i5 and core i7. 3
- PPI 45 b) What is handshaking? (Distinguish between mode 1 and mode 2 operation of 82C55) 3
- c) Explain how 82C55 can be programmed. 3
- 46 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 Y Z A

- a) Mention the functions of memory management unit. Sketch it in 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
- e) What is virtual memory? Give the capabilities of virtual memory. 3
- f) Explain the page faults and page hits in virtual memory mechanism. 5
- g) Distinguish between microprocessor and microcontroller. Give explanation of 8051 with its specification. 4
- h) Why is environment preservation necessary in multitasking operating system? 2
- Ques. No. 1

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

Answer any 5 of the following questions.

- 1) What is microcomputer? What determines whether a microprocessor is considered an 8-bit, a 16 bit, or a 32 bit device? 3
- 2) Describe the functions of the 8086 queue. How does the queue speed up the processing? 3
- 3) Describe the operation an 8086 will perform when it executes ADD AX, BX. 3
- 4) Which physical address is represented by:
i) A1B0 561EH
ii) FFFF:FFFFH 2
- 5) How many address lines does an 8086 have? The 8086 works with 4 segments. How many bytes are contained in each segments? 2
- 6) What is the purpose of the segment register in protected mode memory addressing? Distinguish between global descriptor and local descriptor. 3
- 7) Give the function of granularity bit of descriptor. For an 80186 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
- 8) What is computer memory? Mention its function. Give the basic pin connections of a memory. 3
- 9) What do you mean by memory decoder? Distinguish between SRAM and DRAM. 2
- 10) Give the advantages of using assembly language over machine language. 2
- 11) 1) What do you mean by IN and OUT? Why stepper motor is selected?
Define handshaking. Why the programmable peripheral interface is used in computer system?
2) Describe RTC55 IML. How does it can be programmed?
3) Explain mode 1 operation and mode 2 operation of RTC55. 3
- 12) 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. 3
- 13) 1) What is virtual memory? Give the advantages of virtual memory.
2) Describe channel priority of DMA. 3
3) Why is the memory management unit necessary in computer system? Briefly describe various problems for implementing the multitasking operating systems. 4
4) Explain page hits and page faults in virtual memory. 3
- 14) 1) 8086 has numerous instructions. Some instruction can be grouped depending on their functional similarity. Briefly describe them.
2) Describe following instructions with respect to 8086.
i) MOV CL, AL
ii) MOV 43H[SI], AX
iii) MOV [BX], CX
iv) MOV CS:[AX] DI 3
- 15) Give the flag status of flag register after performing the following operation:
11010
x1011 2
- 16) Why is the protected mode memory addressed sequentially? 2

iii. DI

iv. SI

In the start of a segment is identified with .DATA, what type of memory organization is in

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Patuakhali Science and Technology University

Department of Computer Science and Information Technology

Semester (Level-3 Semester-1), Final Examination of B.Sc. Engg.(CSE), January-June/2021, Session/2018-19

Course Code: CVT-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 10 20
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

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- iii. DI
 - iv. SI