SECTION B

Q.5(a) What happens when the PC is powered up? **02**

(b) Suppose AL contains ABH and CF=1. Give the new contents of AL after each of the following instructions is executed. Assume that the preceding initial condition for each part of this question. **04**

(i) SHL AL, 1
(ii) SAR AL, 1
(iii) ROL AL, CL if CL contains 3
(iv) ROR AL, CL if CL contains 2

(c) Define macro. Write a macro to place the largest of two words in AX. **03**

(d) Write an assembly language program that will take the input N from user and display the following output: **03**

N	N	N	N	N
N	N	N	N	N
N	N	N*N	N	N
N	N	N	N	N
N	N	N	N	N

N.B. you have to use loop to solve this problem.
Sample input:
Enter the number: 5
Sample output:

5	5	5	5	5
5	5	5	5	5
5	5	25	5	5
5	5	5	5	5
5	5	5	5	5

Q.6(a) What is the function of instruction pointer (IP)? **02**

(b) Describe the general purpose registers of 8086 microprocessor. **04**

(c) Write down the differences between DOS routine and BIOS routine. **03**

(d) What are the purposes of instruction queue in 8086 microprocessor? **03**

Q.7(a) Write down the syntax for procedure declaration. What are the differences between NEAR and FAR procedure? **04**

(b) How does the CPU implement a conditional jump? **03**

(c) Explain the significance of direction flag (DF) in string operation. **03**

(d) What happens when stack size is omitted during stack segment declaration? **02**

Q.8(a) Compare RISC processor with CISC processor. **03**

(b) Briefly describe the Intel 8086 family of microprocessors. **04**

(c) Write down the restriction on MOV and XCHG instructions **03**

(d) For which condition DIV and IDIV will give the same result, Explain. **02**

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"Heaven's Light is our Guide"

Rajshahi University of Engineering and Technology

B.Sc. Engineering 3rd Year 5th Semester Examination, 2015

Department of Computer Science and Engineering

Course No. CSE 507 Course Title: Microprocessor and Assembly Language

Full Marks: 70 Time: THREE (03) hours

N.B.

Answer SIX questions taking THREE from each section.
The questions are of equal value.
Use separate answer script for each section.

SECTION A

Q1(a)	What do you mean by 32-bit microprocessor? How adding operation of two numbers of 128-bit each is done by using 32-bit microprocessor. Explain with example.	07½
(b)	Draw the Von Neumann Architecture. Why is it called general purpose Computer Architecture?	04
Q2(a)	Briefly describe (i) RISC and (ii) CISC.	04
(b)	Describe the different processor family.	05½
(c)	What do you mean by physical and logical address of memory?	02
Q3(a)	Explain how a 20-bit physical address for 8086 is handled by 16-bit register?	02½
(b)	Find the physical address of the following: (i) 5706H:6121H (ii) 3AFEH:00F2H	03
(c)	What do you mean by core 2 duo microprocessor? Explain it with necessary figure.	03
(d)	Define (i) Many core processor and (ii) Multicore processor	03
Q4(a)	Explain (i) INT 16H and (ii) INT 21H.	02
(b)	What is STACK? How stack operation is done? Explain with example.	04
(c)	What happens after executing a CALL and RET instruction.	03
(d)	Suppose two strings are defined as follows:	02½

```
.DATA
STR1 DB 'RUET CSE'
STR2 DB 7 DUP(?)
```

Write instructions to copy STR1 into STR2 in reverse order.

SECTION B

Q5(a)	Briefly describe the flag register in 8086 microprocessor.	04
(b)	Explain XLAT instruction with an example.	02½
(c)	Write an assembly program that can find a substring from a string.	03
(d)	What is the basic difference AND and TEST instruction?	02
Q6(a)	What are the advantages of DUP and PTR instruction?	03½
(b)	Describe the function of each status flag in 8086 microprocessor.	03
(c)	Write an assembly program that converts an uppercase sentence into lowercase and vice versa.	05
Q7(a)	Write assembly code for the following decision structures-	05

i)
```
IF AL<=BL
THEN
Display the character in AL
ELSE
Display the character in BL
END_IF
```

ii)
```
If (AX<BX) OR (BX<CX)
THEN
Display the message "YES"
ELSE
Display the message "NO"
END_IF
```

(b)	Using the logic instruction clear the most and least significant bits of AL leaving the other bits unchanged.	02
(c)	Suppose AL contains 11001011b. Give the new contents of AL and CF after each of the following instruction is executed i) ROL AL, CL where CL contains 3 ii) ROR AL, CL where CL contains 2.	04½
Q8(a)	Describe the function of general purpose registers of 8086 microprocessor.	04
(b)	Explain the function of the following. i) Debugger ii) Linker and iii) Assembler.	03
(c)	Give two example of 8-bit, 16-bit and 32-bit microprocessors	03
(d)	The register pair SS:BP is used to access data from which segment?	01½

Heaven's Light is our Guide

Rajshahi University of Engineering & Technology

B.Sc. Engineering 3rd Year ODD Semester Examination, 2016

Department of Computer Science & Engineering

Course No. CSE 3109 Course Title: **Microprocessors and Assembly Language**

Full Marks: 72 Time: THREE (03) hours

B:

Answer **SIX** questions taking **THREE** from each section.

The questions are of equal value.

Use separate answer script for each section.

SECTION A

		Marks
Q.1(a)	What are the basic differences between 16-bit and 32-bit microprocessor?	02
(b)	What are the importances of using instruction queue of 8086 microprocessor?	02
(c)	A memory location has a physical address 4A37BH. Compute the followings: (i) The offset address if the segment number is 401FH. (ii) The segment number if the offset address is 123BH.	03
(d)	Use only MOV, ADD, SUB, INC, DEC and NEG translate the following high level language assignment statements into assembly language where A, B, and C are word variables. (i) A=B-2C-A+1 (ii) B=C-B-2A	02
(e)	Write an assembly program to read one of the hex digits A-F, and display it on the next line in decimal. Sample execution: Enter a hex digit: B In decimal it is: 11	03
Q.2(a)	What are the purposes of using control flags of the flag register of 8088 microprocessor?	03
(b)	For each of the following instructions, give the new destination contents and the new settings of CF, PF, AF, ZF, SF and OF. Suppose that the value of all of the flags are initially 0. (i) ADD AX, BX ; where AX contains 8EE2H and BX contains 9152H. (ii) NEG AL; where AL contains 7FH.	06
(c)	What are the uses of the following registers of 8088 microprocessor? (i) CS (ii) SS (iii)CX (iv)DX (v) IP (vi)SP	03
Q.3(a)	Suppose AL and BL contain extended ASCII characters. Display the one that comes last in the character sequence.	03
(b)	Write assembly code to do the following decision structure: (i) IF AL>0 THEN FFh in AH ELSE Put 00h in AH END_IF (ii) IF (AX<BX) OR (BX<CX) THEN Display the message "YES" ELSE Display the message "NO" END_IF	03
(c)	Explain XLAT instruction with an example.	03
(d)	Write an assembly program to perform the following: Put the sum 1+3+5+7+9+ ..... +25 in BX.	03
Q.4(a)	Explain the working principle of interrupt vector table.	03
(b)	What happens to the contents of the AX after executing the following 8086 instruction sequence: MOV AX, F180H CBW CWD	03
(c)	Why is DMA data transfer faster than doing the same data transfer with program instruction?	02
(d)	How many interrupt pins are exists in 8086 microprocessor? What are the purposes of using those pins?	02
(e)	Explain the differences between the following instructions: MOV AX, 2437H and MOV AX, [2437H]	02

Heaven's Light is our Guide

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		Marks
Q.1(a)	What are the basic differences between 16-bit and 32-bit microprocessor?	02
(b)	What are the importances of using instruction queue of 8086 microprocessor?	02
(c)	A memory location has a physical address 4A37B1. Compute the followings: (i) The offset address if the segment number is 401FH. (ii) The segment number if the offset address is 123BH.	03
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(b)	Write assembly code to do the following decision structure:	03

(i) IF AL>0
THEN Put 1 in AH
ELSE
Put 00h in AH
END_IF

(ii) IF (AX<BX) OR (BX<CX)
THEN
Display the message "YES"
ELSE
Display the message "NO"
END_IF

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"Heaven's Light is our Guide"

Rajshahi University of Engineering and Technology

B.Sc. Engineering 3rd Year 5th Semester Examination, 2015

Department of Computer Science and Engineering

Course No. CSE 507 Course Title: **Microprocessor and Assembly Language**

Full Marks: 70 Time: THREE (03) hours

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5	5	5	5	5
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