**COA 503**

**Reg.No. ……**

**CREDIT BASED FIFTH SEMESTER B.C.A. DEGREE EXAMINATION**
**OCTOBER 2012**
**B.C.A**
**MICROPROCESSOR ARCHITECTURE AND 8086 PROGRAMMING**

**Time: 3 Hrs**

**PART – A**

**Note: Answer any 15 questions from the following:**

**1.** a) What is the purpose of flag register?

b)What is the difference between the instruction SUB and SBB?

c)Give the purpose of LEA instruction with an example.

d)Mention any two advantages of using a procedure.

e)What is the use of SP register in 8086 microprocessor?

f) What is the difference between maskable and non-maskable interrupts?

g)Name the four segment registers of 8086.

h)What is the use of SI and DI registers during string manipulation?

i) What is the purpose of EQU assembler directive?

j) Differentiate between far and near procedures.

k)Name the two functional units of 8086.

l) What is the purpose of NOP instruction?

m) What is wrong with MOV BL, CX instruction?

n)What do you mean by bootstrap loader?

o)Given DS = 8B67H, SI=389H and BX=7865H. Calculate the physical address of the memory location in data segment using indirect addressing mode.

p)What is the purpose of STD and CLD instructions?

q)Why do you call CX register as counter register?

r) The width of address bus and databus of 8086 is …… and ……..

**PART – B**

**Answer any TWO full questions from each unit:**

**UNIT – I**

**2.** a. Write a note on Bus Interfere Unit of 8086.

b. List and explain the types of 8086 instructions based on the number of operands in them. **(8+7)**

**3.** a. What do you mean by addressing mode? Explain the direct and indirect addressing modes with example.

b. Write the format of flag register of 8086. Explain the functions of any three control flags.

**4.** a. Write a note on the history of microprocessor.

b. List and explain all the general purpose registers of 8086 microprocessor.

**(7+8)**

## UNIT – II

**5.** a. Describe the string data transfer instructions with example.

b. Explain the following instructions with syntax and example.

(i) DAA (ii) XCHG (iii) JZ (iv) AND

**6.** a. Explain the CBW and CWD instructions with an example for each.

b. Differentiate between (i) ROR and ROL (ii) ADD and ADC **(7+8)**

**7.** a. How do you declare and use multiple code and data segments in a Program? Explain.

b. Write a program to reverse a string and check whether it is a palindrome or not. **(7+8)**

## UNIT – III

**8.** a. Write a note on how an interrupt works in an 8086 processor. Also explain the use of interrupt vector table.

b. What is a macro? Explain how the macro is defined and expanded.

**9.** a. Write a note on 8237 DMA controller.

b. What do you mean by hardware interrupts? How are they recognized by 8086?

**10.** a. Explain any two exception interrupts.

b. Explain the interrupt INT 02H with an example.

c. Explain the IRET instruction with syntax and an example. **(5+5+5)**

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COA 503.1

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CREDIT BASED FIFTH SEMESTER B.C.A.
DEGREE EXAMINATION
OCTOBER 2013
B.C.A
MICROPROCESSOR PROGRAMMING

**Time: 3 Hrs** **Max. Marks: 120**

PART – A

**1. Answer any 15 questions from the following: 15x2=30**

a. What is the purpose of IP and SP register?
b. Differentiate between AND and TEST instruction.
c. Given DS=3070H, CS=7890H, SS=1234H, SI=200H, IP=500H, SP=4800H. Find the address of the next instruction to be executed by the processor.
d. Name any two instructions used to control the carry flag bit.
e. Differentiate between maskable and nonmaskable interrupts.
f. What is lookup table? Why is it used?
g. Write any two advantages of using procedures.
h. What is the role of direction flag in string transfer instructions?
i. Why segment overside prefixes are used? Give an example.
j. Write the necessary instructions to set the $3^{rd}$, $5^{th}$ and $7^{th}$ bit of register BL without affecting remaining bits. (Assume least significant bit as $0^{th}$ bit).
k. What are Interrupt vectors? How many different types of interrupts are available?
l. What are the different methods of representing BCD number? Give an example for each.
m. The number of bits in _____ bus decides the memory capacity & number of bits in _____ bus decides the speed of the processor.
n. Which is the first microprocessor used

and for what application it was used?

o. Mention the different segment registers and their corresponding offset registers used in 8086.

p. What is the purpose of XCHG instructor?

q. Differentiate between JMP and CALL instruction.

r. Why do we call CX register as counter register?

## PART – B

**Answer any TWO full questions from each unit:**

### UNIT – I

**2.** a. What is a Bus? Explain how the different parts of a computer system are connected through the various buses.

b. Explain the different types of 8086 instructions based on the number of operands. **(8+7)**

**3.** a. Explain the architecture of 8086 processor with diagram.

b. Explain Byte-sized and word-sized data. **(9+6)**

**4.** a. Explain the following addressing modes:
i) Register indirect ii) Immediate iii) Register relative

b. List and explain all the general purpose registers of 8086 microprocessor. **(6+9)**

### UNIT – II

**5.** a. Explain the instructions used to perform BCD arithmetic with suitable example.

b. Explain the following instructions;
i) SCASB ii) CMPSW iii) LODSB **(6+9)**

**6.** a. What is a Procedure? Explain with an example how a procedure is defined and called in a program.

b. Explain the following instructions with suitable example.
i) DIV ii) LDS iii)RCR iv)OUT **(7+8)**

**7.** a. Explain REPEAT….UNTIL and WHILE…ENDW with syntax and suitable example.

b. Write a program to check whether the two strings entered are identical or not. **(8+7)**

## UNIT – III

**8.** a. What is Interrupt? Explain the operation of Interrupt in Real mode.

b. Explain any three Exception Interrupts. **(7+8)**

**9.** a. Write a note on Modular Programming.

b. Explain the following Interrupt instructions.

i) BOUND ii) INTO iii) IRET **(6+9)**

**10.** a. What are Hardware Interrupts? How are they recognized by 8086?

b. What is Data Conversion? Explain any one Data conversion method with an example. **(8+7)**

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CREDIT BASED FIFTH SEMESTER B.C.A.
DEGREE EXAMINATION
OCTOBER 2014
B.C.A
MICROPROCESSOR PROGRAMMING

**Time: 3 Hrs** **Max. Marks: 120**

PART – A

**1. Answer any 15 questions from the following: 15x2=30**

a. Differentiate between instructions and directives.
b. Name the registers used to manipulate stack. What is purpose of each register?
c. What is the difference between SUB and SBB instructions?
d. Write the equivalent instruction for MOV BX, offset X.
e. What is the advantage of macro over procedure?
f. Differentiate between intersegment and intrasegment jump.
g. Identify the addressing modes used in the following instruction
   i) MOV AX, BX ii) MOV CX, 15H.
h. What is an Interrupt? How many different types are available in 8086?
i. What is the purpose of IP register?
j. If CS:IP holds F100:5005h, what is the physical address of the location?
k. Write the usage of CBW instruction.
l. What is a Bus? List the different types of Buses in 8086.
m. Differentiate between HLT and NOP instruction.
n. How to set/reset trap flag?
o. Which register is called as count register in 8086 processor? Why?
p. List the different types of instructions based on the number of operand in 8086.
q. Differentiate between ROR and RCR instruction.
r. What is the use of SI and DI registers during string manipulation?

## PART – B

**Answer any TWO full questions from each unit:**

### UNIT – I

**2.** a. What is a flag register? Give the format of flag register and explain the different flags used.

b. Explain the different data formats used in a computer. **(8+7)**

**3.** a. What is an Addressing Mode? Explain any three addressing modes used to access the data from memory.

b. What is Microprocessor? Explain Bus Interface unit of Microprocesser. **(7+8)**

**4.** a. Explain the evolution of Microprocessor from 4 bits and 16 bits.

b. List the different Multipurpose Registers used and explain the purpose of each registers. **(7+8)**

### UNIT – II

**5.** a. Explain the following instructions with syntax & example:

i) PUSH ii) NEG iii) CMC
iv) DAA

b) Determine the physical address and effective address for the following instructions. (Given DS = 3400H, ES = A500H, X = 0456H, SI = 500H, BX = 0300H)

i) MOV X [SI + 100], AX
ii) ADD AL, [BX + SI – 200]
iii) CMP X [BX + SI], CX
iv) SUB DL, [500] **(8+7)**

**6.** a. Explain the different types of memory models used in the processor.

b. Explain the function of MOVS and STOS instructions. Also explain the effect of REP prefix on these instructions. **(7+8)**

**7.** a. What is a procedure? Explain the different categories of CALL instructions that are associated with NEAR and FAR

Procedures.

b. Write a program to count the number of vowels in a given string. **(8+7)**

## UNIT – III

**8.** a. What is Lookup table? Explain how Lookup tables are used for converting BCD to 7-segment code.

b. Explain the various interrupt instructions used in the processor. **(7+8)**

**9.** a. Explain how interrupt works in 8086 processor? Also explain the use of Interrupt Vector table.

b. What does PUBLIC and EXTERN directives indicate when placed in a program module? Explain with an example. **(8+7)**

**10.** a. What is a Macro? Explain with syntax and example how a macro is defined and expanded.

b. Write 8086 program to convert binary to ASCII. **(8+7)**

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**CREDIT BASED FIFTH SEMESTER B.C.A. DEGREE EXAMINATION OCTOBER 2015**

**B.C.A**

**MICROPROCESSOR PROGRAMMING**

**Time: 3 Hrs** **Max. Marks: 120**

**PART – A**

**1. Answer any 15 questions from the following: 15x2=30**

a. List any two features of Intel 4004 processor.
b. What is TPA? Why it is needed?
c. How is 8086 different from 8085 microprocessor?
d. Write the difference between SUB and CMP instructions.
e. Which bus transfers the memory address to the memory device? What is its size in 8086?
f. List the various multipurpose registers of 8086 microprocessor.
g. What is an IP register? Why is it needed?
h. Find the mistakes if any, in the following instructions.
   (i) MOV ES, DS
   (ii) MOV AX, BH
i. Find the address of the next instruction to be executed by the processor if
   CS = 3000H, IP = 276H, SP = 0200H, SI = 0300H
j. What is segment override prefix? Give an example.
k. Which registers are used in stack memory addressing mode?
l. If DS = 1300H, SS = 4500H, BP = 1500H, Find the address accessed by the following instruction: MOV AX, [BP + 600H].
m. Write the necessary instructions to clear the $2^{nd}$ and $5^{th}$ bit of register AL without affecting remaining bits (Assuming LSB as bit no 0).
n. Write a note on LDS instruction.
o. Differentiate between NOT and NEG instructions.

p. Why CBW instruction is used? Give an example.
q. List the various relational operators which can be used with *IF* statement.
r. List various segment registers of 8086 processor along with their offset pairs.

## PART – B

**Answer any TWO full questions from each unit:**

### UNIT – I

**2.** a. Write the block diagram of microprocessor based computer system and explain each block.
b. Explain byte sized and word sized data. **(9+6)**

**3.** a. What is a bus? Draw the bus structure of 8086 processor and explain it.
b. Write the diagram of FLAG register and explain status flags. **(8+7)**

**4.** a. With suitable diagrams and examples, explain following data addressing modes
(i) Register Indirect (ii) Base plus Index
b. Explain program memory addressing modes with suitable examples.
c. Write a note on BCD data. **(6+6+3)**

### UNIT – II

**5.** a. Explain the operation of various rotate instructions with examples and diagrams.
b) Describe the working of following instructions with examples.
(i) PUSH (ii) MUL **(8+7)**

**6.** a. What is a procedure? Explain different types of procedures with examples.
b. Explain the following instructions.
(i) MOVSB (ii) CMPSB **(7+8)**

**7.** a. Explain various forms of LOOP instructions.
b. Explain the following instructions with examples
(i) DAA (ii) AAA (iii) AND
c. Explain any three processor control

instructions.
**(6+6+3)**

## UNIT – III

**8.** a. Write a note on Assembler and Linker.
b. What is data conversion? Write the code to convert from ASCII to binary.

**9.** a. What is an Interrupt? Explain the operation of Interrupt in real mode.
b. Explain the following instructions with respect to interrupts
(i) INTO (ii) INT (iii) BOUND **(8+7)**

**10.** a. What are hardware interrupts? How are they recognized by 8086 processor?
b. What are Interrupt Vectors? Explain their role in handling interrupts.
c. Explain IRET instruction. **(7+5+3)**

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COA 503.1 Reg. No. .....

CREDIT BASED FIFTH SEMESTER B.C.A. DEGREE EXAMINATION
OCTOBER 2016
B.C.A
MICROPROCESSOR PROGRAMMING

**Time: 3 Hrs.** **Max. Marks: 120**

## PART – A

**1. Answer any FIFTEEN questions from the following:** **15×2=30**

a. How is 8086 different from 8085 microprocessor?
b. Name any two instructions used to control the carry flag bit.
c. Write the difference between SUB and CMP instructions.
d. What is the role of direction flag in string transfer instructions?
e. What is an IP register? Why is it needed?
f. Find the address of the next instruction to be executed if CS=2000H, IP=475H, SI=0300H.
g. What is the purpose of LDS instruction?
h. Differentiate between NOT and NEG instruction.
i. What is the purpose of XCHG instruction?
j. Differentiate between JMP and CALL instruction.
k. List the various segment registers of 8086 processor along with their offset pairs.
l. Why CBW is used? Give an example.
m. What are interrupt vectors? How many different types of interrupts are available?
n. Differentiate between maskable and nonmaskable interrupts.
o. Differentiate between instruction and directive.
p. What is the purpose of SP register?
q. Differentiate between ADD and ADC instruction.
r. What is the difference between NEAR and FAR procedures?

## PART – B

**Answer any TWO full questions from each unit:**

### UNIT – I

**2.** a. Explain the different types of 8086 instructions based on the number of operands.
b. Explain the byte sized and word sized data. **(8+7)**

**3.** a. What is a bus? Draw the bus structure of 8086 processor and explain it.
b. Explain the following addressing modes:
i) Register Internet ii) Immediate **(10+5)**

**4.** a. Write the diagram of FLAG register and explain the status flags.
b. List and explain all the general purpose registers of 8086 microprocessor. **(7+8)**

## UNIT – II

5. a. Explain the various rotate instructions with examples.
   b. Explain the following instructions:
      i) SCASB ii) CMPSW iii) LODSB (8+7)

6. a. Explain the various forms of Loop instructions.
   b. Explain any three processor canbol instructions. (8+7)

7. a. Write a program to check whether the given string is a palindrome or not.
   b. Explain the following instructions with examples.
      i) DAA ii) AND iii) SBB (8+7)

## UNIT – III

8. a. Write notes on i) Assembler ii) linker
   b. Explain the following instructions with respect to interrupts
      i) RNTO ii) IRET iii) BOUND iv) INT (7+8)

9. a. What is an interrupt? Explain the operation of Interrupt in real mode.
   b. What is data conversion? Explain any one data conversion method with an example. (7+8)

10. a. What are hardware interrupts? How are they recognized by 8086?
    b. Explain any three exception interrupts. (9+6)

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CREDIT BASED FIFTH SEMESTER B.C.A. DEGREE EXAMINATION
OCTOBER 2016
B.C.A
MICROPROCESSOR PROGRAMMING

Time: 3 Hrs. Max. Marks: 100

PART – A

1. **Answer any ELEVEN questions from the following:** 11×2=22
   a. How is 8086 different from 8085 microprocessor?
   b. Name any two instructions used to control the carry flag bit.
   c. Write the difference between SUB and CMP instructions.
   d. What is the role of direction flag in string transfer instructions?
   e. What is an IP register? Why is it needed?
   f. Find the address of the next instruction to be executed if CS=2000H, IP=475H, SI=0300H.
   g. What is the purpose of LDS instruction?
   h. Differentiate between NOT and NEG instruction.
   i. What is the purpose of XCHG instruction?
   j. Differentiate between JMP and CALL instruction.
   k. List the various segment registers of 8086 processor along with their offset pairs.
   l. Why CBW is used? Give an example.
   m. What are interrupt vectors? How many different types of interrupts are available?
   n. Differentiate between maskable and nonmaskable interrupts.
   o. Differentiate between instruction and directive.
   p. What is the purpose of SP register?
   q. Differentiate between ADD and ADC instruction.
   r. What is the difference between NEAR and FAR procedures?

PART – B

**Answer any TWO full questions from each unit:**

UNIT – I

2. a. Explain the different types of 8086 instructions based on the number of operands.
   b. Explain the byte sized and word sized data. (7+6)

3. a. What is a bus? Draw the bus structure of 8086 processor and explain it.
   b. Explain the following addressing modes:
   i) Register Internet ii) Immediate (9+4)

4. a. Write the diagram of FLAG register and explain the status flags.
   b. List and explain all the general purpose registers of 8086 microprocessor. (6+7)

## UNIT – II

5. a. Explain the various rotate instructions with examples.
   b. Explain the following instructions:
      i) SCASB ii) CMPSW iii) LODSB **(7+6)**

6. a. Explain the various forms of Loop instructions.
   b. Explain any three processor canbol instructions. **(7+6)**

7. a. Write a program to check whether the given string is a palindrome or not.
   b. Explain the following instructions with examples.
      i) DAA ii) AND iii) SBB **(7+6)**

## UNIT – III

8. a. Write notes on i) Assembler ii) linker
   b. Explain the following instructions with respect to interrupts
      i) RNTO ii) IRET iii) BOUND iv) INT **(5+8)**

9. a. What is an interrupt? Explain the operation of Interrupt in real mode.
   b. What is data conversion? Explain any one data conversion method with an example. **(6+7)**

10. a. What are hardware interrupts? How are they recognized by 8086?
    b. Explain any three exception interrupts. **(7+6)**

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