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END SEMESTER EXAMINATION 2022

Semester : 4th

Subject Code : CO-403

MICROPROCESSOR AND INTERFACING

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

Instructions :

1. All questions of PART-A are compulsory.
2. Answer any five questions from PART-B.

PART – A

Marks – 25

1. Fill up the blanks : 1×5=5

(a) The intel 8086 microprocessor is a _____ bit processor.

(b) SP is a _____ bit register.

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- (c) ALE stands for _____ Enable.
- (d) The _____ flag is set when the result of an arithmetic or logic operation is equal to zero.
- (e) _____ instruction in 8086 microprocessor is used to add with carry.

2. Write True or False : 1×5=5

- (a) Meaning of JZ instruction is Jump if Accumulator is not Zero.
- (b) SUB R1, 20F is an example of direct addressing mode.
- (c) The INC instruction increments the byte or word by one.
- (d) IC 8237 is a programmable interrupt controller.
- (e) In 8086, Non-maskable interrupt is NMI.

3. Answer the following questions : 1×5=5

- (a) What is the function of Data Segment Register ?
- (b) What is the purpose of Carry Flag ?
- (c) What are the registers used for forming AX registers ?

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(d) Name the maskable interrupt of 8086 microprocessor.

(e) What do you mean by Direct addressing mode ?

4. Choose the most appropriate answer : 1×10=10

(a) The BP indicates

- (i) Base pointer
- (ii) Binary pointer
- (iii) Bit pointer
- (iv) Digital pointer

(b) The SS is called as

- (i) Single Stack
- (ii) Stack Segment
- (iii) Sequence Stack
- (iv) None of these

(c) The main functions of EU of microprocessor are

- (i) Decoding of instructions
- (ii) Encoding of instructions
- (iii) Processing of instructions
- (iv) Calculating of instructions

(d) If MN/MX is low, the 8086 operates in mode

- (i) Minimum
- (ii) Maximum
- (iii) Both (i) and (ii)
- (iv) Medium

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- (e) Status register is also called as
- (i) Accumulator register
 - (ii) Stack register
 - (iii) Counter register
 - (iv) Flags register.
- (f) Which of the following is not an arithmetic instruction ?
- (i) INC
 - (ii) CMP
 - (iii) DEC
 - (iv) ROL
- (g) The number of memory locations can be addressed by 8086 microprocessor
- (i) 64 KB
 - (ii) 1 MB
 - (iii) 2 MB
 - (iv) None of the above
- (h) Which of the following is not an 8086/8088 general-purpose register ?
- (i) Code Segment (CS)
 - (ii) Data Segment (DS)
 - (iii) Stack Segment (SS)
 - (iv) Address Segment (AS)

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- (i) In 8086, (hardware) maskable interrupt is
- (i) NMI
 - (ii) INT 0
 - (iii) INTR
 - (iv) None of these
- (j) DEN pin of 8086 microprocessor stands for
- (i) Digital Enable
 - (ii) Data Enable
 - (iii) Data bus Encoding
 - (iv) Data address Encoding.

PART - B

Marks - 45

5. (a) Mention the functions performed by BIU and EU of 8086 microprocessor. 2+2=4
- (b) Write the functions of 5
- (i) Stack Pointer
 - (ii) Code Segment Register.
6. (a) Explain the following instructions of 8086 microprocessor : 6
- (i) ADC
 - (ii) AND
 - (iii) ROL
 - (iv) MOVS
 - (v) JMP
 - (vi) HLT.

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- (b) Differentiate between Minimum mode and Maximum mode of 8086 microprocessor. 3
7. (a) Explain briefly about hardware and software interrupts of 8086 microprocessor. 6
- (b) Write an assembly language program to add two 8 bit numbers. 3
8. (a) Write a brief note on bus organization of 8086 microprocessor. 5
- (b) Draw timing diagram of Memory read and Memory write machine cycles for minimum mode of 8086 microprocessor. 4
9. (a) Write briefly about any *three* of the following addressing modes of 8086 microprocessor : $2 \times 3 = 6$
- (i) Register addressing mode
 - (ii) Direct addressing mode
 - (iii) Indexed addressing mode
 - (iv) Based index addressing mode.
- (b) Write briefly about synchronous data transmission. 3

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10. (a) Write briefly about : 5
- (i) I/O mapped I/O
 - (ii) Memory mapped I/O.
- (b) Explain briefly the Programmable Peripheral Interface (8255). 4
11. Draw and discuss the architecture of 8086 microprocessor. $4+5=9$
12. Write short notes on any *three* : $3 \times 3 = 9$
- (a) Features of 8086 microprocessor
 - (b) Programmable interval timer 8253
 - (c) Stepper motor
 - (d) Flag registers
 - (e) Application of Microprocessors.

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