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Subject Code:- ACSE0405

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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: IV - THEORY EXAMINATION (2021 - 2022)

Subject: Microprocessor

Time: 3 Hours

Max. Marks: 100

General Instructions:

1. The question paper comprises three sections, A, B, and C. You are expected to answer them as directed.
2. Section A - Question No- 1 is 1 mark each & Question No- 2 carries 2 mark each.
3. Section B - Question No-3 is based on external choice carrying 6 marks each.
4. Section C - Questions No. 4-8 are within unit choice questions carrying 10 marks each.
5. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION A 20

1. Attempt all parts:-

1-a. What is the vectored address of RST-5? (CO1) 1

(a) 0010 H
(b) 0032 H
(c) 0028 H
(d) 0030 H

1-b. Suppose registers 'A' and 'B' contain 50H and 40H respectively. After instruction MOV A, B , what will be the contents of registers A and B?(CO1) 1

(a) 40H, 40H
(b) 50H, 40H
(c) 50H, 50H
(d) 60H, 40H

1-c. Carry flag is not affected after the execution of (CO2) 1

(a) ADD B
(b) SBB B
(c) INR B
(d) ORA B

1-d. The content of accumulator is 70 H. Initially all flags are zero. What will be values of CY and S after executing instruction RLC?(CO2) 1

(a) CY = 0 and S = 0
(b) CY = 1 and S = 1
(c) CY = 1 and S = 0
(d) CY = 0 and S = 1

1-e. As the storing of data words onto the stack is increased, the stack pointer is (CO3) 1

(a) incremented by 1
(b) decremented by 1
(c) incremented by 2
(d) decremented by 2

1-f. The instruction that exchanges top of stack with HL pair is (CO3) 1

(a) XTHL
(b) SPHL
(c) PUSH H

(d) POP H

1-g. To avoid loading during read operation, the device used is.(CO4) 1

(a) latch
(b) flipflop
(c) buffer
(d) tristate buffer

1-h. Which lines are supposed to control or handle the transfer operation between two devices in asynchronous mode by apprising the status of transfer using common bus ?(CO4) 1

(a) Control Lines
(b) Data Lines
(c) Transfer Lines
(d) Handshake Lines

1-i. All the functions of the ports of 8255 are achieved by programming the bits of an internal register called(CO5) 1

(a) data bus control
(b) read logic control
(c) control word register
(d) none of the mentioned

1-j. The instruction, MOV AX, 1234H is an example of(CO5) 1

(a) register addressing mode
(b) direct addressing mode
(c) immediate addressing mode
(d) based indexed addressing mode

2. Attempt all parts:-

2.a. Why status signals are provided in microprocessor?(CO1) 2

2.b. Why the number of out ports in the peripheral-mapped I/O is restricted to 256 ports?(CO2) 2

2.c. If a typical PC uses a 20-bit address code, how much memory can the CPU address?(CO3) 2

2.d. Write down the differences between memory mapping of I/O device and I/O mapping of I/O device.(CO4) 2

2.e. List the flags in 8086?(CO5) 2

SECTION B 30

3. Answer any <u>five</u> of the following:-

3-a. Draw the timing diagram for INR M.(CO1) 6

3-b. Why the lower order address bus is multiplexed with data bus? How they will be de-multiplexed?(CO1) 6

3-c. Explain the following instructions: CALL, DAD B, XTHL, STAX B, CMP M (CO2) 6

3-d. Explain the interrupts used in 8085. List out all the vectored interrupts of 8085 and give their vector address.(CO2) 6

3.e. What are the similarities and differences between CALL/RET and PUSH/POP instructions.(CO3) 6

3.f. Explain why a latch is used for an output port, but a tri-state buffer can be used for an input port. (CO4) 6

3.g. Draw and explain register organization of 8086. (CO5) 6

SECTION C 50

4. Answer any <u>one</u> of the following:-

4-a. Draw and explain the architecture of 8085 microprocessor.(CO1) 10

4-b. Write a program to subtract two 8 bit hexadecimal numbers and store the result in 10

Memory.(CO1)

5. Answer any one of the following:-

5-a. Write an assembly language program to add two 16 bit hexadecimal numbers.(CO2) 10

5-b. Write a program to sort the numbers in ascending order.(CO2) 10

6. Answer any one of the following:-

6-a. Write a program to count continuously in hexadecimal from FFH to 00H in a system with a 0.5 micro second clock period. Use register C to set up a one ms delay between each count and display the numbers at one of the output ports.(CO3) 10

6-b. Write a program for BCD addition of two 8-bit numbers and explain it with flowchart and example.(CO3) 10

7. Answer any one of the following:-

7-a. Write a program to perform the following functions and verify the output .Load the number 8BH in register D. Load the number 6FH in register C. Increment the contents of C register by one. Add the contents of registers C and D and display the sum at the output PORT 1.(CO4) 10

7-b. Draw block diagram of 8259 PIC and explain Initialization Command Words (ICWs) and Operational Command Words(OCWs).(CO4) 10

8. Answer any one of the following:-

8-a. Discuss the various modes of operation of the programmable interval timer 8254.(CO5) 10

8-b. Draw the internal block diagram of 8086 microprocessor. Explain the BIU and EU.(CO5) 10