



BRAINWARE UNIVERSITY

Course – BCA

Microprocessor and Microcontroller (BCA 403)

(Semester – 4)

Time allotted: 3 Hours

Full Marks : 70

[The figure in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group –A

(Multiple Choice Type Questions)

10 x 1 = 10

1. *Choose the correct alternative from the following*

- (i) Why 8085 Processor is called an 8-bit processor?
- | | |
|--|---|
| a. Because 8085 processor has 8-Bit ALU. | b. Because 8085 processor has 8-Bit data bus. |
| c. Both (a) and (b) | d. None of these |
- (ii) An 8K*8 ROM, holding the monitor program in a microprocessor trainer kit has end address
- | | |
|-----------|------------------|
| a. 3FFF H | b. 2FFF H |
| c. 1FFF H | d. None of these |
- (iii) Microprocessor speed depends on which parameter?
- | | |
|----------------------|-------------------|
| a. Clock | b. Data Bus Width |
| c. Address Bus Width | d. None of these |
- (iv) Vector Address of RST 3 is
- | | |
|----------|------------------|
| a. 0020H | b. 0018H |
| c. 0081H | d. None of these |
- (v) Which of the following is a user programmable register?
- | | |
|----------------------------|-----------------|
| a. Memory Address Register | b. Accumulator |
| c. Program Counter | d. All of these |

- (vi) The address lines required for 16 KB memory chip are
- | | |
|-------|-------|
| a. 13 | b. 14 |
| c. 15 | d. 16 |
- (vii) The interrupt line having highest priority is
- | | |
|------------|----------|
| a. RST 7.5 | b. READY |
| c. TRAP | d. INTR |
- (viii) PSW in 8085 microprocessor is a
- | | |
|-------------------|--------------------|
| a. 8-bit register | b. 16-bit register |
| c. 4-bit register | d. 32-bit register |
- (ix) 8085 microprocessor operates at a frequency of
- | | |
|----------|------------|
| a. 6 MHz | b. 3.2 MHz |
| c. 5 MHz | d. 3 MHz |
- (x) READY is used for
- | | |
|---------------------|------------------|
| a. Input | b. Output |
| c. Both (a) and (b) | d. None of these |

Group – B

(Short Answer Type Questions)

3 x 5 = 15

Answer any *three* from the following

2. State the differences between architectures of microprocessor and microcontroller. [5]
3. Write the utility of following instructions - [5]
 - (i) XRA A (ii) LHLD 8000 H (iii) RRC (iv) RAR (v) SBB B
4. Discuss the 'fetch' and 'execute' operations of 8085 microprocessor. [5]
5. If the system clock is 1.5 MHz, find the time to execute the given instruction code:

MVIA, (5A) H

MVI B, (A7) H

ADD B

INR A

XRA A

HLT
6. Write a short note on DMA. [5]

Group – C

(Long Answer Type Questions)

3 x 15 = 45

Answer any *three* from the following

7. (a) Describe the different addressing modes of 8085 microprocessor. [5]
 (b) What will be the contents of the accumulator and flag after execution of the following instructions from a program sequentially?
 MVI A, 01
 MVI B, 02
 ADD B
 XRA A
 HLT [5]
 (c) Explain RIM and SIM. [5]
8. (a) Draw the timing diagram for LDA 3000H instruction. [5]
 (b) Discuss the advantages and disadvantages of memory mapped I/O scheme. [5]
 (c) Distinguish between maskable and non-maskable interrupts. [5]
9. (a) Write an Assembly Language Program for Intel 8085 to compute the multiplication result of two 8-bit numbers. [7]
 (b) Design a 2K X 4 RAM from a 2K X 2 RAM. [5]
 (c) Which interrupts are masked after the execution of the following instructions?
 MVI A, 1D H
 SIM [3]
10. (a) Write an Assembly Language Program for Intel 8085 to calculate addition of two 8-bit numbers. [5]
 (b) Discuss the Flag registers of 8085. [5]
 (c) Interface Intel 8085 with two 16 KB RAM and two 16 KB ROM. [5]
11. (a) Explain the interrupts of Intel 8085. [7]
 (b) What are the functions of ALE, HOLD and READY signals? [3]
 (c) State the uses of the following special purpose registers available in 8085 microprocessor – PC, SP and MBR. [5]