CS/B.Tech/IT/Odd/Sem-5th/IT-504E/2015-16

MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY,
WEST BENGAL

IT-504E

MICROPROCESSORS AND MICROCONTROLLERS

Time Allotted: 3 Hours   Full Marks: 70

The questions are of equal value.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.
All symbols are of usual significance.

GROUP A
(Multiple Choice Type Questions)

1. Answer *all* questions. $10 \times 1 = 10$

(i) Which stack is used in 8085?

(A) FIFO   (B) LIFO
(C) FILO   (D) LILO

(ii) The size of 8086 queue is

(A) 2 bytes   (B) 4 bytes
(C) 6 bytes   (D) 8 bytes

(iii) The number of register pairs of 8085 microprocessor is

(A) 3   (B) 4
(C) 2   (D) 5

(v) For 8255 PPI, the bidirectional mode of operation is supported in

(A) Mode 1   (B) Mode 2
(C) Mode 0   (D) Either mode 1 or Mode 2

(vi) The total memory space available in 8086 is

(A) 16 KB   (B) 64 KB
(C) 1 MB   (D) 256 KB

(vii) A single instruction to clear the lower four bits of the accumulator in 8085 is

(A) XRI 0F H   (B) ANI F0 H
(C) ANI 0F H   (D) XRI F0 H

(viii) Number of a address lines required for a 32K memory chip are

(A) 13   (B) 32
(C) 16   (D) 15

(viii) The BSR mode in 8255 is used with

(A) Port A   (B) Port B
(C) Port C   (D) All of these

(ix) The signal which has the highest priority is

(A) TRAP   (B) HOLD
(C) RST 7.5   (D) RST 6.5

(x) 8086 is called a 16 bit microprocessor because

(A) Data bus is 16 bit   (B) Address bus is 16 bit
(C) Accumulator is 16 bit   (D) Memory is 16 bit

GROUP B
(Short Answer Type Questions)

Answer any *three* questions.   3×5 = 15

2. What is meant by sub-routine? Briefly discuss the sequence of events that takes place while executing CALL instruction.

3. How is pipelining achieved in 8086 microprocessor?

4. What are the differences between a microprocessor and a micro-controller?

5. Why AD_0-AD_7 need to be demuxed and how it is done in 8085 microprocessor?

6. Write a program to set PC_4 and Reset PC_7 lines using BSR mode in 8255.

GROUP C
(Long Answer Type Questions)

Answer any *three* questions.   3×15 = 45

7. Explain the memory segmentation scheme with reference to 8086   3+3+5+4
    microprocessor. What is the role of Bus Interface Unit and Execution Unit
    of 8086? How the physical address is generated in 8086? Explain the
    differences between the minimum mode and maximum mode operations of
    8086?

8. Write an Assembly Language program to add two 8 bit numbers stored at   5+5+5
    memory location 2000H and 2001H. Store the result in memory locations
    starting from 5000H. Write an Assembly Language program to subtract two
    8 bit numbers stored at memory location 2000H and 2001H. Store the result
    in memory locations starting from 5000H. Write an Assembly Language
    program to multiply two 8 bit numbers stored at memory location 2000H
    and 2001H. Store the result in memory locations starting from 5000H.

9. Explain the different modes of operation of 8255A. Discuss the different bits   7+4+4
    of the control word of 8255A. Write the accumulator bit pattern for SIM and
    RIM instructions.

10. Write an Assembly Language program to find out the largest number in an   9+6
    array of numbers. Write a program to generate square wave in 8085.

11. Write short notes on any *three* of the following: 3×5
    (a) DMA operation
    (b) Flags of 8086
    (c) Interrupts in 8085
    (d) Addressing modes in 8086
    (e) PIC micro-controller
    (f) Memory organization in 8051 micro-controller.