Maulana Abul Kalam Azad University of Technology, West Bengal

MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : CS-502

MICROPROCESSOR AND MICROCONTROLLER

Time Allotted : 3 Hours | *Full Marks* : 70

The figures 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)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

   i) When the RET instruction at the end of sub-routine executed

      a) the information where the stack is initialized is transferred to the stack pointer

      b) the memory address of the RET instruction is transferred to the PC

      c) two data bytes stored in the top two locations of the stack are transferred to the PC

      d) two data bytes stored in the top two locations of the stack are transferred to the SP.

ii) A single instruction to clear the lower four bits of the accumulator in 8085 microprocessor is
   a) XRI OFH b) ANI FOH
   c) ANI OFH d) XRI FOH.

iii) Machine cycles in 'CALL' instruction are
   a) 6 b) 5
   c) 4 d) 3.

iv) What is the memory size of 8086 microprocessor ?
   a) 16 bit b) 1 Mbyte
   c) 256 byte d) 64 Kbyte.

v) The RST 7·5 interrupt is
   a) Vectored & Maskable
   b) Vectored & Non-maskable
   c) Direct & Maskable
   d) none of these.

vi) What is the size of Internal Program memory in 8051 microcontroller ?
   a) 64 Kbyte b) 128 Byte
   c) 256 Kbyte d) 4 Kbyte.

vii) MOV A#52 is a
   a) Logical instruction
   b) Data transfer instruction
   c) Arithmetic instruction
   d) None of these.

viii) The number of Data lines for 8255 chip is
   a) 16 b) 32
   c) 8 d) 12.

ix) 8253 is
   a) Programmable interval timer
   b) Programmable interrupt controller
   c) Programmable DMA controller
   d) none of these.

x) What is size of External RAM memory in 8051 microcontroller ?

a) 64 Kbyte b) 128 Byte

c) 256 Kbyte d) 1 Kbyte.

xi) 8259 is

a) Programmable DMA controller

b) Programmable interrupt controller

c) Programmable interval timer

d) none of these.

xii) EU is used for

a) encoding b) fetching

c) decoding d) both (a) and (b).

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Draw the Timing Diagram of the Instruction MVI A, 21H.

3. a) Write down the Flag Register in 8085 microprocessor.

b) Explain the Flag Register in 8086 microprocessor.

2 + 3

4. Explain different addressing modes in 8085 microprocessor.

5. a) What is meant by pipelining ? What are the advantages of it ?

b) Differentiate between 8085 & 8086 microprocessor.

3 + 2

6. a) Draw the PSW Register in 8051 microcontroller.

b) Write down the features of 8051 microcontroller.

2 + 3

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) Explain the functions of SIM and RIM Instruction.
   b) Explain vectored and non-vectored Interrupts in 8085.
   c) Explain memory mapped I/O addressing and I/O mapped I/O addressing in 8085. 5 + 5 + 5

8. a) Explain 8255 mode 0 and mode 1 with diagram.
   b) Discuss how 8253 is used to generate square wave (mode 3) with waveform. 8 + 7

9. a) Explain different types of addressing modes in 8086 microprocessor.
   b) What are the main functions of BIU and EU units of 8086 microprocessor ? 7 + 8

10. a) Discuss the memory organization of 8051 microcontroller.
    b) What are the different Interrupts available in 8051 microcontroller ? 7 + 8

11. Write short notes on any *three* of the following : 3×5
    a) Addressing modes in 8051 microcontroller
    b) DMA
    c) Different interrupts available in 8085
    d) Write difference between Microprocessor and Microcontroller
    e) Modes of operation of 8253.