CS-502

MICROPROCESSOR AND MICROCONTROLLER

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.

GROUP A
(Multiple Choice Type Questions)

1. Answer any *ten* questions. $10 \times 1 = 10$

(i) Which stack is used in 8085?

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

(ii) 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) (A) and (B)

(iii) What is SIM?

(A) select interrupt mask (B) sorting interrupt mask
(C) set interrupt mask

(iv) What does microprocessor speed depends on?

(A) clock (B) data bus width
(C) address bus width

(v) Address line for RST 3 is?

(A) 0020H
(B) 0018H
(C) 0081H

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node that takes the least time is

(vi) The memory addressing mode that takes the least time is

(A) direct addressing
(B) indexed addressing
(C) immediate addressing
(D) inherent addressing.

(vii) Which of the following is a user programmable register?

(A) memory address register
(B) accumulator
(C) program counter
(D) all of these.

(viii) The total I / O space available in 8085 if used peripheral mapped I / O

(A) 64
(B) 128
(C) 256
(D) 512

(ix) The size of 8086 queue is

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

(x) Mode 3 of 8253 is a

(A) rate generator
(B) square wave generator
(C) software triggered strobe
(D) hardware triggered strobe

(xi) The number of 16 bit timer/counter register present in 8051 is

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

(xii) What is the condition that BIU can suspend fetching instruction?

(A) current instruction requires access to memory or I / O port
(B) a transfer control instruction (JMP or CALL) occurs
(C) instruction queue is full
(D) none of these.

GROUP B
(Short Answer Type Questions)

Answer any *three* questions. $3\times5 = 15$

2. State the difference between architectures of microprocessor and microcontroller.

3. Explain the role of the following pins of 8086 μP :

   NMI, $\overline{DEN}$, DT/$\overline{R}$, $\overline{BHE}$, MN/$\overline{MX}$

4. Write a program to store 32H in R1 of Register bank 3 of 8051 μC.

5. Write in brief on 8086 interrupts.

6. What is the difference between CALL and JUMP instruction in case of 8085 microprocessor? Explain with an example.

GROUP C
(Long Answer Type Questions)

Answer any *three* questions. $3\times15 = 45$

7. (a) Describe the different addressing modes of 8086 microprocessors. 3

   (b) What are the main functions of BIU and EU unit of 8086 microprocessors? 2+2

   (c) Write the assembly language statement which will perform the following operations: 8

   (i) copy the BP register content to SP register.

   (ii) copy the contents of AX register to the DS register.

   (iii) Load the number F2 H into AL register.

   (iv) Load the number 1456H into BP register.

8. (a) Draw the timing diagram for LDA instruction. 5

(b) What do you mean by MODE 0, MODE 1, MODE 2 operation of 8255? 4

(c) Write the BSR control word for setting PC4 in 8255A. 2

(d) What are functions of major components in 8259 interrupt controller? 4

9. (a) Write a program to compute HCF of two 8 bit nos. 5

(b) Draw the timing diagram for the instruction JMP. 5

(c) Design how one 1K ROM and one 2K RAM can be interfaced with the 8085. Starting from the address 0000H 5

10.(a) What are the flags supported by 8051 controller? What is meant by Power-on-Reset in 8051 controller? What are the significance of SFRs in 8051 Microcontroller? 6+3+6

11. Write short notes on any *three* of the following: 3×5=15

(a) Function of 8251 USART

(b) DMA

(c) Pipelining in 8086 microprocessor

(d) BSR mode of 8255

(e) Interrupts of 8085 microprocessor