3 Hours / 100 Marks   Seat No.

Instructions :   (1)   All Questions are *compulsory.*

(2)   Answer each next main Question on a new page.

(3)   Illustrate your answers with neat sketches wherever necessary.

(4)   Figures to the right indicate full marks.

(5)   Assume suitable data, if necessary.

(6)   Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1.   **Attempt any TEN :**   **20**

(a)   Define 'Microprocessor' and 'Microcomputer'.

(b)   List the different types of instructions depending on size of instruction.

(c)   State the necessity of subroutine.

(d)   State whether RAM is volatile or non-volatile memory.

(e)   State different modes of IC-8255 PPI.

(f)   List the different types of data transfer techniques.

(g)   State the use of ALE signal.

(h)   State examples of immediate addressing mode type instructions. (any 2)

(i)   How many bit address bus is used in I/O mapped I/O techniques ?

(j)   List the different operating modes of Timer in IC 8155.

(k)   State the different functions of ALU.

(l)   How many T-states are required for

    (i)   MOV A, M ?

    (ii)   LDA 1350 H ?

(m)   Which instructions are used for serial communications ?

(n)   List the different peripheral programmable devices are used for interfacing.

2.   Attempt any FOUR :   **16**

(a)   State the different features of 8085 μP.

(b)   List the different types of instruction with suitable example.

(c)   Explain Stack and Stack pointer.

(d)   How SID and SOD pins can be used as a single bit input and output ports respectively ?

(e)   Draw the internal block diagram of 8155.

(f)   Explain concept of DMA controlled data transfer.

3.   Attempt any FOUR :   **16**

(a)   Draw neat labelled architecture of 8085 μP.

(b)   Explain different Addressing modes of 8085 μP instructions.

(c)   Explain time delay subroutine with suitable example.

(d)   Compare I/O mapped I/O and memory mapped I/O techniques.

(e)   State different features of 8355.

(f)   Draw interfacing diagram of ADC with 8085 μP.

4. **Attempt any FOUR :** 16

    (a) Explain, how address bus and data bus is demultiplexed. Support your answer with suitable diagram.

    (b) Draw machine cycle for MOV A, B instruction.

    (c) Explain Interrupts available with 8085.

    (d) Draw interfacing diagram of 2k × 8 ROM with 8085 μP.

    (e) State the different features of 8255 PPI.

    (f) Draw interfacing diagram of 8155 with 8085.

5. **Attempt any FOUR :** 16

    (a) Explain different 'Registers' in 8085 μP.

    (b) State difference between LXI H, 5020 H and LHLD 5020 H instruction for 8085 μP.

    (c) Draw interrupt structure of 8085 μP.

    (d) Draw I/O mode format and BSR mode format of control word register of 8255.

    (e) Write an ALP to rotate stepper motor by 270° in clockwise direction with full stepping mode.

    (f) Write an ALP to take 2's complement of a number stored in memory location 2020 H and store result in 2120 H.

6. **Attempt any FOUR :** 16

(a) With the help of 3 : 8 decoder, how we can generate control signals ? Draw the diagram and explain in brief.

(b) Identify the addressing modes of following instructions :

(i) MVI A, 00H

(ii) MOV A, B

(iii) LDA 2050 H

(iv) LDAX B

(c) Draw interfacing diagram to interface 4k × 8 RAM memory with 8085 but available memory is two 4k × 4 RAMs.

(d) Draw the internal block diagram of 8255 PPI.

(e) Write an ALP to add two 16 bit numbers and store result in 5051, 5052 and carry in 5050 H.

(f) Write an ALP, to generate a square wave of 1 kHz with 8255 PPI. (Assume port address of Port A is 80 H.)

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