[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5588 **J**

Unique Paper Code : 2512012402

Name of the Paper : Microprocessor

Name of the Course : **B. Sc. (H) Electronics**

Semester : IV

Duration : 3 Hours Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Question No. 1 is compulsory.
3. Attempt Five questions in all.
4. Use of non - programable scientific calculators is allowed.

1. (a) What is the address capability and size of internal registers of a processor having 20 address lines and 16 data lines?

   (b) Name any three control signals & specify their function in 8085 microprocessor.

   (c) Differentiate between the following instructions

      1. CALL & RST

      2. SUB & CMP

      3. MOV A, M & LDAX RP

P.T.O.

(d) Why is it important to initialize STACK in a program which calls a subroutine?

(e) Explain the instruction SIM.

(f) Explain the fully nested mode of 8259 Programmable interrupt controller.

(3×6)

2. (a) Why address and data bus is multiplexed in 8085? Draw a schematic to demultiplex address and data bus of 8085 microprocessor. (6)

(b) Draw a schematic to interface a 4Kbyte EPROM having last memory address as 7FFFH with 8085 microprocessor. Compare the memory mapped and peripheral mapped I/O in terms of number of address lines used, type of control signals and instructions for data transfer. (8)

(c) Explain the function of following pins of 8085

(i) READY

(ii) HLDA

(iii) RESET OUT

(iv) INTR (4)

3. (a) List and explain the significance of all 8 bit and 16 bit registers of 8085. What is the advantage of using HL register pair over other register pairs? (8)

(b) What is a subroutine? What role Stack plays in the execution of RET instruction at the end of subroutine? (5)

(c) Write a program to add 84H and F8H. Store the Flag status at 205CH. Also display carry flag at output port 03H. (5)

4. (a) What are various ways of generating delay? Write a program to generate a delay of 1sec with the processor frequency as 2MHz. Also calculate the count value. (8)

(b) Draw the timing diagram for the instruction IN OFH written at memory address 2054H. (6)

(c) What are addressing modes? Specify the addressing mode of the following instructions

(i) STAX

(ii) IN

(iii) ADD M

(iv) CMA (4)

5. (a) Specify the machine cycles and number of T states for the following instructions

(i) LXI H, 2050H

(ii) CALL 2500H

(iii) STA 3000H (6)

(b) Write a program to count no. of ones in a data byte and store the result at memory location 2605H. (6)

(c) Read the following program and specify the contents of STACK &Stack Pointer register after the execution of line 4 and 5. Also specify the contents of DE &HL register pair after the execution of complete program.

1. LXI SP, 26FF

2. LXI H, 0506

3. LXI D, 0808

4. PUSH H

5. POP D (6)

6. (a) List and explain different steps to initiate and implement the interrupts. Which interrupt in 8085 cannot be masked? (8)

(b) Explain how priority encoder resolves the priority in case of multiple interrupts (6)

(c) Compare the architecture of 8086 processor with 8085. (4)

7. (a) Explain the various modes of 8255 programmable peripheral device. Write a program to read data from Port A and display it at Port B. The address of Control Register is 93H. (8)

(b) Write a program to generate a pulse every 100μs using counter 0 of 8253 Programmable Timer using the system frequency as 1MHz. (5)

(c) Draw the block diagram of 8259 interrupt controller and explain different blocks. (5)

Control word format for 8255PPI

I/O	Mode for group A	Port A	Port C_U	Mode for group B	Port B	Port C_L

Control word format for 8253

SC1	SC0	RW1	RW0	M2	M1	M0	BCD

(1000)