

4096

8

Control word format for 8253

SCI	SC0	RW1	RW0	M2	M1	M0	BCD
-----	-----	-----	-----	----	----	----	-----

[This question paper contains 8 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 4096

H

Unique Paper Code : 2512012402

Name of the Paper : Microprocessor

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

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. **First Question** is Compulsory.
 3. There are **seven** questions in all, out of which you have to attempt any **five** questions.
 4. **All** questions carry equal marks.
 5. Use of scientific calculator is allowed.
-
1. (a) Differentiate between memory mapped I/O and peripheral mapped I/O.

(1500)

P.T.O.

4096

2

- (b) Write any three differences between the 8085 and 8086 microprocessors.
- (c) How many memory locations can be addressed by a microprocessor with 14 address lines?
- (d) Define instruction cycle, machine cycle and T-state.
- (e) What will be the contents of register A and the status of S, Z, and CY after the execution of following instructions?

MOV A, 00H

ORA A

SUI 01H

HLT

4096

7

- (c) Write a subroutine to generate an interrupt every 2 sec using 8253 timer. Take the clock frequency as 1MHz. (6)
7. (a) Write a BSR control word subroutine to set PC3 and PC4 and reset them after 10msec. It is given that the address of Port A is 8000H and Ao and A₁ pins of 8255 is connected to 8085 address lines A₁ and A₂. (8)
- (b) Explain the various priority modes of 8259A interrupt controller. (6)
- (c) Name the various registers of 8086 microprocessor. (4)

BSR Control word format for 8255A

0	X	X	X	BIT	SELE	CT	S/R
---	---	---	---	-----	------	----	-----

P.T.O.

(c) Calculate the number of times the following loops are executed.

```
(i)      MVI A, 17H
        LOOP: ORA A
            RAL
            JNC LOOP
```

```

    MVI B, 71H
(ii) LOOP: NOP
        DCR B
        JNZ LOOP

```

(3)

6. (a) Using a suitable timing diagram, show the execution of the instruction IN 10H. Assume that the opcode of IN is DBH and the instruction is stored at memory locations starting from 2600H. (6)

(b) Draw the block diagram of 8253 timer. (6)

(f) If registers BC =2352H, DE = 71FFH, and HL = 134EH, what do they contain after the execution sequence of instructions below?

PUSH B

PUSH H

PUSH D

POP B

POP D

POP H (3X6)

2. (a) Draw the schematics for generating read/write control signals for memory and I/O. (6)

(b) Explain the general purpose registers available in 8085 microprocessor. Why are program counter and stack pointer 16 bit? (6)

4096

4

- (c) What is a flag register and its significance in 8085 microprocessor? Explain the various flags available in 8085 microprocessor. (6)
3. (a) Explain the various addressing modes of 8085 microprocessor with examples. (8)
- (b) Explain the function of READY, HOLD, ALE, INTR pins of 8085 microprocessor. (6)
- (c) Compare absolute and partial decoding. (4)
4. (a) Write an assembly language program to add 4A87H and 1BE5H. Store result in memory locations 2003H to 2005H. Compute result. (6)
- (b) Explain the following instructions with examples: STA, LHLD, DAA and JC. (6)

4096

5

- (c) Explain the various steps involved while executing RET instruction with an example. (6)
5. (a) Write a program to count continuously from FAH to 00H with 1ms delay between each count. The clock frequency of the microprocessor is 2 MHz. (7)
- (b) Distinguish between:
- (i) Call and Jump
- (ii) Maskable and non-maskable interrupt
- (iii) RST 5 and RST 5.5
- (iv) Software and hardware interrupt (8)