**Printed Pages : 2** **Roll No.** | | | | | | | | | | | **NEC409**

**B. TECH.**

**THEORY EXAMINATION (SEM–IV) 2016-17**

**INTRODUCTION TO MICROPROCESSOR**

***Time : 3 Hours*** ***Max. Marks : 100***

***Note :*** *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

## SECTION – A

**1. Attempt all of the following questions: 10 x 2 = 20**

**(a)** Calculate the number of memory chips needed to design 8K byte memory if the memory chip size is 1024 x 1

**(b)** What is the difference between hardware interrupts and software interrupts of 8085 microprocessor?

**(c)** What is the significance of pipelining in 8086 microprocessor?

**(d)** Define the RIM and SIM instruction of 8085 microprocessor.

**(e)** Write instructions to read the data at input port 07H and at the port 08H. Display the input data from 07H at output port 00H and store the input data from port 08H in register B.

**(f)** Explain the significance of HOLD and READY pin of 8085 microprocessor.

**(g)** What do you mean by wait state?

**(h)** State the difference between RAL and RRC instructions.

**(i)** What operation can be performed by using the instruction SUBA? Specify the status of Z and CY.

**(j)** Write the control word format for BSR mode of 8255.

## SECTION – B

**2. Attempt any five of the following questions: 5 x 10 = 50**

**(a)** (i) Explain the flag register of 8085 microprocessor with the help of example.

(ii) Identify the register contents and flag status as the following instructions are executed:

| | A | B | S | Z | CY |
|---|---|---|---|---|---|
| SUB A | | | | | |
| MOV B, A | | | | | |
| DCR B | | | | | |
| INR B | | | | | |
| SUI 01H | | | | | |
| HLT | | | | | |

**(b)** Draw and explain the timing diagram of MVI A, 46H and the total time required for the execution of this instruction.

**(c)** With the help of the block diagram, describe 8237 DMA Controller in detail.

**(d)** (i) Sixteen bytes of data are stored in memory locations at 2050H to 205FH. Write a programme to transfer the entire block of data to new memory locations starting at 2070H.

(ii) A string of six data bytes is stored starting from memory location 2050H. The string includes some blanks. Write a program to eliminate the blanks from the string.

**(e)** Draw the PIN diagram of 8086 microprocessor and discuss about each pin.

**(f)** Write a assembly language program based on 8085 to count from 0 to 9 with a one second delay between each count. At the count of 9, the counter should reset itself to 0

and repeat the sequence continuously. Use register pair HL to set up the delay and display each count at one of the output ports. Assume the clock frequency of the microprocessor is 1 MHz.

**(g)** (i) Write an assembly language program for conversation of Binary to BCD with flow chart.

(ii) Write an assembly language program for conversation of BCD to seven segment decoder.

**(h)** (i) Write a short note on STACK and UBROUTINE.

(ii) Draw a neat diagram for interfacing 8K SRAM and 8K EPROM with the system lines of 8085 microprocessor with memory map.

## SECTION – C

**Attempt any two of the following questions: 2 x 15 = 30**

**3** (i) Explain the role of interrupts in programming. Explain the interrupt used in 8085. List out all the vectored interrupts of 8085 and give their vector address.

(ii) Explain the addressing modes of 8085 microprocessor in detail with example.

**4** (i) Write a BSR control word subroutine to set bits PC7 and PC3a d reset them after 10ms. The address of control word register is 83H. Also, write subroutine of 10ms.

(ii) Write instructions to generate a 1 KHz square wave from counter 1 of 8254. Assume the gate of counter 1 of 8254 is tied to +5V through 10K resistor and port address for counter 1 ad control word register is 81H and 83H respectively. Explain the significance of connecting the gate to +5V.

**5** (i) Explain the architecture of 8255 PPI with neat diagram.

(ii) Define the modes of 8254 PIT in detail with the help of diagrams.