Instructions :

(1)

नीचे दर्शावेल ☛ निशानीवाणी विगतो उत्तरवही पर अवश्य लखवी.
Fillup strictly the details of ☛ signs on your answer book.
Name of the Examination :

B. E. - 3 (SEM. 5) (IC)

Name of the Subject :

Microprocessor Programming & Interfacing

☛ Subject Code No. : 6 7 8 7   ☛ Section No. (1, 2,......) : 1

Seat No. : 5 0 6 0 3 3

Student's Signature

(2)   Attempt all questions.
(3)   Figures to the **right** indicate full marks.
(4)   Answer to the **two** sections must be written in **separate** answer books.

1   (a)   Give answers in brief :   **10**

(1)   Calculate the number of memory chips needed to   **2**
design 8K byte memory if the memory chip size is
1024*1.

(2)   In the opcode fetch cycle, what are the control   **2**
and status signals asserted by the 8085 to enable
the memory buffer ?

(3)   Specify the contents of the accumulator and   **2**
CY flag when the following instructions are
executed ?
MVI A, C5H
ORA A
RAL
RAC

(4)   Which interrupt has highest priority ?   **2**
Which is nonmaskable interrupts ?

(5) What is the status of the flags and the contents 2
of the accumulator after the execution of teh POP
instruction located at 2007H explain the execution
of POP with the help of stack pointer register.

(b) Design a up counter to count from 0 to 9 continuously 8
with 1.5 second delay between each count. Show the
delay calculation.

2 (a) Draw the timing diagram for MOV A, B and 8
calculate the time period needed to execute the
instruction.

OR

2 (a) Draw the timing diagram for execution of OUT 8
instruction.

(b) Show the basic block diagram of I/O interface. 10
Also show decode logic for interfacing LED output port
through latch. Write the steps to interface output using
peripheral mapped I/O.

OR

(b) Show the interfacing of DIP switch as an input and 10
8 output home appliance through decoder 74LS138 to
8085 using memory mapped I/O. Write a program to
read switch and turn on/off appliance.
Assume the on/off position of switch and accordingly
show which output will be on/off.

3 (a) Explain the following terms : 8
(1) Machine code
(2) Absolute and partial decoding
(3) Auxiliary carry flag.

OR

3 (a) Draw the interfacing diagram for connecting 8
27218 EPROM (16K*8) through 74HC139 2 to 4 decoder.
Show the memory map.

(b) Explain the function of EI, DI, SIM and RIM 6
instructions in interrupt programming.

OR

(b) What are various software interrupts in 8085 and 6
give their locations and explain their usefulness.

Instructions :

(1)

	Seat No. :
નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી. Fillup strictly the details of ☛ signs on your answer book. Name of the Examination : ☛ B. E. - 3 (SEM. 5) (IC) Name of the Subject : ☛ Microprocessor Programming & Interfacing ☛ Subject Code No. : 6 7 8 8 ☛ Section No. (1, 2,......) : 2	5 0 6 0 3 3 *Aaţ* Student's Signature

(2) Attempt all questions.

(3) Figures to the **right** indicate full marks.

(4) Answer to the **two** sections must be written in **separate** answer books.

4 (a) Give answers in brief :   **10**

    (1) Write the initialization instructions for the 8255   **3**
    to set up :

      (a) port A as an output port in mode 0

      (b) port B as an output port in Mode 1 for
         interrupt I/O

      (c) port Cu as an output port in Mode 0.

    (2) What is the difference between timer and counter ?   **3**

    (3) List the necessary conditions to generate INTR   **2**
       when port A of the 8255a is set up as and output
       port in Mode 1.

    (4) What is DMA controller 8237. Explain the   **2**
       function of HOLD.

  (b) Write a subroutine to generate an interrupt   **8**
    every 1 sec. Assume the clock frequency of 8254 timer
    is 2 Mhz.

5 (a) A push button keyboard is connected to port A and   **12**
    a seven segment LED is connected to port B of 8255.
    Using mode 0, write a program to monitor keyboard to
    sense a key pressed and display the number of the key
    at the seven segment LED.

OR

5 (a) Following **Figure** shows the interfacing with 8255 in   **12**
    mode 1 :
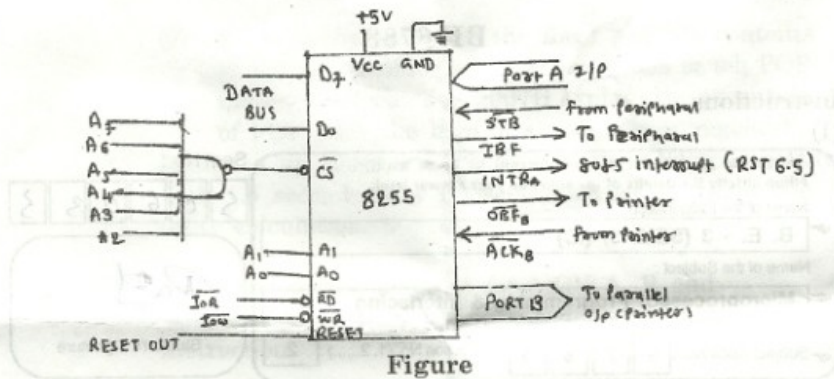
Figure

Find port addresses by analyzing the decode logic. Determine the control word to set up port A as input and port B as output in mode 1. Determine BSR word to enable INTEa (portA) Determine the masking byte to verify the OBFb line in the status check I/O (portB) Write initialization instructions and a printer subroutine to output characters that are stored in memory.

(b) What is stack ? What is subroutine ? Explain the   4
function of stack pointer. PUSH and POP instructions when call subroutine instruction get executed with example.

OR

(b) Explain the functions of handshake signals.   4
Name the handshaking signals used in input and output interfacing.

6 (a) Interface the ADC0801 converter with the 8085 mp   8
using memory-mapped I/O and the interrupt RST 6.5. Write an interrupt routine to read the output data of the converter, store it in memory and continue to collect the data for the specified number of times.

OR

6 (a) Describe the interrupt process.   8
   (b) A set of ten packed BCD numbers is stored in the   8
memory location staring at XX50H. Write a program with a subroutine to add these numbers in BCD.

OR

(b) Write a program to provide the given on/off to three   8
traffic lights (green, yellow and red) and two pedestrian signs (walk and don't walk). The signal lights and signs are turned on/off by the data bits of an output port as shown below :

Lights	on time	Lights	on time
Greeen	15 seconds	Yellow	5 seconds
Red	20 seconds	Walk	15 seconds
Don't Walk	25 seconds		