B. CSE 2ND YEAR 2ND SEMESTER EXAMINATION 2017

MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING

Time: Three Hours   Full Marks: 100

Answer any *four* questions

1. a) How is $\overline{MEMR}$ signal generated? What is the function ALE signal? What is T state, machine cycle and instruction cycle?   2+2+2+2+2

   b) How many machine cycle and T states are required to execute MVI M, 05$_H$? Write the names of these machine cycles. Write the steps and draw the timing diagram of data flow to execute the instruction. Assume that the instruction is stored from 2050$_H$ 2+1+4+8

2. a) Interface an 8K RAM chip beginning at address 2000$_H$ using a suitable decoder. Explain its address decoding technique and find its RAM address range. Assume/generate appropriate signals and pins.   15

   b) Describe the sequence of steps required for data transfer between microprocessor and an I/O device with appropriate schematic diagram.   10

3. a) What is an interrupt? What microprocessor does after receiving an interrupt?   5+5
   b) Name the different types of hardware and software interrupts?   3+2
   c) Rank the hardware interrupts according to their priority.   5
   d) Write the difference between subroutine call and interrupt.   5

4. a) There are N (8-bits) data bytes stored from m/m location 2500$_H$. The value of N is stored in 2000$_H$. Write an 8085 program to copy the even and odd integers into the m/m locations starting from 5050$_H$ and 6050$_H$, respectively.   13

   b) There are N bytes stored from m/m location 2500$_H$. The value of N is stored in 2400$_H$. Write an 8085 program to interchange the bits $D_7 D_6$ with $D_1 D_0$, respectively and store them into the m/m locations starting from 2600$_H$.   12

5. a) N numbers are stored in consecutive m/m location starting from 2050$_H$. The value N is stored in 204F$_H$. Write an 8085 program to find the sum of the maximum and minimum numbers and store the result in 2600$_H$ and 2601$_H$.   13

   b) Write a delay program for 1.0 ms in a 2 MHz microcomputer system.   12

6. a) Describe the different operating modes of the 8255 PPI.   15
   b) Describe with a schematic diagram the sequence of steps for asynchronous serial data transfer between μP and peripheral using a UART.   10