Department of I & CT
MIT, Manipal
ICT 2256 Microprocessor Systems and Computer Organization
FISAC 2 (IT A section) , Deadline: May 9th 12 noon

Answers should be written in A4 size sheets back to back with margin, question number and question statement.

1. With the help of neat diagrams explain the MODE 4 TO MODE 6 of 8254 IC with applications.
2. Explain the MODE 2 operation of 8255 IC with the help of neat diagrams and waveforms. Also, mention an application.
3. Design a combinational shifter according to the following function table:

S1 S0	Operation
0 0	No operation
01	Rotate right by 1 bit
10	Rotate right by 2 bits
11	Rotate right by 3 bits

4. Perform the multiplication of $(15)_{10}$ by $(13)_{10}$ using add and shift method.
5. Write an assembly language program to sort the string located in the data segment in alphabetical order.
6. List and explain the functions of maximum mode pins of 8086.
7. Write an assembly language program to accept a main string and a substring from the keyboard. Search for the substring in the main string and display the position where it is found in the main string. Otherwise, display "string not found" message.
8. Write an ALP to accept two, 2 – digit hexadecimal numbers N1 and N2 from the keyboard. If N1 < N2, perform UP count from N1 to N2 continuously. If N1>N2, perform DOWN count from N1 to N2 continuously. If any key is pressed, it should terminate counting.
9. Perform the multiplication of $(-15)_{10}$ by $(-18)_{10}$ using Booth's algorithm.
10. Explain the following instructions with an example for each

    a. XLAT b. LEA c. LES d. LAHF e. SAHF