

Department of Mathematics
I.I.T., Kharagpur

Mid Autumn Semester Examination 2015-2016
Subject: Systems Programming (MA40003/MA60003)

4th Yr. M.Sc.(MA), 1st Yr. M.Tech(CSDP)

No. of Students: (55+29)

Time : 02 Hours

Marks : 30

Answer all TEN Questions
Each question carries equal marks
No Query will be entertained
The question paper consists of one page

1. Draw the architecture of 8086 processor and explain the function of each block.
2. Explain with example three different ways of passing parameters to and from the procedure.
3. Write an assembly language program which will input the user name from the keyboard. If the user name is 'SYSTEM', then output 'The user name is valid' else output 'Invalid user name'.
4. Write an assembly language program to convert a four digit octal number to decimal number.
5. Discuss the use of XLAT operator. If AL is 147 and execution of the instruction SUB AL, BL makes carry flag as 1 and overflow flag as 0, then what are the possible values of BL before execution of the instruction? Justify your answer.
6. Write an assembly language program to read a two dimensional integer array of size 3×5 . Call a procedure to find the largest element of the array. Display the largest element from main procedure.
7. Write a procedure in assembly language to multiply two 8 bit unsigned integers using addition and bit shifting operators. DO NOT use MUL operator. Write the corresponding procedure.
8. Write an assembly language program to count the number of times the letter 'e' appears in the string 'exercise'. Store the result in memory variable *ans* and display the value of *ans*.
9. Discuss all types of jump instructions used in 8086 microprocessor.
10. Explain register indirect addressing mode, base addressing mode and indexed addressing mode with appropriate example.