

Department of Mathematics
I.I.T., Kharagpur

Mid Autumn Semester Examination 2009-10
Systems Programming (MA40003/MA60003)

Time : 2 Hours

Marks : 30

Answer ALL Twelve Questions

1. Discuss salient features of Intel 8086 microprocessor including the function of different registers. (2)
2. Write a procedure in assembly language to print the content of register BX as a hexadecimal number. Also write the corresponding main function. (2)
3. If AL is 147 and execution of the instruction SUB BL,AL 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. $-128 < BL < 18$ (2)
4. Illustrate with proper examples the syntax and use of the following assembly instructions : PTR, LABEL and XLAT. XLAT is used for Look up table referenced by BX at AL. PTR is used to convert Type of variable. Label can be placed before a piece of code, they are assigned the value of active location counter and serves as instruction operand. (2)
5. Write a procedure in assembly language to insert a string into a specified string starting from a specified position. (2)
6. Give efficient translation of the followings into assembly language : (i) $BX = AX + CX$ (b) If $(CX > (12 - DX))$ then $BX = BX + 10$ else $BX = BX - 10$. Content of no register other than BX should change. (2)
7. Write loops in an assembly language of the type (i) while condition do (ii) repeat until condition (iii) for each case do to add elements of an integer array of size 10 in the memory. (3)
8. Write a program in assembly language to do the following : (i) input a string of letters terminated by period(.), (ii) print the frequency of each letter in the string. (3)
9. Write a program in assembly language to read 12 integers from keyboard and store them in a two dimensional array of size 4 X 3. Now call a procedure to find out the largest element of the array and display the largest element in the main program. (3)
10. Write an assembly language subroutine to add two 32 bit integers. To test the subroutine, write the corresponding main program. (3)
11. Discuss the syntax and use of the following assembly instructions : CLD, LOADSB, SCASW, CMPSB and REPE. (3)
12. Write a procedure in assembly language to move n bytes from a location X to location Y. Use the concept of passing parameters by address. Also write the corresponding main program. (3)

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