USN

Fifth Semester B.E. Degree Examination, Dec.2023/Jan.2024
System Software

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions, selecting at least TWO questions from each part.*

PART – A

1   a.   Explain the instruction formats and addressing modes of SIC/XE machine architecture. **(10 Marks)**
    b.   Write sequence of instructions for SIC/XE to set ALPHA equal to 4 * BETA – 9. Assume ALPHA and BETA are one-word variables (use register operation). **(04 Marks)**
    c.   Write a program in both SIC and SIC/XE to copy a character string 'system software' to another character string. **(06 Marks)**

2   a.   What is meant by assembler directive? Explain the following directives with suitable example : RESW, LTORG, USE, EQU. **(08 Marks)**
    b.   Write the formats of text record and modification record. **(04 Marks)**
    c.   Explain Pass–1 algorithm of assembler and two major internal data structures used by it. **(08 Marks)**

3   a.   Explain the structure of load and go assembler. **(10 Marks)**
    b.   Differentiate between literal and an immediate operand. Give an example for each. **(05 Marks)**
    c.   With an example, explain the multipass assembler. **(05 Marks)**

4   a.   Write and explain Boot strap loader for SIC/XE. **(10 Marks)**
    b.   Explain the machine dependent loader features. **(10 Marks)**

PART – B

5   a.   Describe editor structure with a neat block diagram. **(10 Marks)**
    b.   Explain the different debugging function and debugging capabilities. **(10 Marks)**

6   a.   Define Marco. Briefly explain the macroprocessor algorithm and data structure used by it. **(12 Marks)**
    b.   What is nested macro? Write down the procedure for recursive macro expansion. **(08 Marks)**

7   a.   Explain the structure of a lex program with an example. **(08 Marks)**
    b.   Explain yylex ( ) and yywrap( ) functions. **(04 Marks)**
    c.   Write a Lex program to count the number of characters, words, spaces and lines in a given input file. **(08 Marks)**

8   a.   What is YACC? Explain the different sections used in YACC specification. **(10 Marks)**
    b.   Write a YACC program to validate simple arithmetic expression involving + , – , * , / . **(10 Marks)**

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