



10CS52

Fifth Semester B.E. Degree Examination, Jan./Feb. 2023  
**System Software**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting atleast 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, LORG, 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. List machine independent macro processor features. Explain any two with an example. (10 Marks)  
b. Explain the data structures involved in macro-processor algorithm. (05 Marks)  
c. Explain the features of MASM macro-processor. (05 Marks)
- 7 a. Explain the format of LEX program. (06 Marks)  
b. What is regular expression? Explain all the characters that forms regular expression. (08 Marks)  
c. Write Lex program to count the number of characters, words, lines of given input file. (06 Marks)
- 8 a. State ambiguous grammar with an example. How to eliminate ambiguity? (08 Marks)  
b. Write a Yacc program to design a simple calculator. (08 Marks)  
c. Write down the compilation and execution procedure of a simple Lexer and parser. (04 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg,  $42+8=50$ , will be treated as malpractice.