



10CS52

Fifth Semester B.E. Degree Examination, June/July 2023

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. Bring out the differences between system software and application softwares, with examples. (04 Marks)
- b. Explain the SIC / XE machine architecture in detail. (12 Marks)
- c. Suppose that RECORD contains a 100 byte record. Write a subroutine for SIC / XE that will write this record onto device F1. Use immediate addressing and register-to-register instructions to make the subroutine as efficient as possible. (04 Marks)
- 2 a. What are the basic functions of an assembler? (05 Marks)
- b. Write the following formats: i) Header ii) Text iii) End. (05 Marks)
- c. Write and explain the algorithm of PASS-1 of two-pass assembler. (10 Marks)
- 3 a. With required data structures and processing logic, explain the implementation of literals within an assembler. (07 Marks)
- b. What are program blocks? How multiple program blocks are handled by an assembler? (07 Marks)
- c. Compare a two-pass assembler with a single pass assembler. How forward references are handled in one-pass assembler? (06 Marks)
- 4 a. Write the SIC/XE source code for a simple bootstrap loader. (07 Marks)
- b. Explain dynamic linking with suitable diagrams. (07 Marks)
- c. Explain the facilities available in MS-DOS linker for program linking. (06 Marks)

PART - B

- 5 a. With a neat diagram, explain the working of typical editor structure. (08 Marks)
 - b. Explain the debugging functions and capabilities of an interactive debugging system. (08 Marks)
 - c. List the four tasks of a document editing process. (04 Marks)
 - 6 a. What are the basic functions of macro processor? Explain the various data structures used in the implementation of a one-pass macro processor. (10 Marks)
 - b. Explain the following features of macro processors:
 - i) Concatenation of macro-parameters.
 - ii) Generation of unique labels.
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- 7 a. Explain the communication between the Parser and Lexer with a neat block diagram. (05 Marks)
 - b. What is a regular expression? Explain the various regular expressions in UNIX with examples for each. (10 Marks)
 - c. Write a LEX program to count the number of vowels and consonants in a given string. (05 Marks)
 - 8 a. Define YACC tools. What are the two types of conflicts in YACC? Give examples. (08 Marks)
 - b. Write a YACC program to evaluate an arithmetic expression involving operators +, -, *, /. (07 Marks)
 - c. Write a short note on shift/reduce parsing. (05 Marks)

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.