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10CS52

**Fifth Semester B.E. Degree Examination, June/July 2018**  
**System Software**

Time: 3 hrs.

Max. Marks:100

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

**PART - A**

- 1 a. Explain the following features of SIC/XE machine architecture: (10 Marks)  
i) Registers ii) Memory iii) Input and Output.
- b. Explain SIC/XE machine instruction formats and all addressing modes by clearly indicating the setting of different flag bits. (10 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. What are the program blocks? Explain a program with multiple program blocks. (10 Marks)
- b. Explain the following terms: i) Multipass assembler ii) MASM assembler. (10 Marks)
- 4 a. Write the source program or algorithm of a simple bootstrap loader. Explain. (08 Marks)
- b. Explain the dynamic linking with suitable diagrams. (08 Marks)
- c. Distinguish between linking loader and linkage editors. (04 Marks)

**PART - B**

- 5 a. With a neat diagram, explain the structure of a text editor. (10 Marks)
- b. Explain the functions and capabilities of an interactive debugging system. (06 Marks)
- c. Write a note on user interface criteria. (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: (10 Marks)  
i) Concatenation of macro-parameters.  
ii) Generation of unique labels.
- 7 a. Explain the structure of "LEX". (06 Marks)
- b. Explain the "Parser-lexer communication". (06 Marks)
- c. Give the LEX and YACC specifications to recognize parenthesized arithmetic expressions. (08 Marks)
- 8 a. Write a program for recognizing the given language  $\{a^n b^n : n \geq 0\}$ . (10 Marks)
- b. Consider the grammar:  
 $E \rightarrow E - E$   
 $E \rightarrow E \times E$   
 $E \rightarrow a|b|c$   
Perform shift reduce parsing of the input string "a - b \* c". (10 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.