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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:
i) Registers ii) Memory iii) Input and Output. **(10 Marks)**

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:
i) Concatenation of macro-parameters.
ii) Generation of unique labels. **(10 Marks)**

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 $\{a^n b^n : n >= 0\}$. **(10 Marks)**

b. Consider the grammer:
$E \rightarrow E - E$
$E \rightarrow E \times E$
$E \rightarrow a|b|c$
Perform shift reduce parsing of the input string "a – b * c". **(10 Marks)**

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