CBCS Scheme

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15CS63

Sixth Semester B.E. Degree Examination, June/July 2018
System Software and Compiler Design

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1 a. Define system software. Distinguish between system software and application software. **(06 Marks)**

b. List out registers used in SIC/XE machine architecture along with their use. **(10 Marks)**

OR

2 a. Explain the data structures and pass-1 algorithm of SIC assembler. **(08 Marks)**

b. Define Macro. Give the features of macro processors and explain the data structures used in macro processors. **(08 Marks)**

Module-2

3 a. What is loader? What are advantages and disadvantages? Explain boot strap loader with algorithm. **(08 Marks)**

b. Enlist any four different loader option commands. **(04 Marks)**

c. Define the following: i) Linking loader ii) Dynamic linking. **(04 Marks)**

OR

4 a. Explain the working of linkage editor and linking loader. **(08 Marks)**

b. Write the data structures and pass 2 algorithm for linking loader. **(08 Marks)**

Module-3

5 a. What is compiler? Explain various phases of compiler with help of neat diagram. **(10 Marks)**

b. Explain the concept of input buffering in the lexical analysis. **(06 Marks)**

OR

6 a. Construct the transition diagram to recognize the tokens given below:
i) Identifier ii) Relational operator iii) Unsigned number. **(08 Marks)**

b. Create a lexical analyzer with Lex and explain the structure of Lex programs. **(08 Marks)**

Module-4

7 a. What is top down parser? What are key problems in top down parsing? **(08 Marks)**

b. Explain the ambiguity in arithmetic expression. What is the ambiguity in parsing $2 + 3 \times 4$? Explain the solution for it. **(08 Marks)**

OR

8 a. What is meant by handle processing? How it helps on shift reduce parsing? List the actions of a shift reduce parser. **(08 Marks)**

b. Form the Action/Goto table for the following grammer:

$S \rightarrow Aa|bAc|Ba|bBa$

$A \rightarrow d$

$B \rightarrow d$

Justify whether the grammer is LR (0) or not. **(08 Marks)**

Module-5

9 a. Discuss S-attributes and L-attributes with respect to SDD (Syntax Directed Definition). **(04 Marks)**

b. Construct the syntax tree for the expression $x * y - 5 + z$. **(04 Marks)**

c. Explain the translation of expression address code of
i) Quadruples ii) Triples iii) Indirect triples, with examples. **(08 Marks)**

OR

10 a. Briefly explain the main issues in code generation. **(08 Marks)**

b. Generate code for the following expression using the code generator algorithm. $x := (a + b)^* (c - d)$. **(08 Marks)**

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