CBCS SCHEME

USN | 1 | K | S | 1 | 5 | C | S | 0 | 1 | 4 | 15CS63

Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020
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. Explain the various instruction formats used in SIC/XE machine. **(04 Marks)**

b. Write a SIC/XE program to copy the string "COMPUTER SCIENCE ENGINEERING" from STR1 to another string STR2. **(06 Marks)**

c. List the functions of Pass-1 and Pass-2 of a two pass assembler. **(06 Marks)**

OR

2 a. Write an algorithm of the Pass-1 of a two pass assembler. **(08 Marks)**

b. List the various machine independent assembler features. Explain the control-sections, how the assembler converter them into object code. **(08 Marks)**

Module-2

3 a. Define Macro. Explain how Macros are defined and expanded. **(07 Marks)**

b. What are the basic functions of a loader? Explain two ways of program relocation in loaders. **(09 Marks)**

OR

4 a. Explain the functions of dynamic linking with a diagram. **(08 Marks)**

b. Write a note on MS-DOS linker. **(08 Marks)**

Module-3

5 a. Explain the different phases of a compiler, with an example. **(09 Marks)**

b. What is input buffering in lexical analysis? List the different methods of input buffering explain any one of them. **(07 Marks)**

OR

6 a. List and explain the reasons for separating the analysis portion of a compiler into lexical and syntax analysis phases. **(06 Marks)**

b. Construct the transition diagram to recognize the tokens of
i) Identifier ii) Relational operators iii) Unsigned numbers. **(06 Marks)**

c. Define Tokens, patterns, lexemes. **(04 Marks)**

Module-4

7 a. What is the role of parser? Explain the different error recovery strategies. **(08 Marks)**

b. Construct the LL(1) parsing table for the following productions:
$E \rightarrow E + T/T$; $T \rightarrow T * F/F$; $F \rightarrow (E)/id$ **(08 Marks)**

OR

8 a. Using operator-precedence parsing algorithm, construct the table and parse the input string id + id * id. **(12 Marks)**

b. Define Handle, viable prefixes. **(04 Marks)**

Module-5

9 a. Discuss S-attributed and L-attributed SDD. **(06 Marks)**

b. Write 3-address code syntax tree and DAG for the expression a + a * (b – c) + (b – c) * d. **(10 Marks)**

OR

10 a. Obtain the SDD and construct annotated parse tree for the input string 6 * 5 + 3, for the grammar

$S \rightarrow EN$

$E \rightarrow E + T/T$

$T \rightarrow T * F/F$

$F \rightarrow (E)/digit$

$N \rightarrow ;$ **(10 Marks)**

b. Discuss the issues in the design of code generator. **(06 Marks)**

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