

CBCS SCHEME

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15CS63

Sixth Semester B.E. Degree Examination, 1)ec.201 9/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

- Explain the various instruction formats used in S1C/XE machine. (04 Marks)
 - Write a SIC/XE program to copy the string "COMPUTER SCIENCE ENGINEERING" from STR 1 to another string STR2. (06 Marks)
 - List the functions of Pass-1 and Pass-2 of a two pass assembler. (06 Marks)

OR

- Write an algorithm of the Pass-1 of a two pass assembler. (08 Marks)
 - List the various machine independent assembler features. Explain the control-sections, how the assembler converter them into object code. (08 Marks)

Module-2

- Define Macro. Explain how Macros are defined and expanded. (07 Marks)
 - What are the basic functions of a loader? Explain two ways of program relocation in loaders. (09 Marks)

OR

- Explain the functions of dynamic linking with a diagram. (08 Marks)
 - Write a note on MS-DOS linker. (08 Marks)

Module-3

- Explain the different phases of a compiler, with an example. (09 Marks)
 - What is input buffering in lexical analysis? List the different methods of input buffering explain any one of them. (07 Marks)

OR

- List and explain the reasons for separating the analysis portion of a compiler into lexical and syntax analysis phases. (06 Marks)
 - Construct the transition diagram to recognize the tokens of
 - Identifier
 - Relational operators
 - Unsigned numbers.
 (06 Marks)
 - Define Tokens, patterns, lexemes. (04 Marks)

Module-4

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

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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
 $S \rightarrow EN$
 $E \rightarrow E + T / T$
 $T \rightarrow T * F / F$
 $F \rightarrow (E) / \text{digit}$
 $1 \rightarrow ;$
 b. Discuss the issues in the design of code generator. (10 Marks)

(06 Marks)

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