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B. Tech. 6th Semester (CSE) Examination – May, 2023

COMPILER DESIGN

Paper : PCC-CSE-302G

Time : Three Hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all, selecting ***one*** question from each Section. Question No. 1 is ***compulsory***.

1. Explain the following questions : $6 \times 2.5 = 15$

   (a) Role of lexical analyzer

   (b) Language Processors

   (c) Recursive Descent Parser

   (d) Handle pruning

   (e) Rules to construct the LR (0) items

   (f) Forms of objects code

SECTION – A

2. (a) What do you mean by Compiler ? Explain various Phases of Compiler. 10

(b) Explain various compiler construction tools. 5

3. (a) Construct a Finite Automata equivalent to the regular expression : 10

$(a \mid b)^* \mid (ab)^* b \mid a^* (bb)^*$

(b) Explain implementation of lexical analyzer. 5

SECTION – B

4. (a) Explain the parsing techniques with a hierarchical diagram. 7.5

(b) What are the problems associated with Top Down Parsing ? 7.5

5. Explain operator precedence parsing in detail. Explain with the help of example. 15

SECTION – C

6. (a) Prepare a canonical parsing table for the given grammar : $S \rightarrow CC$ $C \rightarrow cC/d$ 10

(b) Explain three address code, quadruples and triples. 5

7. (a) Construct SLR parsing table for the following grammar : 7.5

$R \rightarrow R^* \mid ^* R \mid R\,R \mid R^+ \mid (R) \mid a \mid b$

(b) Write Rules to construct FIRST Function and FOLLOW Function. Consider Grammar. 7.5

$E \rightarrow E+T \mid T$

$T \rightarrow T^*F \mid F$

$F \rightarrow (E) \mid id$

SECTION – D

8. (a) What is the use of symbol table ? Explain the various data structures associated with symbol table. 8

(b) Explain the various types of errors generated during the various phases of the compiler. How does we recover from these errors ? 7

9. Explain the following with example : $2 \times 7.5 = 15$

(a) Various machine independent code optimization techniques.

(b) Register allocation for temporary and user defined variables.
