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53 (CS 601) CPDG

2021

COMPILER DESIGN

Paper : CS 601

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer any five questions.

1. (a) What are Basic Blocks? Write the algorithm for partitioning into basic blocks. 10
- (b) Define Code Optimization. Explain machine-independent and machine-dependent code optimization. 10
2. (a) Explain Dead code elimination with example. 5

Contd.

- (b) Do the left factoring in the following grammar 5

$$A \rightarrow aAB|aA|a$$

$$B \rightarrow bB|b$$

- (c) Check whether the following grammar is an LL(1) grammar

$$S \rightarrow iEtS|iEtSeS|a$$

$$E \rightarrow b$$

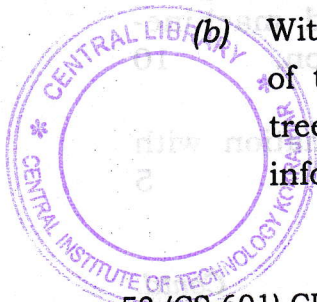
Also find First and Follow. 10

3. (a) Define LALR(1) grammar. Construct LALR(1) parsing table for the following grammar 10

$$S \rightarrow CC$$

$$C \rightarrow cC|c|d$$

- (b) With a neat diagram, explain the format of the symbol table. And discuss the tree structure representation of scope information. 10



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4. Create the LR(0) and SLR(1) parsing table for following grammar

$$E \rightarrow E + T \mid T$$

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

$$F \rightarrow (E) \mid id$$

Parse the string $(id + id) * id$ and

$id + id * id + id$.

20

5. (a) Differentiate between Top-Down and Bottom-Up parsing techniques. 10
- (b) Discuss all the phases of a compiler with a diagram. 10

6. Write short notes on : 10×2=20

(a) Lex and YACC

(b) Lexeme, Token, Pattern.

