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Code No: CT1509

GEC-R14

III B. Tech II Semester Regular Examinations, April 2017

COMPILER DESIGN
(Information Technology)

Time: 3 Hours

Max. Marks: 60

Note: All Questions from **PART-A** are to be answered at one place.

Answer any **FOUR** questions from **PART-B**. All Questions carry equal Marks.

PART-A

6 × 2 = 12M

1. Construct Regular Expression to identify floating point numbers
2. Define left recursion
3. Construct LR(0) items for the grammar $S \rightarrow S(S)/\epsilon$
4. How the value of inherited attribute is computed?
5. Convert the given infix expression into postfix expression.
 $(a + b) * (c + d) (a + b + c)$
6. What is inter procedural optimization?

PART-B

4 × 12 = 48M

1. a) Discuss various phases of compiler. Explain the result of each phase for the example given below.
Position=initial+ rate*60 (6M)
b) Identify the lexemes that make up the tokens in the following program segment. Indicate corresponding token and pattern (6M)
void swap(int i, int j)
{
int t;
t=i;
i=j;
j=t;
}
2. a) Construct LL(1) Parsing table for grammar (8M)
 $E \rightarrow TE^1$
 $E^1 \rightarrow +TE^1 / \epsilon$
 $T \rightarrow FT^1$
 $T^1 \rightarrow *FT^1 / \epsilon$
 $F \rightarrow (E)/id$
And parse the string $id+(id*id)$

- b) Find FIRST and FOLLOW of following grammar (4M)
- $S \rightarrow aBbSA/d$
 $A \rightarrow eS/\epsilon$
 $B \rightarrow f$
3. Construct SLR parsing table for the following grammar and find whether the string **add\$** is accepted by the grammar or not. (12M)
- $S \rightarrow CC$
 $C \rightarrow aC|d$
4. Write short notes on the following:
- a) Write an SDD for flow control statements. (6M)
- b) Symbol table organization for block structured languages. (6M)
5. a) Write the quadruple, triple, indirect triple for the expression (6M)
- $-(a*b)+(c+d)-(a+b+c+d)$
- b) Explain methods for Basic block optimization. (6M)
6. a) Write an algorithm for generating code from DAG and construct (6M)
- DAG for $X = -a*b + -a*b$
- b) What is peephole optimization? Explain its characteristics. (6M)
