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VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (IT: CBCS) VI-Semester Advanced Supplementary Examinations, July-2019

Compiler Construction

Time: 3 hours

Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. What is the difference between Compiler and Interpreter?
2. What is the role of Finite Automata in compiler construction?
3. What is ambiguous grammar? Give an example.
4. What is the relationship among SLR, CLR and LALR with respect to the power?
5. What is L-attributed Definition?
6. What is annotated parse tree?
7. What is activation tree? Give an example.
8. What do you mean by loop invariant computation? Give an example.
9. What is peephole optimization?
10. What is the role of target machine properties in code generation?

Part-B (5 × 10 = 50 Marks)

- 11.a) What are the different phases of a compiler? Explain in detail. [5]
- b) Write a LEX program to identify: keyword, identifiers, constants, operators and special symbols. [5]
- 12.a) Show that the following grammar is LL(1). [5]
 $S \rightarrow AsAb \mid BbBa$
 $A \rightarrow \epsilon$
 $B \rightarrow \epsilon$
- b) Construct the CLR parsing table for the following grammar. [5]
 $S \rightarrow CC$
 $C \rightarrow cC \mid d$
- 13.a) Give the SDD for a desk-calculator with the productions: [5]
 $E \rightarrow E + T \mid T$
 $T \rightarrow T * F \mid F$
 $F \rightarrow (E) \mid \text{digit}$
- b) Construct the parse tree and syntax tree for the expression ((a)+(b)) by using SDD obtained in Q.No. 13(a). [5]
- 14.a) What are the different storage allocation strategies? Explain. [5]
- b) How to identify Leaders, Basic Blocks and flow graph while doing code optimization? Explain with an example. [5]

15. Give the algorithm for code generation and generate the code for the following C [10]
statements by assuming three registers.

```
x=1  
x=y  
x=x+1  
x=a+b*c  
x=a/(b+c)-d*(e+f)
```

16.a) Explain about Input buffering. [5]

b) Give the structure of YACC program with an example. [5]

17. Answer any *two* of the following:

a) Explain about Type Checking. [5]

b) Explain about heap management. [5]

c) What are the different issues to be considered in code generation? Explain. [5]

