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**Question Paper Code: 56803**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Sixth Semester

Information Technology

15UIT603- COMPILER DESIGN

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

PART A - (5 x 1 = 5 Marks)

1. \_\_\_\_\_ phase generates a parse tree as output. CO1- R  
(a) Lexical Analysis (b) Syntax Analysis (c) Semantic Analysis (d) Code Generation
2. Grammar of the programming is checked at \_\_\_\_\_ phase of compiler. CO2- R  
(a) Semantic analysis (b) Syntax analysis  
(c) Code optimization (d) Code generation
3. An intermediate code form is\_\_\_\_\_. CO3- R  
(a) Postfix notation (b) Syntax trees (c) Three address codes (d) Both a&c
4. Determine the costs of the following instruction sequences. CO4- R  
LDA R0,a ST b, R0  
(a) 3 (b) 4 (c) 5 (d) 6
5. Peep-hole optimization is a form of\_\_\_\_\_. CO5- R  
(a) Loop optimization (b) Local optimization  
(c) Constant folding (d) Data flow analysis

PART – B (5 x 3= 15Marks)

6. List the tokens for the given C ++ statement CO1 -R  
float limitedsquare(x) float x {  
return ( x <= -10.0 || x >= 10.0 ) ? 100 : x\* x ;  
}
7. List the error recovery strategies. CO2- R
8. Define intermediate code generation?. CO3- R

9. How can you find the leaders in basic block c. CO4 -R
10. List the properties of natural loop. CO5- R

PART – C (5 x 16= 80Marks)

11. (a) (i) Discuss the working of various phases of Compiler with a neat diagram. CO1- App (8)
- (ii) Illustrate the output of each phase of compilation for the input  $a = (b+c) * (b+c) * 2$ . CO1- App (8)
- Or
- (b) (i) Illustrate in detail about the various compiler construction tools. CO1 -App (8)
- (ii) What is the need of lexical analyzer? Mention some input buffering techniques. CO1 -App (8)
12. (a) Explain the role of the parser and discuss about various error-recovery strategies. CO2 -App (16)
- Or
- (b) Construct an SLR parsing table for the following grammar CO2 -Ana (16)
- E -> E + T | T  
T -> T \* F | F  
F -> (E)  
F -> id  
Show the behavior of the parser for the given sentence id +id\*id
13. (a) Construct predictive parser and check whether the given grammar is a LL(1) grammar.  $S \rightarrow iEtS \mid iEtSeS \mid a, E \rightarrow b$ . CO3 -Ana (16)
- Or
- (b) (i) What is the advantage of intermediate code generation. CO3 -Ana (8)
- (ii) Translate the arithmetic expression  $a + -(b+c)$  into syntax tree, Quadruples, Triples, and Indirect triples CO3 -Ana (8)
14. (a) Discuss briefly about the issues in the design of code generator CO4 - U (16)
- Or
- (b) Analyze the issues in register allocation and assignment with examples. CO4 -Ana (16)

15. (a) (i) Discuss optimization of basic blocks CO5- U (8)
- (ii) What is dataflow analysis? Explain with an example . CO5- U (8)
- Or
- (b) Explain the various code improving transformation techniques CO5- U (16)  
with an example

