

Roll No .....

**CS-701****B.E. VII Semester**

Examination, December 2013

**Compiler Design***Time : Three Hours***RGPVONLINE.COM** *Maximum Marks : 70***Note:** Attempt one question from each unit**Unit - I**

1. a) Explain the role of the lexical analysis in compiler and also discuss the issues in lexical analysis.  
b) Construct the NFA and then optimized DFA for the regular expression.  $ab(a/b)^*a^*$
2. a) Explain the following:-  
(i) Boot strapping and Pointing  
(ii) Input buffering  
b) Describe the analysis-synthesis model of compilation.

**Unit - II**

3. What are the merits and demerits of LR-parses? Construct SLR parsing table for the following grammars with necessary codes for action.

$$E \rightarrow E + T / T$$

$$T \rightarrow T * F / F$$

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

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4. a) Explain the syntax directed definition for constructing syntax tree for an arithmetic expression. Also explain what is an rotated parse tree.  
b) Define content free grammar and explain how it is suitable for parsing.

**Unit - III**

5. a) Explain the memory allocation in block structured languages.  
b) Distinguish between static scope and dynamic scope. Briefly explain access to non-local names in static scope.
6. a) Explain in detail different dynamic storage allocation strategies.  
b) What is type conversion?  
c) Explain overloading of functions and operations briefly?

**Unit - IV**

7. a) Discuss the issues in the design of code generator.  
b) Give the translation scheme for converting the assignments into three address code.
8. a) Explain the code generation algorithm and generate the code for the following:  
$$X = (A - B) + (A - C) + (A - C)$$
  
b) Describe peephole optimization briefly.

**Unit - V**

9. a) What is code optimization? How is it achieved? Explain.  
b) Explain data flow analysis of structure flow graph.
10. Write short notes on the following :-  
a) Loops in flow graphs  
b) Loop unrolling, peeling, fusion  
c) Code improving transformations  
d) Function preserving transformations

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