

Roll No .....

**IT-6004 (CBGS)****B.E. VI Semester**

Examination, May 2019

**Choice Based Grading System (CBGS)****Compiler Design****Time : Three Hours****Maximum Marks : 70****Note:** i) Attempt any five questions.

ii) All questions carry equal marks.

- a) What is a compiler? Explain the various phases of compiler in detail, with a neat sketch. 7
- b) Explain the role of Lexical Analyzer and also discuss the issues of same. 7
- a) Construct CFG without  $\epsilon$  production from:  $S \rightarrow a|Ab|aBa$ ,  $A \rightarrow b|\epsilon$ ,  $B \rightarrow b|A$ . 7
- b) Consider the CFG with the following production rules:  
 $S \rightarrow aB|bA$   
 $A \rightarrow bAA|aS|a$   
 $B \rightarrow aBB|bS|b$   
 Give a rightmost derivation and draw derivation tree for the string **abbaab**. 7
3. a) What is a shift reduce parser? Explain in detail the conflicts that may occur during shift reduce parsing. 7
- b) Check whether the following grammar is a LL(1) grammar  $S \rightarrow iEtS | iEtSeS | a$   $E \rightarrow b$  also define the FIRST and FOLLOW procedures. 7

4. a) Check whether the following grammar is SLR (1) or not. Explain your answer with reasons. 7  
 $S \rightarrow L = R$   
 $S \rightarrow R$   
 $L \rightarrow *R$   
 $L \rightarrow id$   
 $R \rightarrow L$
- b) What is a syntax tree? Draw the syntax tree for the assignment statement:  
 $a := b * - c + b * - c$  7
5. a) Explain how declarations are done in a procedure using syntax directed translation scheme. 7
- b) What are the different storage allocation strategies? Explain. 7
6. a) Explain the principle sources of optimization in detail? 7
- b) Explain the data structure used for implementing symbol table. 7
7. a) How would you construct a DAG for a Basic block? Explain with an example. 7
- b) Write about Data Flow Analysis of structural programs. 7
8. a) Describe in detail about the stack allocation in memory management. 7
- b) Discuss about the following: 7
  - i) Dead code Elimination and
  - ii) Code motion

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