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### 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.

1.  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

2.  a)  Construct CFG without $\varepsilon$ production from: S-->a|Ab|aBa, A-->b|$\varepsilon$, B-->b|A.          7

    b)  Consider the CFG with the following production rules:

    S -->aB| bA

    A-->bAA |aS |a

    B --> aBB |bS| b

    Give a righmost 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-->iEtS |iEtSeS| a E-->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:          7

    $a : = b * - c + b * - c$

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. http://www.rgpvonline.com          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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