Indian Institute of Information Technology, Nagpur

Department of Computer Science and Engineering

Session:2019-2020

Course: Compiler

Teacher's Assessment 1

VI Semester **Marks: 10**

Note: The marks allotted to questions are written on the right-side of every question in square bracket. Last date of submission of the assignment will be 13/03/20 (Friday).

1. Consider the following grammar,
   S → Aa | bAc | Bc | bBa
   A → d
   B → d
   Check if the grammar is CLR(1) and LALR(1). **[2]**

2. Consider the following grammar,
   S → AaAb | BbBa
   A → ε
   B → ε
   Check if the grammar is LALR(1). **[1]**

3. Compute First and Follow for each nonterminal and LL(1) table.
   E → aA | (E)
   A → +E |*E | ε **[1]**

4. Construct the nonempty sets of LR(1) items for the following grammar:
   S → A
   A → AB | ε
   B → aB | ε **[1]**

5. Write the grammar for arithmetic expressions, and write syntax directed translations to count the number of reductions made by the parser, to go along with your grammar. **[1]**
6. Consider the following grammar,
   S → id = E; | L = E;
   E → E_1 + E_2 | id | L
   L → id [E] | L_1 [E]
   Write the syntax directed translations to convert array references to three address code. **[2]**
7. Write a syntax-directed definition for the evaluation of a real number from its bit-string representation (E.g. :- Bit-string = 110.101, real number after evaluation = 6.625)
   N → L . R
   L → BL | B
   R →BR | B
   B → 0 | 1 **[2]**