NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CSPC41 – PRINCIPLES OF COMPILER DESIGN

B.TECH / CSE (B) – VII Semester

Last Date: 06.11.2020 **Programming Assignment** **Marks : 15 Marks**

Answer All the Questions

LEXICAL ANALYZER – LEX PROGRAM

1. Develop a scanner using LEX to **count** and **print** words that start with '**k**' or '**K**'
2. Develop a scanner using LEX to **count** and **print** words that has **atleast two vowels**
3. Develop a scanner using LEX to **count** no. of **operators, identifiers, keywords, special symbols** in the given 'C' program
4. Develop a scanner using LEX to **count** no. of **classes, data members, and member functions** in the given 'C++' program
5. Develop a scanner using LEX to **convert** the **lower case letters to uppercase**
6. Develop a scanner using LEX to **count** no. **of words, lines, characters, numbers, spaces, comma, and full stop**. (**i/p:** A paragraph in English).
7. Develop a scanner using LEX to **count** and **print vowels** that is present in the given word (**i/p:** A paragraph in English).
8. Develop a scanner using LEX to **count** and **print** only those **words are in mixed case**

SYNTAX ANALYZER – LEX followed by YACC Program

1. Write **LEX** and **YACC** specifications for atleast for 5 programming Constructs using '**FOR**'
2. Write **LEX** and **YACC** Specifications for atleast for 5 programming Constructs using '**WHILE**'
3. Write **LEX** and **YACC** specifications for all "**do while**" loop statements of 'C' programming language
4. Write **LEX** and **YACC** specifications for "**IF – ELSE**" programming constructs

5. Develop a parser for "**switch case**" statements of 'C' programming language using **LEX & YACC.**
6. Design a calculator with only bitwise operators like **&, | , ^** using **LEX** and **YACC**
7. Write **LEX** and **YACC** specification to verify the given program is syntactically correct

.

```
void main()
{
        int a=10,b=20,c;
        c=a+b;
        printf(c);
```

8. Write a **LEX/YACC** program to validate email id (.....@gmail/yahoo/hotmail.com/in etc).

UNIT3- INTERMEDIATE CODE GENERATOR

1. Generate Three Address Code for the expressions with arithmetic and relational operators

UNIT4- CODE OPTIMIZER

1. Write an optimizer pass in C or Java that does **common-sub expression** elimination for any given three address code.

```
1  t1 = b*c
2  t2 = a+t1
3  t3 = b*c
4  t4 = d/t3
5  t5 = t2-t4
```

********** ALL THE BEST **********