National Institute of Technology, Tiruchirapppalli - 15
Department of Computer Science and Engineering
CYCLE TEST 1
CSPC62 – Compiler Design

Course/Department **: B.Tech./CSE** Batch : **2019-2023**
Semester/Section **: VI** Session **: Jan/2022**
Date and Time **: 21-02-2022 & 02.30 PM – 03.30 PM** Marks **: 20**

Answer ALL Questions with proper steps and justification.
Draw diagrams wherever necessary.

1. With the help of an example differentiate tokens, patterns and lexemes. **(2)**

2. Construct DFA directly from the regular expression (ab)*bda*(c|b)* using the syntax tree. **(3)**

3. Write a program in LEX to display the words with *str* as substring. **(2)**
   Sample Input: Finding substring in string
   Output: substring string

4. Write the regular definitions to recognize the tokens of while loop programming constructs of C programming language. **(2)**

5. Compute FIRST and FOLLOW for the grammar given below. **(2)**
   $S \rightarrow aBCbD$
   $B \rightarrow bBh|BD|d$
   $C \rightarrow CS|a$
   $D \rightarrow EC|b|\varepsilon$
   $E \rightarrow CDb|\varepsilon$

6. Eliminate left recursion and left factoring, if present, from the following grammar. **(2)**
   $S \rightarrow SbC|CeT|Se$
   $T \rightarrow TaS|\ dC|a$
   $C \rightarrow St|\ Td$

7. Construct LL parsing table for the following grammar. Parse a string of minimum length 10 using the parsing table constructed by handling S-R conflicts if present. **(3)**
   $S \rightarrow A\#a|*bB$
   $A \rightarrow (AS|\ \#$
   $B \rightarrow \%B\#|\ )$

8. Construct SLR parsing table for the following grammar by using LR(0) items. Take a sample input string for the grammar and parse it using the constructed SLR parsing table. **(4)**

   $S \rightarrow L := E$
   $E \rightarrow E + E\ /\ (E)\ /\ L$
   $L \rightarrow Elist]\ /\ id$
   $Elist \rightarrow Elist, E\ /\ id\ [\ E$