



National Institute of Technology, Tiruchirappalli - 15
Department of Computer Science and Engineering
CYCLE TEST 1
CSPC41 – Principles of Compiler Design

Course/Department : **B.Tech./CSE**

Batch : **2018-2022**

Semester/Section : **VII**

Session : **JUL/2021**

Date and Time : **06-09-2021 & 10.00 AM – 11.00 AM**

Marks : **15**

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

1. Can we use a QUEUE to represent symbol table? Justify your answer. (1)
2. Identify and list out the tokens in the following C code. (1)
`printf("The sum of %d numbers is %d", n, sum);`
3. Write the regular definitions for comments (`//.....` and `/* */`) in C programming. (2)
4. Compute LEADING and TRAILING for the grammar given below. (2)
$$S \rightarrow Tc | Sc | C$$
$$T \rightarrow Ta | Sa | d$$
$$C \rightarrow St | Td$$
5. Construct an NFA for the regular expression $(aa|bb)^*abc((ba|ca)(cc|bb)^*)^*$. And obtain the DFA from NFA. (4)
6. Construct the LL(1) parsing table for the following grammar. Use it to parse a string of minimum length 7 (consisting of terminal symbols according to the given grammar) of your choice and show whether it is acceptable or not. (3)
$$R \rightarrow (R)|cT$$
$$T \rightarrow +R | *R | \varepsilon$$
7. Eliminate left recursion and left factoring, if present, from the following grammar. (2)
$$S \rightarrow Tc | Sc | C$$
$$T \rightarrow Ta | Sa | d$$
$$C \rightarrow St | Td$$