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**PRESIDENCY UNIVERSITY  
BENGALURU**

**SCHOOL OF ENGINEERING  
MID TERM EXAMINATION - OCT 2023**

**Semester :** Semester VII - 2020

**Course Code :** CSE3167

**Course Name :** Sem VII - CSE3167 - Compiler Design

**Program :** B.TECH

**Date :** 30-OCT-2023

**Time :** 11:30AM - 1:00PM

**Max Marks :** 60

**Weightage :** 30%

**Instructions:**

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

**PART A**

**ANSWER ALL THE QUESTIONS**

**(5 X 2 = 10M)**

1. What are the tasks of lexical analyzer?  
(CO1) [Knowledge]
2. Why sentinel is used in buffer? .  
(CO1) [Knowledge]
3. What is the purpose of the symbol table in the compiler?  
(CO1) [Knowledge]
4. Define LL(1) Parser.  
(CO2) [Knowledge]
5. What is Left factoring? Write the general form to perform the left factoring.  
(CO2) [Knowledge]

**PART B**

**ANSWER ALL THE QUESTIONS**

**(2 X 15 = 30M)**

6. a. Manoj is highly passionate about creating a compiler. Assist Manoj in listing and describing the tools used to create the compiler.  
b. Write down the output of each phase of the compiler for the expression  $a:=b+c*50$ .  
(CO1) [Comprehension]

7. a. Consider the grammar perform shift reduce parsing for the input string (b,(p,q))

$S \rightarrow (T) \mid b$

$S \rightarrow p \mid q$

$T \rightarrow T, S$

$T \rightarrow S$

b. Compute FIRST and FOLLOW for the following grammar

$S \rightarrow WX$

$W \rightarrow ZY$

$X \rightarrow +WX \mid -WX \mid S$

$Y \rightarrow *ZY \mid /ZY \mid S$

$Z \rightarrow (S) \mid id$

(CO2) [Comprehension]

### PART C

#### ANSWER THE FOLLOWING QUESTION

(1 X 20 = 20M)

8. 1. Do the necessary changes for the following grammar

$E \rightarrow E+T \mid T$

$T \rightarrow T * F \mid F$

$F \rightarrow (E) \mid id$

a) FIRST & FOLLOW of the grammar

b) Construct the predictive parsing table.

c) Show the moves made by a predictive parser as input  $id+id*id$

(CO2) [Application]