Semester: 6th
Subject Name: Compiler Design.& Code:- CS3008
Branch (s): Computer Engineering -

SPRING MID SEMESTER EXAMINATION-2023

School of Computer Engineering
Kalinga Institute of Industrial Technology, Deemed to be University
Subject Name Compiler Design
[Subject Code CS 3008]

Time: 1 1/2 Hours **Full Mark: 20**

Answer any four Questions including Q.No.1 which is Compulsory.
The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable and all parts of a question should be answered at one place only.

1. Answer all the questions. [1 x 5]

a) What is Compiler? Consider the following grammar.

S-> iEtS
| iEtSeS
| a
E->b

Apply left factoring.

b) The attributes of three arithmetic operators in some programming language are given below (All the operators have their usual meaning and binary in nature)

Operator	Precedence	Associativity
+	High	Left
-	Medium	Right
*	Low	Left

What will be the value of the expression *2-5+1-7*3*?

c) What are roles and tasks of a lexical analyzer?

d) In the below grammar Write the precedence of the operators *, + and -

E→E*F|F+E|F
F→F-F| id

e)
```
int max(x,y)
int x,y;
/* find max of x and y */
{
        return(x>y?x:y);
}
```

Calculate Number of tokens and lexemes in the above Program

2. Describe the different phases of Compiler for the following expression [5 Marks]

X=Y+Z*30.0, using the grammar. Also calculate 2+3*4

E-> E*T | T

T-> T+F | F

F-> id

3. Compute the FIRST and FOLLOW sets of each non-terminal in the grammar [5 Marks]

given bellow. Also construct the LL(1) parsing table.

S->aABh

A->cC

C->bC|ε

B->ED

E->g|ε

D->f|ε

4. Consider the following grammar [5 Marks]

S-> Ab | Sb

A-> Aa | a

Design a recursive descent parser for the above grammar.

5. What is Grammar? How you can prove that the Grammar [5 Marks]

E-> E + E

| E * E

| id

is ambiguous or not using the input string id+id *id

*** Best of Luck ***