National University of Computer and Emerging Sciences, Lahore Campus

Course Name:	Compiler Construction	Course Code:	CS 4031
Program:	BS (CS)	Semester:	Spring 2023
Duration:	One hour	Total Marks:	30
Paper Date:	27-Feb-2023	Weight:	
Section:	6A and 8A	Page(s):	1
Exam Type:	Mid-1		

Student : Name:_____   Roll No._____

Solve question 1 on page 1, question 2 on page 2, and question 3 on page 3. Only the first three pages will be marked!

Question 1
Give token-lexeme pairs for the following source code:

```
int dif(int x, int y) {
    int d;
    if (x >= y)
        d = x - y;
    else
        d = y - x;
    return d;
}
```

$S \rightarrow S = T \mid T$

$T \rightarrow S - F \mid S * F \mid F$

$F \rightarrow id \mid num$

$a =$

Question 2
Give a DFA for the token *num*:

num -> digit* F

F -> ^ | . digit⁺ |n

Halt the machine only after reading all the digits. You may use the keyword "other" and the symbol *

Question 3
Consider the following grammar

S -> S & S | S = S | S # S | id | num

Set precedence of operators & and # higher than that of = sign. Set associativity of all the operators from left to right (left associative).