NATIONAL OPEN UNIVERSITY OF
Plot 91, Cadastral one, Nnamdi Azikiwe Expressway, Jabi, Abuja
Faculty of Science
Computer Science Department

2023_2 EXAMINATIONS

PROGRAMME: B.Sc.
COURSE TITLE: Principles of Compilers and Construction
COURSE CODE: CIT316
CREDIT UNIT: 3
DURATION: 2½ HRS

Instructions: Answer Question ONE (1) and any other three questions

1(a) Outline the four basic types of grammars. ***(4 marks)***

(b) Consider the concatenation of two set of strings, 'bab' and 'aba'. What will be the resulting string? ***(1 mark)***

(c) With examples, define a lexeme? ***(4 marks)***

(d) What are the roles of the parser? ***(6 marks)***

(e) Given the expression:

$$X = (a + (b*c))/(a-(b*c))$$

Generate the corresponding parse tree. ***(10 marks)***

2(a) What are the specific areas that causes problems during measurement on the performance of actual complier? ***(5 marks)***

(b) With diagrammatic representation, give a description of the directed acyclic graph. ***(8 marks).***

(c) How is directed acyclic graph different from the parse tree ***(2 marks)***

3(a) What is the output from an intermediate phase of a compiler? ***(4 marks)***

(b) Given the following source code statement:

```
c = a + b * 5;
```

show the phases of compilation process and their results from initial phase up to the intermediate code level. ***(10 marks)***

(c) What is the intermediate code called ***(1 mark)***

4(a) Given the expression:

```
d:= (a-b) + (a-c) + (a-c)
```

Write the three address code. ***(4 marks)***