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

2024 1 EXAMINATION

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) Explain the term Function Chunking. ***(4 marks)***

(b) List and explain three (3) loop optimization techniques ***(6 marks)***

(c) Mention the semantic errors that can be recognized by the semantic analysers? ***(5 marks)***

(d) Consider the Grammar below:

G: $E \rightarrow TE'$
$E' \rightarrow +TE'/\varepsilon$
$T \rightarrow FT'$
$T' \rightarrow *FT'/\varepsilon$
$F \rightarrow (E) / i$

Find FIRST(E) ***(6 marks)***

(e) Define target programme and give three examples. ***(4 marks)***

2(a) Mention three ways of removing ambiguity from the grammar. ***(3 marks)***

(b) Write down the various most frequently applied transformation techniques in common optimization algorithms. ***(7 marks)***

(c) Outline the benefits and the drawback of LR parsing. ***(5 marks)***

3(a) What is the major role and the categories of optimization within a compiler? ***(4 marks)***

(b) Suppose we have a grammar G:

1: $E \rightarrow E + T$
2: $E \rightarrow T$