NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI-ABUJA
FACULTY OF COMPUTING
DEPARTMENT OF COMPUTER SCIENCE
2025_1 EXAMINATION

Course Code: CIT401
Course Title: Organization of Programming Languages
Time: $2^{1}/_{2}$ Hours
Credit: 3 Units
Instruction: Attempt 4 questions in all. Question1 is Compulsory and any other three (3)

1a. Describe the role of Ada Lovelace in the history of programming languages. Why is she significant in the context of programming language evolution? (5marks)
1b. Outline the main contributions of the C programming language to software development and its impact on later programming languages. **(5marks)**
1c. What are lexical errors in programming, and how are they detected? Provide an example. **(5marks)**
1d. Explain the concept of Denotational Semantics in programming languages. How does it differ from Operational Semantics? **(10 marks)**

2a. Explain contextual errors in programming with an example. **(5marks)**
2b. What is the difference between bounded and unbounded iteration in programming? Provide examples of each. **(10marks)**

3a. Explain the concept of a parse tree. How does it represent the structure of a programming language's syntax? **(5marks)**
3b. Explain the concept of Denotational Semantics in programming languages. How does it differ from Operational Semantics? ***(10 marks)***

4a. Define and differentiate BNF and EBNF. **(5marks)**
4b. Compare the programming languages FORTRAN and ALGOL in terms of their contribution to the evolution of programming languages. **(10marks)**

5a. Define Backus-Naur Form (BNF). (5marks)
5b. List and explain the advantages (8marks) and disadvantages (2marks) of structured programming. **(10marks)**

6a. Define syntax and semantics in the context of programming languages. How do they different? Provide an example illustrating both. **(5mark)**
6b. Compare structured programming with unstructured programming, highlighting the key differences. **(10marks)**