NATIONAL OPEN UNIVERSITY OF NIGERIA
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi, Abuja
Faculty of Science
2024_2 EXAMINATION

DEPARTMENT:	**COMPUTER SCIENCE**
COURSE TITLE:	**ORGANISATION OF PROGRAMMING LANGUAGE**
COURSE CODE	**CIT401**
CREDIT UNIT(S):	**3**
INSTRUCTION(S):	**ATTEMPT FOUR (4) QUESTIONS IN ALL, QUESTION ONE (1) IS COMPULSORY**

TIME: 3 HOURS

QUESTION ONE

A. List and explain four (4) classes of grammar? (4 marks)
B. List five (5) division of programming languages? (5 marks)
C. In a tabular form, not more than five (5) points for each; differentiate between Data Types and Data Structures? (10 marks)
D. What is an expression; discuss any three (3) categories of an expression you know? (6 marks)

QUESTION TWO

A. What do you understand by run-time error and how does run-time error happen? (1½ Marks)
B. List and explain how run-time error can be fixed (6 marks)
C. List and explain any three (3) with at least three (3) examples each, of any five (5) of the kind units that lexical structured of all programming languages consist of? (7½ marks)

QUESTION THREE

A. In a tabular form; using any five (5) points, compare and contrast structured and unstructured programming languages? (5 marks)
B. Name and explain the three (3) categories of structured programming language? (6 marks)
C. List two (2) advantages and two (2) disadvantages of structured programming language? (4 marks)

QUESTION FOUR

A. Name any two (2) ways that programming languages were formally defined? (3 marks)
B. Define the following: Assignment Statement, Conditional Statement and Loop Statements with one (1) example each? (9 marks)
C. What is programming language paradigm? (3 marks)

.

QUESTION FIVE

A. Indicate which is lexical structure and which is syntactic structure of the language stated definitions below? (8½ marks)

<letter>	::=	a|b|c|d|e|f|g|h|i|j|k|l|m|n|o|p|q|r|s|t|u|v|w|x|y|z
<digit>	::=	0|1|2|3|4|5|6|7|8|9
<symbol>	::=	_|@|.|~|?|#|$
<char>	::=	<letter>|<digit>|<symbol>
<operator>	::=	+|−|*|/|%||==|<=|>=|and|or|not
<identifier>	::=	<letter>|<identifier><char>
<number>	::=	<digit>|<number><digit>
<item>	::=	<identifier>|<number>
<expression>	::=	<item>|(<expression)| <expression><operator><expression>
<branch>	::=	if <expr>then {<block>} | if <expr>then {<block>}else {<block>}
<switch>	::=	switch<expr>{<sbody>}
<sbody>	::=	<cases>|<cases>; default :<block>
<cases>	::=	case:<value>:<block> | <cases>; case<value>:<block>
<loop>	::=	while <expr>do {<block>}
<assignment>	::=	<identifier>=<expression>;
<statement>	::=	<assignment>|<branch>|<loop>
<block>	:=	<statement>|<block>;<statement>

B. Check if the following statements below from 1-7 are syntactically correct? (3½ marks)

Statement

1. sum1 = 0;
2. while sum1 <= 100 do {
3. sum1 = sum1 + (a1 + a2) * (3b % 4*b); }
4. if sum1 == 120 then 2sum − sum1 else sum2 + sum1;
5. p4#rd_2 = ((1a + a2) * (b3 % b4)) / (c7 − c8);
6. foo.bar = (a1 + a2 − b3 − b4);
7. (a1 / a2) = (c3 − c4);

C. What is inference rule and which part of an inference rule is the antecedent and consequent? (3 marks)

QUESTION SIX

A. State any three (3) of the main attribute words related to programming language? (6 marks)

B. List any four (4) of the semantic errors that the semantic analyzer is expected to recognize? (2 marks)

C. Describe the operation of language generator and recognizer? (7 marks)