OLABISI ONABANJO UNIVERSITY, AGO-IWOYE

DEPARTMENT OF MATHEMATICAL SCIENCES

B.SC. COMPUTER SCIENCES DEGREE PROGRAMME

2017/2018 HARMATTAN SEMESTER EXAMINATION

COURSE CODE: CMP 401 COURSE TITLE: ORGANIZATION OF PROGRAMMING LANGUAGES

nstruction: Attempt All questions in Section A (Serially) and any three Questions from Section B.

Course Code: 3 units Time: 2 hrs 30 mins

SECTION A (ATTEMPT ALL)

1. What are the application domain of programming language?
2. The syntax of a language can be defined as ----------
3. ---------- is a meta-language widely used to describe the syntax of programming languages
4. Three types of semantics of a language are ----------.
5. The knowledge of programming language characteristics benefit the whole computing community with- ----------, ----------, ----------, ---------- and ----------
6. What are Control structures?

7. ---------- is a virtual machine state which provides software services for process or programs which a computer is running.
8. Pragmatics of programming language refers to----------
9. Language Paradigm include ----------,----------, and ----------
10. Algol 68 is an example of ---------- computer programming language
11. The syntax of a programming language describes ----------
12. Parsing is the process of ----------
13. Consider the arithmetic expression `2*((i%5)*(4+(j-3)/(k+2)))`

    Where I, j and k are integer variables. If these variables are assigned the values 8, 15 and 4, respectively. Evaluate the expression

Questions 14 – 20

Assume that x is 1, show the result of the following Boolean expressions

14. `! (x >0 )&& (x > 0)`
15. `(x > 0) &&( x< 0)`
16. `( X !=0) || (x ==0)`
17. `(x >= 0) || (x < 0)`
18. `(x !=1 ) == !( x==1)`
19. `(true) && (3> 4)`

```
20.     !( false) || (- 1 > 0)
```

SECTION B (Answer any Three Questions)

Question 1

(a) What do you understand by programming Language? Hence give reasons for studying concepts of programming

(b) List the programming languages evaluation criteria

(c) Describe the influences of the following on language design

(i) Computer Architecture

(ii) Programming Methodologies

Question 2

(a.) Consider the following abbreviated productions for ***Pascal-like*** expressions

```
Expression::= [+| -] term | expression addop term
Addop :: = + | - | or
Term:: = factor | term mulop factor
Mulop :: = * | / | div | mod | and
Factor ::= identifier | number | (expression)
```

Parse this expression using the productions above.

```
a * b -( c+d)
```

Using the grammar below, show a parse tree and a leftmost derivation for each of this statement:

```
<assign> → <id> = <expr>
<id> → A | B | C
<expr> → <id> + <expr>
       | <id> * <expr>
       | ( <expr> )
       | <id>
```

A = A * (B + (C * A))

Using the grammar below, show a parse tree or a leftmost derivation for each of the following statements:

```
<assign> → <id> = <expr>
<id> → A | B | C
<expr> → <expr> + <term>
       | <term>
<term> → <term> * <factor>
       | <factor>
<factor> → ( <expr> )
       | <id>
```

A = (A + B) * C