



**BABCOCK UNIVERSITY**  
**ILISAN-REMO, OGUN STATE, NIGERIA.**  
**SCHOOL OF COMPUTING AND ENGINEERING SCIENCES**  
**COMPUTER SCIENCE DEPARTMENT**

**COURSE:** Introduction to Programming in C (COSC101)

**SESSION:** 2016/17

**LECTURERS:** Joshua V.(PhD), Adekola Daniel, Akande Oyebola , Ebiesuwa Seun

**FIRST SEMESTER EXAM (60%)**

**SECTION A (Attempt all) (20%)**

1). How many times does the loop run? for (j = 2; j <= n; j++) (a) 10 (b) n (c) n-1 (d) n-2	11). A while statement must not end with a semi-colon: (a) True (b) False (c) No idea (d) Maybe
2). Which one of the following is not a primitive data type in C: (a) float (b) array (c) char (d) int	12). A do...while statement must end with a semi-colon: (a) True (b) False (c) No idea (d) Not really
3) Which of the following definition is(are) correct: I) char color[3] = { 'R', 'E', 'D' } ; II) char color[4] = "RED"; III) char color[] = "RED"; IV) char color[3] = "RED"; (a) I only (b) III only (c) I, II and III (d) all	13). Write only the <b>prototype</b> of a function named <b>primeDetector</b> which tests whether a passed value is prime or not and returns 0 or 1 as its returned value. <b>Hint:</b> The caller will use the returned "0 or 1" to confirm prime.
4). C program execution starts from (a) begin (b) class() (c) void (d) main()	14) what happens to a line of code written after return statement.....
5) Elements in an array are identified by a unique: (a). data type (b). variable (c) subscript (d) value	15). what is the output of the following code: int a = 4; int b = 3; if(a == b) printf("This cannot be seen");
6). Consider the following statement: int x = 7/2; what is the value of x: (a) 3.5 (b) 3 (c) 1 (d) 3.0	16) State the difference between a <b>function</b> declared before the main function and the one declared inside the main.....
7). At least, the <b>do...while(condition)</b> construct characteristically execute in what number of times: (a) 0 (b) 1 (c) n (d) n-1	17) Consider the following function prototype: <b>float average(int n, float x[]);</b> What is the correct way to call this function
8). what is control (flow) construct exhibited in the following lines of code and what is last value of x:  x = 5; x = x + 2; x = x * 2; (a) 14 (b) 2 (c) 10 (d) 5	18) what is the output if integer values 2 is received by variable <b>choice</b> : <b>scanf("%d", &amp;choice);</b> <b>switch(choice){</b> <b>Case 1: printf("\n Hey What's Up"); break;</b> <b>Case 2: printf("\n It is cool to know"); break;</b> <b>Case 3: printf("\n Coding is fun"); break;</b> <b>default: printf("\n Out of Range");</b> <b>}//end of switch statement</b>
9). A compiler can execute comment in a code: (a) True (b) False (c) No idea (d) Maybe	19). Compiler can execute a pseudocode: (a) True (b) False (c) No idea (d) undefined
10). An if statement must end with a semi-colon: (a) True (b) False (c) No idea (d) I think	20) Consider the following array definition: <b>char school[] = "Babcock";</b> what element is in school[7].....

## SECTION B (Attempt question 1 and any other 3 questions)

- 1) a) Identify errors in the following line of code and indicate each error as syntax error, semantic error, and logical error. Indicate with line numbers.

```

1 //program to debug error
2 #include<stdio.h>
3 int man()
4 {
5     int x,y,z, age;
6     float b;
7     a=x+y;
8     z=1.2345;
9     b=x/0;
10    //using if, to admit students with age greater
11    //than or equal to 16
12    printf("Input your age");
13    scanf("%d", &age);
14    if (age<=16)
15    printf("Admit the student");
16 }
    
```

Figure 1: A screenshot of a code to be debugged

- b) State and explain four properties of an algorithm

2).A software is to compute the monthly **takehome** of all category of employees of an establishment. The employee taxation is based on the following constraints:

- If basic salary is less than or equal to N5000, 5% of basic salary is deducted as tax otherwise 8% deducted.
- Also 10% of the employee gross pay should be deducted as part of pension scheme.
- It is require that each employee pay slip should contain employee number, name, total allowance, tax, basic salary, gross pay and Net pay.

Analyze this problem by stating the input, processing and output requirements and draw a flow chart showing the procedure for the implementation of this software:

### HINTS:

- \* Total allowances = Housing + Transport
- \* Gross Pay = Basic salary + Total allowances
- \* Net pay = Gross pay – (Tax + pension)

3). Babcock University Staff School needs a simple calculator programme that can aid Grade I pupils in learning simple arithmetic operations involving two integers. The school Head teacher contacted you to develop a simple application that for this purpose.

Thus, you need to write a C program using function technique that will:

- Allow input of two integers
- Create four functions called addition, subtraction, multiplication, and division
- Output the result of addition, subtraction, multiplication, and division.

4). Using for-loops, write a C program to compute average score of 300 students in 400 level offering Software Engineering. The program will

- Take in scores of 300students
- Find the sum of scores of all the students
- Find the average score

5 a) Using function, write a C program to calculate the area of a circle by receiving the radius as input from the user. (Use pi = 3.142).

b) Use a loop statement and output the elements in the following array named temperature:  
float temperature[]= {1.0, 3.4, 2.5, 9.0, 7.5, 5.0, 4.0 };