



**FOUNTAIN UNIVERSITY, OSOGBO**  
**COLLEGE OF NATURAL AND APPLIED SCIENCES**  
**DEPARTMENT OF MATHEMATICAL & COMPUTER SCIENCES**  
**SECOND SEMESTER EXAMINATION 2019/2020 SESSION**  
**COURSE CODE: CPS201 PROGRAMMING LANGUAGE 1    UNITS/ (STATUS) 3/(C )**  
**TIME: 2 hours**

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**INSTRUCTIONS: ANSWER ALL QUESTIONS IN SECTION A AND ANY OTHER 3**

1. List the four basic data types often used in C Language programming. [5 marks]

2. Write a type declaration for each of the following

- a) number of students that are accommodated in Adegunwa Hostel
- b) a letter grade scored by a student in CPS202
- c) average volume of rainfall in each year
- d) address of a house in a street
- e) acceleration due to gravity

**[5 marks]**

3. What are Header files in C and what are they used for.

List at least 4 header files and what each one is used for. [5 marks]

4. Write a program to compute the volume of a cylinder using the formula

$$V = \pi r^2 h$$

**[5 marks]**

5. Predict the output of the following code

```
#include <stdio.h>
int main ()
{
    int i;
    for (i = 0; i < 5; i++) {
        printf( "data %d \n ", i);
    }
    return 0;
}
```

**[5 marks]**

**SECTION B**

**ANSWER ANY 3 QUESTIONS IN THIS SECTION**

B1. The following C program is meant to be used to compute the salary of 20 employees of Fountain University. The program is badly written and laid out.

(a) Correct the errors by re-writing the programs so that it works.

```
/* program for computing the salary of employees */
#include <stdio.h>
main ()
```

```

{
#define dev-fee 2000;
for( i = 1; i<=50; i++){
float allowance, rent, housing, transport,,netpay;
float rent,housing, transport;
float basic_pay, tax, deduction;
printf(" input basic_pay here");
scanf( "%f",&basicpay);
printf(" input rent,housing and ,transport");
scanf( "%f %f %f", &rent, &housing, &transport);
/* start the computation of salary here */
tax = 0.05 * bsic pay
allowance = rent + housing +transport
netpay = basic pay +allowance – deduction;
/* Print the net salary here */
deduction = dev-fee +tax
printf( %f , netpay);
}
return (0);

```

b) Prepare an algorithm or flowchart for the corrected program above [ **15 marks**]

B2.a) What are do loops and what are they used for in C programming?

List at least 3 types of do loops and give the general format for each with an example for each type.

b) The Authorities of Nasrul Lahi-il-Fatih Society of Nigeria is proposing to give out scholarship awards to deserving students. The criteria for the award is as stated below:

- (i) A qualified candidate must be a Muslim student, male or female of any private tertiary institution who must not lower than 200 level
- (ii) He/she must have at least a CGPA of 3.5
- (iii) He/She must not have been convicted of any criminal offence in his/her institution.

Prepare a flowchart and **write** a C program which reads the following:

The students matric number, Name, Religion, Name of institution, Academic Level, CGPA and Moral record status to filter out the list of eligible students using the If... else construct

**[15 marks]**

B3.a) Write a simple C program which accepts two integers and find the sum, the difference, the product and the quotient. of the numbers.(the first value must necessarily be bigger than the second. If not let an error message show as a notification that the first input must be greater than the first)

b) Consider the program below. Rewrite the program using the do ...while repetition

```

// Using the for do repetition statement.
#include <stdio.h>
// function main begins program execution
main( )

```

```

{
unsigned int counter = 1; // initialize counter
    for (counter =1; counter <=10; counter++ )
    {
printf( "%d ", counter );    // display counter
    }    // end for do ..loop
} // end function main

```

**[15 marks]**

B4.a) In a typical supermarket Value added tax is calculated based on the amount of goods procured using the following schedule

<b>Item Description</b>	<b>VAT in %</b>
a) Goods greater than N40,000:00	2
b) Goods within the next N10,000:00	3
c) Goods within the next N15,000:00	4
d) Goods within the next N5,000:00	5

Write an algorithm and a C program which reads the house number(as an integer id),cost of goods and compute the Net-amount payable by a customer. Generate an appropriate output from the program.

b) Describe the structure of a C Program. Use a simple program to compute perimeter and area of a rectangle to illustrate your description.

**[15 marks]**