



ZIMBABWE

**MINISTRY OF HIGHER AND TERTIARY EDUCATION,
INNOVATION, SCIENCE AND TECHNOLOGY DEVELOPMENT**

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL CERTIFICATE

IN

INFORMATION TECHNOLOGY

SUBJECT: Programming Using C++ (Theory) PAPER NO: 317/18/S02A

DURATION: 3 Hours

MARCH/APRIL 2020 EXAMINATION

REQUIREMENTS

Answer booklet.

INSTRUCTIONS TO CANDIDATE

Answer ALL questions.

This paper consists of 5 printed pages.

QUESTION 1

- (a) Give appropriate programming terms for the following
- (i) Errors reported by translators when rules of the language are not obeyed. (1 mark)
 - (ii) A program in high level or assembly language. (1 mark)
 - (iii) An error in a program. (1 mark)
 - (iv) When the required results are not given by the program due to bad reasoning by the programmer. (1 mark)
- (b) Draw a flowchart for a program that accepts a set of integers and finds the totals of positive and negative integers separately. The program should stop when the user enters a zero (0). (10 marks)
- (c) Explain each of the following terms as they are used in C++.
- (i) Scope resolution operator (: :) (2 marks)
 - (ii) Class (2 marks)
 - (iii) Friend function (2 marks)

QUESTION 2

- (a) Explain each of the following C++ programming terms
- (i) Identifier (2 marks)
 - (ii) Variable (2 marks)
 - (iii) Keyword (2 marks)
 - (iv) Constant (2 marks)
 - (v) Unary operator (2 marks)
- (b) Determine the output of each of the following:-
- (i) $12+6.8/2$ (1 mark)
 - (ii) $15/6.0+2$ (1 mark)
 - (iii) $\text{int } (30.55)/4$ (1 mark)
 - (iv) `cout<<3*4+5<<endl;` (1 mark)
 - (v) `cout<<17+10/4<<endl;` (1 mark)

PAPER NO: 317/18/S02A – PROGRAMMING USING C++ (THEORY)

```
else
cout <<c<< "Doubled is" <<c * 2<< endl;

c--;

}
```

(10 marks)

- (b) Declare an appropriate data structure to store country name and population for a number of countries specified by the user. (6 marks)
- (c) Write a code segment to swap elements when sorting an array of integers. (4 marks)

QUESTION 4

- (a) Outline any two (2) differences between an array and a structure. (4 marks)
- (b) Determine the output of the following program segment.

```
int i, A[6]={2,3,4,5,6,7};
```

```
for (i=1;i<=3; i++)
```

```
    A[i]=i;
```

```
for (i=0; i<6; i++)
```

```
cout <<A[i]<< " ";
```

```
cout << endl;
```

(6 marks)

- (c) Write a function which accepts a salary and returns tax according to the following rules:-

No tax for first \$1000

5% tax for the second \$1000

4% tax for third \$1000

3% tax for the remaining untaxed salary

For example if salary is \$4000, then the tax is \$120.

(10 marks)

```
int salary
if (num <= 1000)
    int worker(salary, num)
```

```
For (c = 0; c <= 4; c++)
```

```
num
cout << c
```

$$5 / 100 = 0.05$$

$$400 / 100 = 0.04$$

```
{
    int x = 1/2
    if (salary > 1000)
        cout << "No tax for first 1000";
    else if (salary == 1000)
```

4000

int

QUESTION 5

- (a) Differentiate between the following C++ file processing terms
- (i) ifstream and ofstream (2 marks)
 - (ii) ios: :app and ios: :out (2 marks)
 - (iii) open() and close () (2 marks)
 - (iv) get () and put () (2 marks)
- (b) Distinguish between a textfile and a binary file. (2 marks)
- (c) Explain the three access specifiers in C++. (9 marks)
- (d) Show by means of an example how a class method is accessed using an object. (1 mark)
-/cn

num=1
if (num > 5)