

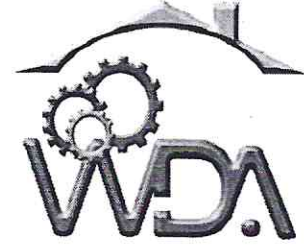
**CSC&CSM – Algorithm and
Programming**

T040

Thursday, 29/11/2018

08:30 – 11:30 AM

WORKFORCE DEVELOPMENT AUTHORITY



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**ADVANCED LEVEL NATIONAL EXAMINATIONS, 2018,
TECHNICAL AND PROFESSIONAL STUDIES**

EXAM TITLE: ALGORITHM AND PROGRAMMING

OPTIONS:

- **Computer Science (CSC)**
- **Computer Science and Management (CSM)**

DURATION: 3 hours

INSTRUCTIONS:

The paper is composed of **the following sections:**

Section I: Sixteen (16) compulsory questions. 55 marks

Section II: Attempt any three (3) out of five questions. 30 marks

Section III: Attempt any one (1) out of three questions. 15 marks

Note:

Every candidate is required to carefully comply with the above instructions. Penalty measures will be applied on their strict consideration.

Section I. Sixteen (16) Compulsory questions**55 marks**

01. Explain the data structure. **(3 marks)**
02. Define a data type in Programming Languages. **(3 marks)**
03. Explain the algorithm. **(3 marks)**
04. List and explain at least four basic data types in C? **(4 marks)**
05. Explain the following terms:
a. encapsulation; b. polymorphism; c. inheritance **(6 marks)**
06. What is the difference between while and do- While loop? **(3 marks)**
07. What is the difference between listbox and combo box? **(3 marks)**
08. In control structure switch-case what is the purpose of default in C++? **(3 marks)**
09. Look at the program below and correct the possible mistakes inside:
`#includes <iostreams>`
`using namespace std;`
`// A C++ program begins at main().`
`int main()`
`{`
`cout <<"C++ is power programming.";`
`return 0 }` **(3 marks)**
10. Explain the importance of a debugger. **(3 marks)**
11. Observe the program below:

```
#include <iostream>  
using std::cout;  
  
int main() {  
cout <<"This is a simple C++ program!\n";
```

a. Explain the meaning of term **std**

b. Explain the **symbol #**

(5 marks)

12. Write a C++ program that will convert feet into meters, considering that
1m= 3.28 f **(4 marks)**

13. Observe this program below:

```
#include <iostream>
int main() {
    int dividend, divisor;
    // Get two integers from the user
    std::cout <<"Please enter two integers to divide:";
    std::cin >> dividend >> divisor;
    // If possible, divide them and report the result
    if (divisor != 0)
        std::cout << dividend <<"/"<< divisor <<" = "
        << dividend/divisor <<'\n';
    else
    }
    std::cout <<"Division by zero is not allowed\n";
```

a. What will happen if the inputs are fractional numbers?

b. What will happen if the divisor is equal to zero?

c. What will happen if the inputs are whole numbers and the divisor is different from zero?

(3 marks)

14. Explain any three advantages of flow charts.

(3 marks)

15. Give the output of the following statements:

```
#include <iostream>
using namespace std;

int main() {
int i, j;
bool b1, b2;

i = 10;
j = 11;
if(i < j) cout <<"i < j\n";
if(i <= j) cout <<"i <= j\n";

if(i != j) cout <<"i != j\n";
if(i == j) cout <<"this won't execute\n";
if(i >= j) cout <<"this won't execute\n";
if(i > j) cout <<"this won't execute\n";

b1 = true;
b2 = false;
if(b1 && b2) cout <<"this won't execute\n";
if(!(b1 && b2)) cout <<"!(b1 && b2) is true\n";
if(b1 || b2) cout <<"b1 || b2 is true\n";

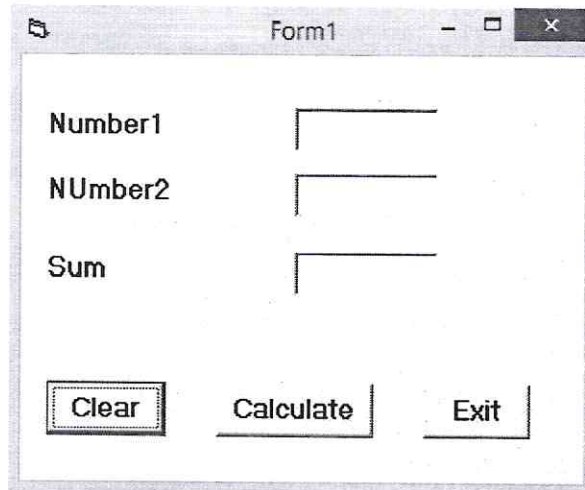
return 0; }
```

(4 marks)

16. What does the % operator do? To what types can it be applied?

(2 marks)

17. Write VB codes that can display the following Diagram. i.e. enter the first Number, 2nd Number and display the Sum in Text box after you have clicked Calculate button and also Make clear button able to clear all numbers in text Boxes also make Exit button able to exit the form1.

(10 marks)A screenshot of a Windows form titled "Form1". The form contains three text boxes labeled "Number1", "NUmber2", and "Sum". Below the text boxes are three buttons: "Clear", "Calculate", and "Exit".

18. **A)** Define a Garbage Collection.
B) What is the main purpose of Garbage collector?
(10 marks)
19. **A)** Explain what are four characteristics of Class Members in C++.
B) Explain what is Member Functions in Classes.
(10 marks)
20. Write a C program to print number from 1 to 10.
(10 marks)
21. Convert the binary number 1111011 to decimal number. Show all the steps.
(10 marks)

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