

TEST 1, MONDAY, FEBRUARY 16, 2004

ANSWERS

(1) Consider the following program:

```
#include <iostream.h>

void main() {

    int a=2, b=1;

    a++;
    b += a;
    if (b==4) a--;
    else a +=2;

    cout << a << endl << b << endl;
}
```

Put the output of the program in the space below:

2
4

- (2) Consider the following program:

```
#include<iostream.h>

void main() {

    char c1, c2, c3;

    cout << "Enter three characters: ";
    cin >> c1 >> c2 >> c3;

    c1--;
    c2--;
    c3--;

    cout << c1 << endl << c2 << endl << c3 << endl;
}
```

After the prompt `Enter three characters:` appears on the screen, the user types in the six keystrokes

`9 SPACE B ENTER c ENTER`

in that order. What is the output of the last line of the program (the last `cout` line)? Put your answer in the space below:

8
A
b

Multiple choice: circle the correct answer.

- (3) A gigabyte consists of approximately how many bytes?
 (a) 1024
 (b) 1000
 (c) one million
 (d) one billion
- (4) Let `a` and `b` be `double` type variables. The mathematical expression

$$\frac{ab + 2}{b}$$

can be written in C++ as

- (a) `ab+2/b`
 (b) `(ab+2)/b`
 (c) `(a*b+2)/b`
 (d) More than one of the choices (a), (b), (c) are correct.

- (5) The `char` type constant representing the digit 7 is
- (a) 7
 - (b)** '7'
 - (c) ''7''
 - (d) None of the above
- (6) Each of the following is a valid C++ identifier (variable name) EXCEPT
- (a) `_Rate`
 - (b) `MI5`
 - (c) `variable_name`
 - (d)** `else`
- (7) This expression evaluates to 21 in C++
- (a)** $5/4 + 20$
 - (b) $3 * 1+6$
 - (c) $42 \% 2$
 - (d) $3(7)$
- (8) All of the following are examples of hardware EXCEPT
- (a) keyboard
 - (b) CPU
 - (c) hard disk
 - (d)** your program `Program1.cpp`
- (9) Which of the following statements about C++ is false?
- (a) C++ is an extension of C.
 - (b) C++ is an object-oriented programming language.
 - (c)** C++ uses an interpreter, not a compiler.
 - (d) Every C++ program is required to have a `main` function.
- (10) The C++ expression `1.e10` is equal to
- (a)** 10^{10}
 - (b) The constant 1. times the variable `e` times the constant 10
 - (c) The constant 1. times the math constant e (which is about 2.718) times the constant 10
 - (d) This expression will produce a syntax error.

- (11) What is the syntax error in the following program?

```
#include <iostream.h>
```

```
Void main {  
    cout >> "I have an error in me!" ;  
}
```

- (a) Void should not be capitalized.
(b) There should be () between main and {.
(c) The >> in the cout statement should be << instead.
(d) All of the above.
- (12) ASCII is
- (a) An early military computer.
(b) A unit of permanent memory whose contents cannot be changed.
(c) A code to assign a different character to each integer between 0 and 255.
(d) A set of grammar rules for a programming language.
- (13) This is an example of machine language.
- (a) Assembly language
(b) C++
(c) Executable file
(d) Your program Program1.cpp
- (14) The following piece of code prints out YES to the screen if the variable a is less than 4 and does nothing if a is not less than 4.
- (a)

```
if (a<<4)  
    cout << "YES" << endl;
```
- (b)

```
if (a<4);  
    cout << "YES" << endl;
```
- (c)**

```
if (a<4)  
    cout << "YES" << endl;
```
- (d)

```
if (a<<4);  
else cout << "YES" << endl;
```

(15) True/False. Circle T or F to the left of each expression.

T F The C++ statement
`int a = 1000000000000;`

makes the variable `a` take the value one trillion (note that the number 1000000000000 is one trillion).

T F Syntax is a type of memory.

T F `'x'-3` represents the character `'t'`.

T F The decimal number 10 is represented by the hexadecimal digit `A`.

T F In a C++ program using the standard header file `cmath`, `tan(45)` gives the tangent of 45 degrees.

T F The octal number system uses only two digits, 0 and 1.

T F In order to use a `cout` statement in a C++ program, you must include one of the header files `iostream.h` or `iostream`.

(16) Fill in the blanks:

(a) Correct the following code so that it declares both `a` and `b` to be `int` type variables. (Hint: you only need to add one character.)

```
int a , b ;
```

(b) The decimal number 14 is written as **1110** in binary.

(c) In order for a C++ program to output data to a file (as opposed to the screen), the header file **fstream.h** or **fstream** must be included (either or both is correct).

(d) The value of the C++ expression `9.0/6` is **1.5**.

(e) Fill in the blank to make this code fragment print **YES!** to the screen if both `a` is greater than 4 and `b` is equal to 6. It should do nothing otherwise.

```
if ((a>4) && (b==6))  
    cout << "YES!" << endl;
```