



**READ THIS NOW!**

Failure to read and follow the instructions below may result in severe penalties. Failure to adhere to these directions will not constitute an excuse or defense.

- Print your name in the space provided below.
- Print your name and ID number on the OpSCAN form; be sure to code your ID number correctly on the OpSCAN form. Code **Form B** on the OpSCAN; code your section **group** number:

Struble	Engel 223	1
Henry	Smyth 146	2
Tucker	Litton-Reeves 1670	3
McQuain	Litton-Reeves 1870	4
	Engel 223	5

- Choose the single best answer for each question — some answers may be partially correct. If you mark more than one answer to a question, you will receive no credit for any of them.
- Unless a question involves determining whether given C++ code is syntactically correct, assume that it is. Unless a question specifically deals with compiler #include directives, you should assume the necessary header files have been included.
- Be careful to distinguish integer values from floating point (real) values (containing a decimal point). In questions/answers which require a distinction between integer and real values, integers will be represented without a decimal point, whereas real values will have a decimal point, [ 1044 (integer), 1044.0 (real)].
- When you have finished, sign the pledge at the bottom of this page and turn in the test and your OpSCAN.
- **This is a closed-book, closed-notes examination. No calculators or other electronic devices may be used during this examination. You may not discuss (in any form: written, verbal or electronic) the content of this examination with any student who has not taken it. You must return this test form when you complete the examination. Failure to adhere to any of these restrictions is an Honor Code violation.**
- There are 30 equal-valued multiple-choice questions.
- The answers you mark on the OpSCAN form will be considered your official answers.

**Do not start the test until instructed to do so!**

Name (Last, First) \_\_\_\_\_ printed

**Pledge:** On my honor, I have neither given nor received unauthorized aid on this examination.

\_\_\_\_\_ signature

For the next 2 questions, assume the input file stream `iFile` is connected to an input file whose contents are:

47 A321

(There's a single space separating the '7' from the 'A'.) Consider execution of the following code fragment immediately after the file stream has been opened:

```
int i1 = 0;
char ch1 = 'x', ch2 = 'y';

iFile >> i1;
iFile.get(ch1);
iFile >> ch2 >> i1;
```

1) The resulting value of the variable `ch1` would be:

- |                  |        |                  |
|------------------|--------|------------------|
| 1) '4'           | 4) 'A' | 7) '1'           |
| 2) '7'           | 5) '3' | 8) '\n'          |
| 3) ' ' (a space) | 6) '2' | 9) none of these |

2) The resulting value of the variable `i1` would be:

- |       |                       |                  |
|-------|-----------------------|------------------|
| 1) 4  | 4) 32                 | 7) none of these |
| 2) 47 | 5) 321                |                  |
| 3) 3  | 6) ASCII code for 'A' |                  |

For the next 2 questions, consider writing a program that must read lines of data formatted in the following way. Each line will contain the name of a team, followed by a tab, followed by a score, followed by a tab, followed by another team name, followed by a tab, followed by another score, followed by a newline. For example:

```
Washington Deadskins<tab>21<tab>Dallas Plowboys<tab>27<newline>
```

Assume that an input stream variable, `In`, has just been opened on such a file, and that the following variables have been declared:

```
string Team1, Team2;
int Score1, Score2;
```

3) Which of the following statements will correctly read the first team name into the variable `Team1`?

- |   |                  |
|---|------------------|
| 1) <code>In &gt;&gt; Team1;</code>        | 5) 1 and 2 only  |
| 2) <code>getline(In, Team1);</code>       | 6) 1 and 3 only  |
| 3) <code>getline(In, Team1, '\t');</code> | 7) 2 and 3 only  |
| 4) 1, 2 and 3                             | 8) none of these |

4) Assuming that the first team name, and the tab following it, have been read, which of the following statements will correctly read the first score into the variable `Score1`?

- |  |                  |
|--|------------------|
| 1) <code>In &gt;&gt; Score1;</code>        | 5) 1 and 2 only  |
| 2) <code>getline(In, Score1);</code>       | 6) 1 and 3 only  |
| 3) <code>getline(In, Score1, '\t');</code> | 7) 2 and 3 only  |
| 4) 1, 2 and 3                              | 8) none of these |

For the next 3 questions, select the value assigned to the relevant variable, given the declarations:

```
int    IntVar;
double DecVar;
```

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>5)</b> IntVar = 19 / 5;	3	3.0	3.8	4	none of these
<b>6)</b> DecVar = 5 + 2.7;	7	7.7	8	8.0	none of these

For the following 3 questions, select the value of the given C++ arithmetic expression. Note that the presence of a decimal indicates a double value, rather than an int.

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>7)</b> 7/4 - 3/4	1	2.5	3	4	none of these
<b>8)</b> 15/3*2+1	1	2	3	4	none of these
<b>9)</b> 4.0 + 5/2	6	6.0	6.5	not allowed	none of these

For the following 4 questions, suppose the (file) input stream In contains the following 5 lines of data (there's one tab character between columns and a newline character immediately after the last character on each line):

```
55    23    72    40    Gomer
17    30    95    28    Goober
 6    34    82    66    Opie
19    62    36    21    Floyd
 8    49    45    33    Bea
```

What is the value of each of the indicated variables after the execution of the following program segment?

```
int Zero = 0, One = 1, Two = 2, Three = 3, Four = 4;
string First = "Andy", Second = "Barney";
```

```
In >> Zero >> One >> Two;
In.ignore(100, '\n');
In >> Two >> One >> Zero;
In >> Four;
In.ignore(100, '\t');
In >> First;
In.ignore(100, '\n');
In >> Second;
```

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>10)</b> Zero	55	72	30	95	none of these
<b>11)</b> Four	40	28	30	17	none of these
<b>12)</b> First	"\t"	"Goober"	"Opie"	"6"	none of these
<b>13)</b> Second	"Opie"	" 6"	"6"	"34"	none of these

For the next 4 questions, assume the input file stream `Fred` is connected to an input file whose contents are:

```
3.14 2.71828 43 0 27
24 1.8 -12 3 5 51 8
45.738 17.9 19 32 91
```

(There's a newline character at the end of each line, and a single space separating values on the same line.) Consider execution of the following code fragment immediately after the file stream has been opened:

```
int    anInt1, anInt2, anInt3, anInt4;
float  aFloat1, aFloat2;
Fred.setf(ios::floatfield, ios::fixed);
Fred.setf(ios::showpoint);

Fred >> aFloat1 >> anInt1;
cout << aFloat1 << anInt1;           // A

Fred.ignore(100, '\n');
Fred.ignore( 5, '\n');
Fred >> anInt1 >> aFloat2 >> anInt3;
Fred.ignore( 80, '\n');
cout << anInt1 << setprecision(1) << aFloat2 << anInt3; // B

Fred >> aFloat2;
cout << setprecision(2) << aFloat2; // C
```

14) In the statement labeled A, the value printed for the variable `anInt1` would be:

- |      |       |                  |
|------|-------|------------------|
| 1) 3 | 4) 24 | 7) -12           |
| 2) 0 | 5) 1  | 8) 45            |
| 3) 2 | 6) 8  | 9) none of these |

15) In the statement labeled B, the value printed for the variable `aFloat2` would be:

- |          |         |                  |
|----------|---------|------------------|
| 1) 1.8   | 4) 3.0  | 7) 8.0           |
| 2) 0.8   | 5) 5.0  | 8) -12           |
| 3) -12.0 | 6) 51.0 | 9) none of these |

16) In the statement labeled B, the value printed for the variable `anInt3` would be:

- |       |       |                  |
|-------|-------|------------------|
| 1) 43 | 4) 24 | 7) -12           |
| 2) 0  | 5) 1  | 8) 45            |
| 3) 27 | 6) 8  | 9) none of these |

17) In the statement labeled C, the value printed for the variable `aFloat2` would be:

- |         |           |                  |
|---------|-----------|------------------|
| 1) 45   | 4) 45.73  | 7) 46            |
| 2) 45.0 | 5) 45.74  | 8) 46.0          |
| 3) 45.7 | 6) 45.738 | 9) none of these |

For the next 2 questions, assume the input file stream `ifile` is connected to an input file whose contents are:

47 A321

(There's a single tab separating the '4' from the '1'.) Consider execution of the following code fragment immediately after the file stream has been opened:

```
int i1;
char ch1 = 'x', ch2 = 'y', ch3 = 'z';
ifile >> ch1 >> i1 >> ch2 >> ch3;
```

18) The resulting value of the variable `i1` would be:

- |       |       |                  |
|-------|-------|------------------|
| 1) 4  | 4) 3  | 7) 321           |
| 2) 47 | 5) 32 | 8) none of these |
| 3) 7  | 6) 2  |                  |

19) The resulting value of the variable `ch2` would be:

- |                  |        |                  |
|------------------|--------|------------------|
| 1) '4'           | 4) 'A' | 7) '1'           |
| 2) '7'           | 5) '3' | 8) '\n'          |
| 3) ' ' (a space) | 6) '2' | 9) none of these |

20) What is the value of the variable `Z` after the following code is executed?

```
int W = 5, X = 9, Y = 5, Z = 1;
if (X % Y >= 2 + W) {
    Z++;
    if (Y-3*W >= -X)
        Z--;
    else
        Z++;
}
else {
    Z = -1;
}
```

- |       |      |      |                                     |
|-------|------|------|-------------------------------------|
| 1) -1 | 3) 1 | 5) 3 | 6) the code contains a syntax error |
| 2) 0  | 4) 2 |      | 7) none of the above                |

21) What is the first step in Polya's four-step process?

- |                            |                            |
|----------------------------|----------------------------|
| 1) Design a solution.      | 4) Implement the solution. |
| 2) Understand the problem. | 5) Find an excuse.         |
| 3) Test the solution.      | 6) none of these           |

For the next 2 questions, assume the declarations:

```
string FName = "Mickey", LName = "Mouse";
int Age = 74;
```

- 22) What would be printed by the statement: `cout << LName + ", " + FName;`
- 1) Mickey Mouse
  - 2) Mickey, Mouse
  - 3) Mouse, Mickey
  - 4) The statement is not allowed.
  - 5) None of these
- 23) Which of the following statements would print the name Mickey, followed by the value of Age, so that the value 74 would be right-justified to column 15?
- 1) `cout << FName << Age;`
  - 2) `cout << FName << setw(15) << Age;`
  - 3) `cout << FName << setw(15 - FName.length()) << Age;`
  - 4) All of these
  - 5) 2 and 3 only
  - 6) None of these

For the next 3 questions, assume the following variable declarations and initializations:

```
bool Burke,
     Hare = false;
int a = 0, b = 1, c = 3;
```

Determine the value assigned by each of the following statements to the relevant Boolean variable, or if there's something (syntactically) wrong with the expression; choose from the following answers:

1 true      2 false      3 syntax error

- 24) `Burke = 2 + b < c ;`
- 25) `Hare = !( Hare );`
- 26) `Burke = (a + b < c || a + b == c);`
- 27) What output will the following program produce? (Be careful this may be tricky.)

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

void main( ) {
    int Score = 87, Rank = 2;

    if (Score >= 95)
        if (Rank <= 5)
            cout << "Nice job!";
        else
            cout << "Good job!";
}
```

- |                |                 |                           |
|----------------|-----------------|---------------------------|
| 1) Nice job!   | 4) "Good job!"  | 7) No output is produced. |
| 2) Good job!   | 5) both 1 and 2 | 8) none of these          |
| 3) "Nice job!" | 6) both 3 and 4 |                           |

28) What is the value printed for the variable `Delta` if the following code is executed?

```
int Delta = 0, X = 4;

if ( X / 2 == 1 )
    Delta = Delta + X;
X--;

if ( X / 2 == 0 )
    Delta = Delta + X;
X--;

if ( X / 2 == 0 )
    Delta = Delta + X;

cout << "Delta = " << Delta << endl;
```

- |      |      |                  |
|------|------|------------------|
| 1) 0 | 4) 3 | 7) 6             |
| 2) 1 | 5) 4 | 8) None of these |
| 3) 2 | 6) 5 |                  |

For the next 2 questions, consider execution of the following switch statement:

```
int Enter = 10;
cin >> Enter;

switch (Enter) {
case 1: Enter = -4;
case 2: Enter = -6;
case 4: break;
case 6: Enter = -8;
       break;
default: Enter = -1;
}
```

What would the value of `Enter` be after execution of this code if the value read for `Enter` were:

	<b>Enter</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
29)	2	-1	-4	-6	-8	10	none of these
30)	5	-1	-4	-6	-8	10	none of these