



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 on the Opscan form. Code **Form A** on the Opscan; code your room **group** number: Litrv 1670 = 1; Nor 136 = 2; Engel 223 = 3, Litrv 1870 = 4, Squir Colnl = 5, code the last 3 digits of your index number as the **seat** number: Litrv 1670 = 228; Nor 136 = 345; Engel 223 = 582, Litrv 1870 = 696, Squir Colnl = 346.
- Choose the single best answer for each question — some answers may be partially correct. If you mark more than one answer, it will be counted wrong.
- Unless a question involves determining whether given C++ code is syntactically correct, assume that it is. The given code has been compiled and tested, except where there are deliberate errors. Unless a question specifically deals with compiler #include directives, you should assume the necessary header files have been included.
- Note that questions about printed values disregard formatting completely.
- 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 40, 2.5-point 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!

Print Name (Last, First) _____

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

signature

For the following 4 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.

	1	2	3	4	5
1) $9 - 6 / 4$	0	0.75	7.5	8	none of the above
2) $4.0 + 24.0 / 4.0$	7.0	7	10.0	10	none of the above
3) $32 - 14 \% 5$	3	28	29.2	30	none of the above
4) $5.5 * 4 + 2$	24	24.0	30	33.0	none of the above

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

```
int    IntVar;
double FloatVar;
```

	1	2	3	4	5
5) <code>FloatVar = 16 / 5;</code>	3	3.0	3.2	1.0	none of the above
6) <code>FloatVar = 12 / 2.4;</code>	5	5.0	6	6.0	none of the above
7) <code>IntVar = 5 + 2.7 ;</code>	7	7.7	8	8.0	none of the above

For the next 4 questions, assume the variable declarations:

```
int    leia, han, darth=0;
double luke, obeiwan ;
```

Consider each group of statements and mark:

- 1) if every statement in the group is syntactically **correct**
- 2) if there is at least one statement in the group that is syntactically **incorrect**
- 3) if there is not enough information to decide

(Assume that any necessary #include directives are present.)

8) `han = 13;`
`luke = ++darth;`
`obeiwan = leia ^ han--;`

9) `luke = 2.71828F;`
`han = (darth == 1);`

10) `han = 1 ;`
`if (han * darth)`
 `leia = han;`
`else`
 `luke = darth;`

11) `obeiwan = 1;`
`luke = obeiwan -- darth ;`

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

```
55      23      72      40      Back
17      30      95      28      to
6       34      82      66      Moon
19      62      36      21      Homer
8       49      45      33      Hickam
```

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;
```

```
infile >> zero >> one >> zero;
infile.ignore(100, '\n');
infile >> one >> two >> three >> four;
infile.ignore(100, '\n');
infile.ignore(100, '\n');
infile >> three >> three >> three;
infile.ignore(100, '\n');
if (!infile.eof()) infile >> four;
```

	1	2	3	4	5
12) zero	23	55	40	72	none of the above
13) one	17	23	30	40	none of the above
14) two	17	23	30	34	none of the above
15) three	28	30	82	90	none of the above
16) four	6	8	19	22	none of the above

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

```
697c4 12
```

(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';
ifile.get(ch1);
ifile >> i1;
ifile.get(ch2);
```

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

- | | | | |
|--------|-------------------|---------|--------|
| 1) '6' | 2) '9' | 3) '7' | 4) 'c' |
| 5) '4' | 6) ' ' (a space) | 7) '\t' | 8) '1' |
| 9) '2' | 10) none of these | | |

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

- | | | | |
|--------|-------------------|---------|--------|
| 1) '6' | 2) '9' | 3) '7' | 4) 'c' |
| 5) '4' | 6) ' ' (a space) | 7) '\t' | 8) '1' |
| 9) '2' | 10) none of these | | |

For the succeeding 2 questions, suppose the input file, `input.dat` contains the following data:

8 2 4 8 3 9 8 -6 7 1 8 2

Consider executing the following program:

```
#include <iostream.h>
#include <fstream.h>
void main() {
    int delta, epsilon, zeta, eta, sume = 0, sumo = 0;
    ifstream input;
    input.open("input.dat");
    input >> delta >> epsilon >> zeta >> eta;
    while (input) {
        sumo = delta + zeta + sumo;
        sume = sume + epsilon + eta;
        cout << sume << endl;
        input >> delta >> epsilon >> zeta >> eta;
    }
    cout << sumo << endl;
    input.close( );
}
```

19) What is the value printed on the second line of output?

- 1) 10 2) 3 3) 15 4) 25 5) 13
6) none of the above

20) What is the value printed on the last line of output?

- 1) 12 2) 11 3) 23 4) 15 5) 38
6) none of the above

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

697c4 12

(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 >> ch2 >> i1 >> ch3;
```

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

- 1) '6' 2) '9' 3) '7' 4) 'c'
5) '4' 6) ' ' (a space) 7) '\t' 8) '1'
9) '2' 10) none of these

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

- 1) '6' 2) '9' 3) '7' 4) 'c'
5) '4' 6) ' ' (a space) 7) '\t' 8) '1'
9) '2' 10) none of these

23) The resulting value of the variable ch3 would be:

- | | | | |
|--------|-------------------|---------|--------|
| 1) '6' | 2) '9' | 3) '7' | 4) 'c' |
| 5) '4' | 6) ' ' (a space) | 7) '\t' | 8) '1' |
| 9) '2' | 10) none of these | | |

For the next 5 questions, assume the input file stream bill 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 -21 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;
bill >> aFloat1 >> aFloat2;
cout << aFloat1 << aFloat2;
bill.ignore(4, '\n');
bill >> anInt1 >> anInt2 >> anInt3;
bill.ignore( 80, '\n');
cout << anInt1 << anInt2 << anInt3;
bill >> anInt4;
cout << anInt4;
```

24) The value printed for the variable aFloat2 would be:

- | | | | |
|------------------------------|-----------------------|-------|---------|
| 1) 3.14 | 2) 2.71828 | 3) 43 | 4) 43.0 |
| 5) 27 | 6) 27.0 | 7) 24 | 8) 24.0 |
| 9) This would cause an error | 10) none of the above | | |

25) The value printed for the variable anInt1 would be:

- | | | | |
|------------------------------|-----------------------|--------|-------|
| 1) 43 | 2) 0 | 3) 27 | 4) 24 |
| 5) 1 | 6) 8 | 7) -12 | 8) 45 |
| 9) This would cause an error | 10) none of the above | | |

26) The value printed for the variable anInt2 would be:

- | | | | |
|------------------------------|-----------------------|--------|-------|
| 1) 43 | 2) 0 | 3) 27 | 4) 24 |
| 5) 1 | 6) 8 | 7) -12 | 8) 45 |
| 9) This would cause an error | 10) none of the above | | |

27) The value printed for the variable anInt3 would be:

- | | | | |
|------------------------------|-----------------------|--------|-------|
| 1) 43 | 2) 0 | 3) 27 | 4) 24 |
| 5) 1 | 6) 8 | 7) -12 | 8) 45 |
| 9) This would cause an error | 10) none of the above | | |

28) The value printed for the variable anInt4 would be:

- | | | | |
|------------------------------|-----------------------|--------|--------|
| 1) 24 | 2) 1 | 3) 8 | 4) -12 |
| 5) 3 | 6) 45 | 7) -21 | 8) 91 |
| 9) This would cause an error | 10) none of the above | | |

Assume the following variable declarations and initializations:

```
bool burke, christy, doyle=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

29) burke = 1 - b <= a ;

30) doyle = !(doyle)

31) burke = (a % b-1 || c-2 ≠ b);

32) christy = (-(-c) >= c);

33) burke = (1 + b == c || c-2 < a && a - c <= -c);

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

```
int W = 5, X = 7, Y = 9, Z = 1;
if (X % Y >= 2 + W) {
    Z++;
    if (Y-3*W >= -X)
        Z--;
    else
        Z++;
}
else {
    Z = -1;
}
```

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

35) What output will the following program produce? (Be careful this is tricky.)

```
#include <iostream.h>
void main( ) {
    int score = 87, rank = 2;
    if (score >= 95) {
        if (rank <= 5)
            cout << "Nice job!"; }
    else
        cout << "Good job!";
}
```

- 1) Nice job! 2) Good job! 3) "Nice job!" 4) "Good job!"
5) both 1 and 2 6) both 3 and 4 7) No output is produced.

36) What is the value printed for the variable `delta` if the following code is executed?

```
int delta = 0, x = 3;
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 2) 1 3) 2 4) 3 5) 4
6) 5 7) 6 8) None of the above
-

37) `int A = 0, D = 5;`
 `if (R <= T)`
 `D = A - 1;`
 `else`
 `A = 1;`

Which of the following code fragments is equivalent to the code above? "Equivalent" means that each code fragment would assign the same values to A and D as the code given above, no matter what the initial values for the variables R and T were.

- | | |
|--|---|
| 1) <code>int A = 0, D = 5;</code>
<code>if (R > T)</code>
<code>A = 1;</code>
<code>else</code>
<code>D = A - 1;</code> | 2) <code>int A = 0, D = 5;</code>
<code>if (R >= T)</code>
<code>A = 1;</code>
<code>else</code>
<code>D = A - 1;</code> |
| 3) <code>int A = 0, D = 5;</code>
<code>if (R > T)</code>
<code>A = 1;</code>
<code>if (R <= T)</code>
<code>D = A - 1;</code> | 4) <code>int A = 0, D = 5;</code>
<code>if (R < T)</code>
<code>A = 1;</code>
<code>if (R > T)</code>
<code>D = A - 1;</code> |

- 5) all of the above 6) 1 and 2 only 7) 1 and 3 only
8) 2 and 4 only 9) none are equivalent
-

For the next 3 questions, consider execution of the following switch statement:

```
int enter = 10;
cin >> enter;
switch (enter) {
case 1: enter = -4;
        break;
case 2: enter = -6;
case 4:
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:

	enter	1	2	3	4	5	6
38)	2	-1	-4	-6	-8	10	none of the above
39)	4	-1	-4	-6	-8	10	none of the above
40)	5	-1	-4	-6	-8	10	none of the above
