CSC1321 Programming in C++ **Review Questions**
Professor: Zhang **Chapters 2 and 3**

1. (5 points) True or False? Every C++ program must have a function named main.
   A. True
   B. False
2. (5 points) True or False? A C++ identifier cannot start with a digit.
   A. True
   B. False
3. (5 points) True or False? The C++ compiler considers the identifier `CanOfWorms` to be the same as the identifier `canofworms`.
   A. True
   B. False
4. (5 points) True or False? Some C++ reserved words can also be used as programmer-defined identifiers.
   A. True
   B. False
5. (5 points) True or False? If a program compiles successfully, it is guaranteed to execute correctly.
   A. True
   B. False
6. (5 points) True or False? In a C++ expression, all additions are performed before any subtractions.
   A. True
   B. False
7. (5 points) True or False? In C++, the value of the expression `3 + 2 * 6` is `15`
   A. True
   B. False
8. (5 points) True or False? To use a C++ library function, you must use an `include` directive to include the appropriate header file.
   A. True
   B. False
9. (5 points) A programming language is said to be _____ if it considers uppercase letters to be different from lowercase letters.
10. (5 points) In C++, subprograms are referred to as _____ .
11. (5 points) Which of the following statements about the C++ main function is **false**?
    A. Every program must have a function named main.
    B. Program execution begins with the first executable statement in the main function.

C. The main function must call (invoke) at least one other function.

D. The word `int` in the function heading means that the main function returns an integer value.

12. (5 points) Which one of the following is not a valid identifier in C++?

    A. `Hi_There`

    B. `top40`

    C. `UpAnDdOwN`

    D. `3BlindMice`

    E. `CAPS`

13. (5 points) Which of the following statements prints `HappyBirthday` on one output line?

    A. `cout << "Happy" << endl;  cout << "Birthday" << endl;`

    B. `cout << "Happy";  cout << "Birthday" << endl;`

    C. `cout << "HappyBirthday" << endl;`

    D. B and C above

    E. A, B, and C above

14. (5 points) Among the C++ operators `+, -, *, /,` and %, which ones have the lowest precedence?

    A. + and -

    B. * and /

    C. *, /, and %

    D. +, -, and %

    E. +, -, and *

15. (5 points) The value of the C++ expression `3 / 4 * 5` is:

    A. 0.0

    B. 0

    C. 3.75

    D. 3

    E. 0.15

16. (5 points) Assuming all variables are of type float, the C++ expression for `(a + b) c / d + e` is:

    A. `a + b * c / d + e`

    B. `(a + b) * c / d + e`

    C. `(a + b) * c / (d + e)`

    D. `(a + b * c) / d + e`

    E. `(a + b) c / (d + e)`

17. (5 points) The value of the C++ expression 11 + 22 % 4 is:

    A. 13

    B. 1

    C. 8

    D. 16

    E. none of the above

18. (5 points) Given that x is a float variable and num is an int variable containing the value 38, what will x contain after execution of the following statement:

```
int num = 38;
int x = num / 4 + 3.0;
```

    A. 12.5

    B. 13

    C. 12

    D. 12.0

    E. A compile-time error occurs

19. (5 points) If the int variables `int1 and int2` contain the values 4 and 5, respectively, then the value of the expression `float(int1 / int2)` is:

    A. 0.8

    B. 0

    C. 0.0

    D. 1.0

    E. 1

20. (5 points) Which expression does not correctly compute the mathematical average of the int variables `int1, int2, and int3`?

    A. `float(int1 + int2 + int3) / 3.0`

    B. `(int1 + int2 + int3) / 3.0`

    C. `float((int1 + int2 + int3) / 3)`

    D. `float(int1 + int2 + int3) / 3`

    E. B and D above

21. (5 points) What is the output of the following program fragment?

```
age = 29;
cout << "Are you" << age << "years old?" << endl;
```

    A. `Are you29years old?`

    B. `Are you 29 years old?`

    C. `Are you29 years old?`

D. `Are you 29years old?`

E. `Are you age years old?`

22. (5 points) What is the output of the following program fragment? (alpha and beta are int variables.)

```
alpha = 2463;
beta = 72;
cout << "123456789" << endl
<< setw(5) << alpha << endl
<< setw(5) << beta << endl;
```

A. `123456789`
`24630`
`72000`

B. `123456789`
`␣2463`
`␣72`

C. `123456789`
`␣2463`
`␣␣␣72`

D. `123456789`
`␣␣␣␣␣2463`
`␣␣␣␣␣72`

E. none of the above

23. (5 points) What is the output of the following program fragment? (x is a float variable.)

```
x = 25.6284;
cout << "**" << setw(6) << setprecision(1) << x << endl;
```

A. `**25.6284`

B. `**␣25.628400`

C. `**25.628`

D. `**␣␣25.6`

E. `**␣␣␣␣25.6`

24. (5 points) Formatting a program in a consistent, readable style is valuable to

A. the person who writes the program.

B. other people who need to understand and work with the program.

C. the C++ compiler.

D. A and B above

E. A, B, and C above

25. (5 points) Write a C++ assignment statement to calculate the sum of the natural numbers from 1 to n: $sum = 1 + 2 + \ldots + n$ using the following formula:

$$sum = \frac{n(n+1)}{2}$$

26. (5 points) Write a C++ assignment statement to calculate the sum of a geometric series: $sum = 1 + r + r^2 + \ldots + r^n$ using the following formula:

$$sum = \frac{r^{n+1} - 1}{r - 1}$$

27. (5 points) Write a C++ assignment statement to calculate the first root of quadratic equation $ax^2 + bx + c = 0$ using the formula:

$$x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

28. (5 points) Write a C++ assignment statement to calculate the following:

$$\phi = \sqrt{1 + \sqrt{1 + \sqrt{1 + \alpha}}}$$

29. (5 points) Write a C++ program to calculate the number of hours and minutes left after converting from a total of minutes. For example, given a total of 135 minutes, it can be converted into 2 hours and 15 minutes.