COMPUTER PROGRAMMING CONCEPTS
(390)

—OPEN EVENT—

REGIONAL – 2018

DO NOT WRITE ON TEST BOOKLET

TOTAL POINTS _____ ***(100 points)***

Failure to adhere to any of the following rules will result in disqualification:

1. **Contestant must hand in this test booklet and all printouts. Failure to do so will result in disqualification.**
2. **No equipment, supplies, or materials other than those specified for this event are allowed in the testing area. No previous BPA tests and/or sample tests or facsimile (handwritten, photocopied, or keyed) are allowed in the testing area.**
3. **Electronic devices will be monitored according to ACT standards.**

No more than sixty (60) minutes testing time

MULTIPLE CHOICE

Identify the letter of the choice that best completes the statement or answers the question.

1. Using the object-oriented approach, a(n) ____ is a combined set of attributes and actions.
   a. algorithm
   b. prototype
   c. abstraction
   d. class

2. The compiler is responsible for ____.
   a. translating high-level programming language into machine-readable form
   b. controlling the operation of the system
   c. producing output from programming language such as C#
   d. producing UML diagrams during the design phase

3. During which phase of software development should questions be asked to clarify the problem definition?
   a. analysis
   b. design
   c. coding
   d. testing

4. Packaging data characteristics and behaviors into a class is called ____.
   a. inheritance
   b. instantiation
   c. encapsulation
   d. classes

5. If you write a program and, instead of multiplying two values together as intended, you divide one value by the other, you produce a(n) ____ error.
   a. syntax
   b. analysis
   c. logic
   d. design

6. The set of rules that a language such as C# has to follow are called ____ rules.
   a. syntax
   b. semantic
   c. compiler
   d. language

7. The first step found in most software development methodologies is ____.
   a. design
   b. analysis
   c. code
   d. desk check

8. The diagram used in object-oriented development to show the characteristics and behaviors of a class is a(n) ____.
   a. flowchart
   b. structure chart
   c. class diagram
   d. UML

9. What object-oriented feature enables you to define subclasses that share some of the characteristics of other classes?
   a. encapsulation
   b. polymorphism
   c. abstraction
   d. inheritance

10. A(n)____ version of software has not been fully tested and may still contain bugs or errors.
    a. alpha
    b. maintenance
    c. bug
    d. beta

11. On a class diagram, the minus symbol shown beside the data member indicates the member is ____.
    a. accessible to any methods that use the class
    b. a behavior of the data
    c. public
    d. private

12. When should test plans be developed?
    a. During the analysis and design phases
    b. After the solution has been designed
    c. During the implementation phase
    d. After the solution has been coded

13. One class predefined as part of .NET is ____.
    a. System
    b. Console
    c. namespace
    d. main

14. In a C# program, namespace is used to ____.
    a. display information on the monitor
    b. identify where the program begins
    c. add a reference to the most common classes in .NET
    d. group functionally related types under a single name

15. In Visual Studio.NET, the feature that attempts to sense what you are going to type before you type it is called ____.
    a. Help
    b. Tools
    c. IntelliSense
    d. ToolTip

16. Which of the following would display "Good day!" on the screen?
    a. WriteLine.Console("Good day!");
    b. Console.WriteLine["Good day!"];
    c. WriteLine.Console{"Good day!"};
    d. Console.WriteLine("Good day!");

17. Comments that use two forward slashes are called ____.
    a. block
    b. multiline
    c. XML
    d. inline

18. Program execution halts in a C# program when ____.
    a. the last line in the program listing is executed
    b. the last statement in Main( ) is executed
    c. the stop statement is encountered
    d. the Exit command from the File menu is selected

19. A(n) ____ is a collection of one or more program statements combined to perform some action.
    a. class
    b. object
    c. method
    d. field

20. A quick way to identify a method is by looking for ____.
    a. the keyword class
    b. the { } combination
    c. parentheses
    d. a namespace

21. Console is a ____ and WriteLine( ) is a ____.
    a. method, class
    b. namespace, method
    c. class, namespace
    d. class, method

22. WriteLine( ) differs from Write( ) in that ____.
    a. WriteLine( ) does not automatically advance to the next line
    b. smaller items are printed using Write( )
    c. WriteLine( ) was added in later releases of C#
    d. WriteLine( ) advances to the next line after it finishes displaying output

23. Which character is called the escape character in C#?
    a. #
    b. Esc
    c. \
    d. '

24. Given the following output statement, what would be displayed?
    Console.Write("Ok\\ \"I\'m sure\"");
    a. "Ok\\ \"I\'m sure\""
    b. Ok\ "I'm sure"
    c. Ok "I'm sure"
    d. Ok I'm sure

25. Which method of the Console class allows multiple characters to be input via the keyboard?
    a. Write( )
    b. Read( )
    c. Input( )
    d. ReadLine( )

26. An IDE enables you to ____.
    a. type your program statements into an editor
    b. debug an application
    c. compile an application
    d. all of the above

27. The compiler checks for ____.
    a. semantic violations
    b. files that are too large
    c. debugger options
    d. syntax rule violations

28. Run-time errors are more difficult to find than syntax errors because ____.
    a. the program may compile and produce results with a run-time error
    b. run-time errors are violations in the rules of the language
    c. the program can never run if it has a run-time error
    d. the program will never stop if it has a run-time error

29. ____ is normally part of the analysis phase of software development.
    a. Making sure you understand the problem definition
    b. Designing a prototype of the desired output
    c. Coding the solution using an algorithm
    d. Developing an algorithm to solve the problem

30. Which of the following statements would produce the output shown here?

    Live
    Life to the fullest

    a. Console.WriteLine("Live\nLife to the \tfullest");
    b. Console.WriteLine("Live Life to the fullest");
    c. Console.WriteLine("Live
       Life to the fullest");
    d. Console.WriteLine("Live\\nLife to the \\tfullest");

31. Which of the following is a *valid* identifier?
    a. score#1
    b. amount owed by student
    c. finalGrade
    d. 4thExam

32. The number 3.45 is an example of a(n) ____ type.
    a. bool
    b. int
    c. floating point
    d. char

33. The value *true* could be stored in a variable of ____ type.
    a. bool
    b. decimal
    c. char
    d. floating point

34. The special character that can be used with an identifier is ____.
    a. -
    b. _
    c. *
    d. #

35. Which statement subtracts 100 from the original value of an answer?
    a. 100 -= answer;
    b. answer = 100 -;
    c. answer =- 100;
    d. answer -= 100;

36. Given the following declarations, what is stored in ans as a result of the arithmetic expression?

```
int ans = 0, v1 = 5, v2 = 8;
ans = v2 % v1++;
```

a. 1.3333
b. 1.6
c. 2
d. 3

37. What is stored in ans as a result of the arithmetic expression, given the following declarations?

```
int ans = 5, v1 = 2, v2 = 10, v3 = 18;
ans += v1 + 10 * (v2-- / 5) + v3 / v2;
```

a. 27
b. 12
c. 29
d. none of the above

38. Which of the following formats the first argument to display an amount with two digits to the right of the decimal?
a. {0:C}
b. {0:c}
c. {0:f2}
d. all of the above

39. One convention used for naming identifiers is called Pascal case. This convention requires that ____.
a. the first letter be lowercase with the first letter of each subsequent word capitalized
b. all letters appear in uppercase characters
c. the first letter be uppercase with the first letter of each subsequent word capitalized
d. all letters appear in lowercase with words separated by an underscore

40. Probably the *most* important rule for naming identifiers is ____.
a. do not use over 12 characters for the identifier
b. number the identifiers and begin each identifier with an numeric character representing its number
c. use a lowercase character for the first character of the identifier
d. be descriptive and select a meaningful name

41. Which of the following would be the *most* appropriate identifier for a memory location that will store the amount of rainfall for a given period of time?
a. time
b. amount of rain
c. amountOfRain
d. amountofrainforsomeperiodoftime

42. Which of the following is a valid compile-time initialization for amountDue, a floating point variable of the double type, that will initially be set to zero?
    a. amountDue = 0;
    b. amountDue = '0';
    c. amountDue = 0m;
    d. amountDue = 0f;

43. Which of the following is a valid compile-time initialization for amountDue, a variable of the decimal type, that will initially be set to zero?
    a. amountDue = 0;
    b. amountDue = '0';
    c. amountDue = 0m;
    d. amountDue = 0d;

44. A variable of type bool can store ____.
    a. "true"
    b. TRUE
    c. true
    d. all of the above

45. A valid string literal representing the last month of the year is ____.
    a. 12
    b. "December"
    c. lastMonthOfTheYear
    d. December

46. The value stored in answer after the following expression is evaluated is

```
int v1 = 10, v2 = 5, ans =3;
ans += --v1 * v2++;
```

    a. 39
    b. 48
    c. 57
    d. none of the above

47. Which of the following expressions would be evaluated *first*?

```
ans += v1 + v2 * v3 % 2;
```

    a. ans += v1
    b. v1 + v2
    c. v2 * v3
    d. v3 % 2

48. The result of the following expression is ____.

```
double ans, v1 = 45.7, v2 = 10.5;
int v3 = 5;
ans = (int) v1 + v2 / (double) v3;
```

a. 48.8
b. 47.1
c. 48
d. 47

49. The value 3.42e-4 is equivalent to _____.
a. 3420000
b. .000342
c. -3.420000
d. -.000342

50. In order to format the first argument in the WriteLine method so that it prints the value 5343.67 as $5,343.67 with a comma and a dollar symbol, you would insert the following format string as the argument to the WriteLine( ) ____.
a. “{0:$,2}”
b. “{C:0}”
c. “{0:C}”
d. “{0:F,2,$}”

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TOTAL POINTS _____ ***(100 points)***

Graders: Please double check and verify all scores and answer keys!

COMPUTER PROGRAMMING CONCEPTS-OPEN - REGIONAL 2018
ANSWER KEY

1. D
2. A
3. A
4. C
5. C
6. A
7. B
8. C
9. D
10. D
11. D
12. A
13. B
14. D
15. C
16. D
17. D
18. B
19. C
20. C
21. D
22. D
23. C
24. B
25. D
26. D
27. D
28. A
29. A
30. A
31. C
32. C
33. B
34. B
35. D
36. D
37. C
38. D
39. C
40. D
41. C
42. A
43. C
44. C
45. B
46. B
47. C
48. B
49. B
50. C