**COMPUTER PROGRAMMING**

**CONCEPTS**

**(390)**

—OPEN EVENT—

**REGIONAL – 2015**

DO NOT WRITE ON TEST BOOKLET

***TOTAL POINTS \_\_\_\_\_\_\_\_\_\_\_ (500)***

**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 60 minutes testing time

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*Workplace Skills Assessment Program* competition.

**Identify the letter of the choice that best completes the statement or answers the question. Mark A if the statement is true. Mark B if the statement is false. (10 pts. each)**

**If you finish before the end of the 60 minutes testing, notify the proctor. Time may be a factor in determining the winner of the event of a tie.**

1. \_\_\_ is a tool programmers use to help plan algorithms.
   1. Linkage
   2. Modularization
   3. Pseudocode
   4. Standardization
2. The \_\_\_ of a language is the set of rules that must be followed to use the language correctly.
   1. syntax
   2. semantics
   3. instructions
   4. flow
3. Given the following pseudo-code, what is the value of m following execution?  
   a = 4  
   b = 2  
   c = 7  
   If (a > b) Then  
    If (a > c) Then  
    m = 1  
    Else  
    m = 2  
    End If  
   Else  
    If (c != 0) Then  
    m = 3  
    Else  
    m = 4  
    End If  
   End If
   1. 1
   2. 2
   3. 3
   4. 4
4. A conditional or decision node in a flowchart is represented by which shape?
   1. Oval
   2. Parallelogram
   3. Rectangle
   4. Diamond
5. Dividing a problem or task into parts is an example of \_\_\_?
   1. Abstraction
   2. Encapsulation
   3. Compilation
   4. Generality
6. Evaluate: 10 % 5 + 2 / 4
   1. 1
   2. 0.5
   3. 0
   4. NaN
7. Define I/O.
   1. Interactive Operations
   2. Independent Operations
   3. Input and Output
   4. Interdependent Operations
8. What is a variable?
   1. A reference to dynamic information
   2. A randomly generated number
   3. An unchanging constant piece of user-generated data
   4. A slider user-interface control
9. How many bits are in a byte?
   1. 16
   2. 12
   3. 8
   4. 4
10. An application that translates high-level programming language code into machine language is a/an \_\_\_.
    1. Operating System
    2. Compiler
    3. CPU
    4. Assembler
11. Which of the following Boolean expressions evaluates to False?
    1. (x != 0) || (x = 0)
    2. !(x > 0) != (x > 0)
    3. (True && (3 >= 4))
    4. (x >= 0) || (x <= 0)
12. A variable defined within a function is referred to as a \_\_\_?
    1. Block variable
    2. Function variable
    3. Local variable
    4. Global variable
13. What is the minimum number of temporary variables required to swap the value of two other variables?
    1. 3
    2. 2
    3. 1
    4. 0
14. In C-like languages, the keyword used to transfer control from a function back to the calling code is a \_\_\_.
    1. switch
    2. goto
    3. go back
    4. return
15. The do…while loop is ideal for loop structures that \_\_\_.
    1. must execute some process at least one time
    2. must check the loop condition before the loop body is executed
    3. repeat some process a fixed number of times
    4. do all of the above
16. How many times will the following loop be executed?  
    For i = 2 To 14 Step 3  
     /\* body of loop \*/  
    Next i
    1. 4
    2. 5
    3. 12
    4. 13
17. Which operators are used to test the relationship between two variables or between a variable and a constant?
    1. Arithmetic operators
    2. Logical operators
    3. Relational operators
    4. Special operators
18. Which of the following is commonly used as an assignment operator?
    1. =
    2. \*
    3. ^
    4. %
19. Why do computers represent data as binary numbers (zeroes and ones)?
    1. Binary numbers are simplest
    2. Combinations of zeroes and ones can represent any number or character value
    3. Binary numbers are the basis upon which all other number systems are built
    4. Digital devices have two stable states, making it natural to use zero for one state and 1 for the other
20. A \_\_\_ error does not cause a program to abort but produces incorrect results.
    1. Syntax
    2. Runtime
    3. Logic
    4. None of the above
21. A \_\_\_ is the context within a program in which a variable is valid.
    1. Binding
    2. Scope
    3. Declaration
    4. Syntax
22. Which numerical base includes the use of Roman letters to express numerical values?
    1. Hexadecimal
    2. Decimal
    3. Octal
    4. Binary
23. A while loop is ideal for loop structures that \_\_\_.
    1. Repeat some process a fixed number of times
    2. Must check the loop conditional before the loop body is executed
    3. Must execute some process at least once
    4. All of the above
24. What symbol is used to represent output in a flowchart?
    1. Square
    2. Circle
    3. Parallelogram
    4. Triangle
25. What is the result of 45/4? Assume integer division.
    1. 10
    2. 11
    3. 11.25
    4. 12
26. The Unicode value of ‘a’ is 97. What is the Unicode value for ‘z’?
    1. 121
    2. 122
    3. 123
    4. 124
27. The value True is \_\_\_.
    1. a language keyword
    2. a Boolean literal
    3. a String literal
    4. None of the above
28. Which of the following conditionals is *not* considered a loop?
    1. For
    2. While
    3. If
    4. All of the above
29. A variable defined outside a function is referred to as a \_\_\_?
    1. global variable
    2. function variable
    3. local variable
    4. block variable
30. Software that can be used in applications other than the one for which it was originally written are called \_\_\_.
    1. Cross code
    2. Migrant code
    3. Reentrant code
    4. Reusable code
31. The Boolean expression (A && B) || A is True \_\_\_.
    1. only when A is True
    2. only when B is True
    3. when either A is True or B is True
    4. for all values of A and B
32. A series of logically ordered steps that lead to a required result is called a(n) \_\_\_.
    1. compiler
    2. program
    3. data structure
    4. algorithm
33. A common data type used for keeping an ordered set of values in memory that can be referenced by key, e.g., A[3], A[n+1], etc., is known as a(n) \_\_\_.
    1. file
    2. array
    3. string
    4. container
34. Today is Tuesday. It is raining. Which is the following is True?
    1. Raining OR Tuesday
    2. Raining XOR Tuesday
    3. NOT Tuesday
    4. NOT (Raining OR Tuesday)
35. Tracing, stepping, and breakpoints are typical terms in which aspect of programming?
    1. Debugging
    2. Compilation
    3. Version control
    4. Project planning
36. In a switch statement block, the \_\_\_ case executes if none of the other cases were satisfied.
    1. Else
    2. Then
    3. Default
    4. Loop
37. In some programming languages, a variable \_\_\_ must be used to tell the compiler or interpreter about the data type of the variable.
    1. Name
    2. Termination
    3. Decision
    4. Declaration
38. Which is an example of volatile data storage?
    1. DVD-ROM
    2. RAM
    3. ROM
    4. SSD
39. What is the output of the following pseudocode?  
    choice = 2  
    Num = 3  
    switch (choice) {  
     case 1:  
     print “Workplace Skills Assessment Program”  
     break  
     case Num:  
     print “I think variables are not allowed in case statements!”  
     break  
     case (7 - 8 + 3):  
     print “What do you think?”  
     break  
    }
    1. Nothing
    2. “Workplace Skills Assessment Program”
    3. “I think variables are not allowed in case statements!”
    4. “What do you think?”
40. Whenever possible, avoid the use of \_\_\_.
    1. Global variables
    2. Function variables
    3. Block variables
    4. Local variables
41. What is the correct expression of the character ‘9’?
    1. 9
    2. ‘9’
    3. “9”
    4. None of the above
42. In the expression 1337/5, the values on the left and right of the / symbol are known as \_\_\_?
    1. operators
    2. operands
    3. parameters
    4. arguments
43. Which of the following expressions results in the value 1?
    1. 2 % 1
    2. 15 % 4
    3. 25 % 5
    4. 37 % 6
44. Which term describes the act of a function calling itself on a subset of its data?
    1. encapsulation
    2. inheritance
    3. recursion
    4. polymorphism
45. Which is a common language for programming behaviors and interactions within Web pages?
    1. JavaScript
    2. HTML
    3. COBOL
    4. XML
46. Which of the following is the “greater than or equal to” comparison operator?
    1. >
    2. >=
    3. =>
    4. >>
47. In an interpreted language, a syntax error is detected at \_\_\_
    1. Runtime
    2. Compile time
    3. All of the above
    4. None of the above
48. In some languages, a \_\_\_ symbol signifies the end of a discrete command.
    1. /
    2. \
    3. ;
    4. #
49. What is the result of (“9 - 5 \* 3”)?
    1. -6
    2. 12
    3. “9 - 15”
    4. “9 - 5 \* 3”
50. Which expression is commonly used to decrement the numeric value of a variable on one unit?
    1. -=
    2. --
    3. -
    4. -!