

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.
 - a. Linkage
 - b. Modularization
 - c. Pseudocode
 - d. Standardization

2. The ___ of a language is the set of rules that must be followed to use the language correctly.
 - a. syntax
 - b. semantics
 - c. instructions
 - d. 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
 - a. 1
 - b. 2
 - c. 3
 - d. 4

4. A conditional or decision node in a flowchart is represented by which shape?
 - a. Oval
 - b. Parallelogram
 - c. Rectangle
 - d. Diamond

5. Dividing a problem or task into parts is an example of ____?
 - a. Abstraction
 - b. Encapsulation
 - c. Compilation
 - d. Generality

6. Evaluate: $10 \% 5 + 2 / 4$
 - a. 1
 - b. 0.5
 - c. 0
 - d. NaN

7. Define I/O.
 - a. Interactive Operations
 - b. Independent Operations
 - c. Input and Output
 - d. Interdependent Operations

8. What is a variable?
 - a. A reference to dynamic information
 - b. A randomly generated number
 - c. An unchanging constant piece of user-generated data
 - d. A slider user-interface control

9. How many bits are in a byte?
 - a. 16
 - b. 12
 - c. 8
 - d. 4

10. An application that translates high-level programming language code into machine language is a/an ____.
 - a. Operating System
 - b. Compiler
 - c. CPU
 - d. Assembler

11. Which of the following Boolean expressions evaluates to False?
- $(x \neq 0) \parallel (x = 0)$
 - $!(x > 0) \neq (x > 0)$
 - $(\text{True} \ \&\& \ (3 \geq 4))$
 - $(x \geq 0) \parallel (x \leq 0)$
12. A variable defined within a function is referred to as a ____?
- Block variable
 - Function variable
 - Local variable
 - Global variable
13. What is the minimum number of temporary variables required to swap the value of two other variables?
- 3
 - 2
 - 1
 - 0
14. In C-like languages, the keyword used to transfer control from a function back to the calling code is a ____.
- switch
 - goto
 - go back
 - return
15. The do...while loop is ideal for loop structures that ____.
- must execute some process at least one time
 - must check the loop condition before the loop body is executed
 - repeat some process a fixed number of times
 - 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
```
- 4
  - 5
  - 12
  - 13
17. Which operators are used to test the relationship between two variables or between a variable and a constant?
- Arithmetic operators
  - Logical operators
  - Relational operators
  - Special operators

18. Which of the following is commonly used as an assignment operator?
- =
  - \*
  - ^
  - %
19. Why do computers represent data as binary numbers (zeroes and ones)?
- Binary numbers are simplest
  - Combinations of zeroes and ones can represent any number or character value
  - Binary numbers are the basis upon which all other number systems are built
  - 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.
- Syntax
  - Runtime
  - Logic
  - None of the above
21. A \_\_\_ is the context within a program in which a variable is valid.
- Binding
  - Scope
  - Declaration
  - Syntax
22. Which numerical base includes the use of Roman letters to express numerical values?
- Hexadecimal
  - Decimal
  - Octal
  - Binary
23. A while loop is ideal for loop structures that \_\_\_\_.
- Repeat some process a fixed number of times
  - Must check the loop conditional before the loop body is executed
  - Must execute some process at least once
  - All of the above
24. What symbol is used to represent output in a flowchart?
- Square
  - Circle
  - Parallelogram
  - Triangle

25. What is the result of 45/4? Assume integer division.
- 10
  - 11
  - 11.25
  - 12
26. The Unicode value of 'a' is 97. What is the Unicode value for 'z'?
- 121
  - 122
  - 123
  - 124
27. The value True is \_\_\_\_.
- a language keyword
  - a Boolean literal
  - a String literal
  - None of the above
28. Which of the following conditionals is *not* considered a loop?
- For
  - While
  - If
  - All of the above
29. A variable defined outside a function is referred to as a \_\_\_\_?
- global variable
  - function variable
  - local variable
  - block variable
30. Software that can be used in applications other than the one for which it was originally written are called \_\_\_\_.
- Cross code
  - Migrant code
  - Reentrant code
  - Reusable code
31. The Boolean expression (A && B) || A is True \_\_\_\_.
- only when A is True
  - only when B is True
  - when either A is True or B is True
  - for all values of A and B

32. A series of logically ordered steps that lead to a required result is called a(n) \_\_\_\_.
- compiler
  - program
  - data structure
  - 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) \_\_\_\_.
- file
  - array
  - string
  - container
34. Today is Tuesday. It is raining. Which of the following is True?
- Raining OR Tuesday
  - Raining XOR Tuesday
  - NOT Tuesday
  - NOT (Raining OR Tuesday)
35. Tracing, stepping, and breakpoints are typical terms in which aspect of programming?
- Debugging
  - Compilation
  - Version control
  - Project planning
36. In a switch statement block, the \_\_\_\_ case executes if none of the other cases were satisfied.
- Else
  - Then
  - Default
  - Loop
37. In some programming languages, a variable \_\_\_\_ must be used to tell the compiler or interpreter about the data type of the variable.
- Name
  - Termination
  - Decision
  - Declaration
38. Which is an example of volatile data storage?
- DVD-ROM
  - RAM
  - ROM
  - 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
}
```

- a. Nothing
  - b. "Workplace Skills Assessment Program"
  - c. "I think variables are not allowed in case statements!"
  - d. "What do you think?"
40. Whenever possible, avoid the use of \_\_\_\_.
- a. Global variables
  - b. Function variables
  - c. Block variables
  - d. Local variables
41. What is the correct expression of the character '9'?
- a. 9
  - b. '9'
  - c. "9"
  - d. None of the above
42. In the expression 1337/5, the values on the left and right of the / symbol are known as \_\_\_\_?
- a. operators
  - b. operands
  - c. parameters
  - d. arguments
43. Which of the following expressions results in the value 1?
- a. 2 % 1
  - b. 15 % 4
  - c. 25 % 5
  - d. 37 % 6



44. Which term describes the act of a function calling itself on a subset of its data?
- encapsulation
  - inheritance
  - recursion
  - polymorphism
45. Which is a common language for programming behaviors and interactions within Web pages?
- JavaScript
  - HTML
  - COBOL
  - XML
46. Which of the following is the “greater than or equal to” comparison operator?
- >
  - >=
  - =>
  - >>
47. In an interpreted language, a syntax error is detected at \_\_\_\_
- Runtime
  - Compile time
  - All of the above
  - None of the above
48. In some languages, a \_\_\_\_ symbol signifies the end of a discrete command.
- /
  - \
  - ;
  - #
49. What is the result of (“9 - 5 \* 3”)?
- 6
  - 12
  - “9 - 15”
  - “9 - 5 \* 3”
50. Which expression is commonly used to decrement the numeric value of a variable on one unit?
- =
  - 
  - 
  - !-