1 True or False

Fill in the bubble for "A" if the answer is True. Fill in the bubble for "B" if the answer is False.

1. True/False: Nested decision structures are the only way to test more than one condition.
   **ANS:** False

2. The line \( \text{if } x = y: \) will evaluate to true for \( x = 4 \) and \( y = 4 \).
   **ANS:** False

3. Short-circuit evaluation is performed only with the "and" operator.
   **ANS:** False

4. Reducing duplication of code is one of the advantages of using a loop structure.
   **ANS:** True

5. In flowcharting, the decision structure and the repetition structure both use the diamond symbol to represent the condition that is tested.
   **ANS:** True

6. In Python, you are more likely to get an infinite loop in a for structure than in a while structure.
   **ANS:** False

7. In a nested loop, the inner loop goes through all of its iterations for every single iteration of an outer loop.
   **ANS:** True

8. Assume you have a nested loop structure with an outer loop and an inner loop. The outer loop will repeat \( n \) times and the inner loop will repeat \( m \) times each time the outer loop repeats. So, you will have a total of \( n^m \) repetitions of the inner loop.
   **ANS:** False

9. The `randrange` function returns a randomly selected value from a specific sequence of numbers.
   **ANS:** True

10. True/False: The math function, \( \text{ceil}(x) \), returns the smallest integer that is less than or equal to \( x \).
    **ANS:** False

11. When a piece of data is read from a file, it is copied from the file into RAM.
    **ANS:** True

12. In Python, if you try to access a file that does not exist, it will always cause an error.
    **ANS:** False

13. It is possible to create a while loop that determines when the end of a file has been reached.
    **ANS:** True

14. A function can return multiple values only if they are all of the same type (int, string, bool, etc).
    **ANS:** False

15. A file object may be associated with multiple files.
    **ANS:** False
2 Multiple Choice

Fill in the bubble that corresponds to your answer choice.

16. What is the disadvantage of coding in one long sequence structure?
   (A) Duplicated code makes the program faster to write.
   (B) Writing a long sequence of statements is error prone.
   (C) If parts of the duplicated code have to be corrected, the correction has to be made many times.
   (D) It does not make use of decision structures.
   (E) Both B and C

   ANS: E

17. Which of the following is the correct format for a while loop in Python?
   (A) while x < 5 and x > 0
   (B) while x < 5 and > 0:
   (C) while x < 5 && x > 0:
   (D) while x < 5 and x > 0:
   (E) while: x < 5 and x > 0;

   ANS: D

18. What are the values that the variable num contains through the iterations of the following for loop?
   for num in range(2, 9, 2):
   (A) 2, 3, 4, 5, 6, 7, 8, 9
   (B) 2, 5, 8
   (C) 2, 4, 6, 8
   (D) 1, 3, 5, 7, 9
   (E) 1, 4, 7, 9

   ANS: C

19. What are the values that the variable num contains through the iterations of the following for loop?
   for num in range(4):
   (A) 0, 1, 2, 3
   (B) 1, 2, 3, 4
   (C) 0, 1, 2, 3, 4
   (D) 1, 2, 3
   (E) 0, 2, 4

   ANS: A

20. A variable used to keep the running total is called a(n) ...
   (A) Accumulator
   (B) Total
21. The first input operation is called the ______, and its purpose is to get the first input value that will be tested by the validation loop.
   (A) priming read
   (B) first input
   (C) default read
   (D) loop validation
   (E) loop set read
   **ANS: A**

22. What is the programming structure that causes a statement or a set of statements to execute repeatedly?
   (A) Sequence
   (B) Decision
   (C) Module
   (D) File
   (E) Repetition
   **ANS: E**

23. When will the following loop terminate?
   ```python
   while keep_on_going != 999 :
   ```
   (A) When keep_on_going refers to a value less than 999
   (B) When keep_on_going refers to a value greater than 999
   (C) When keep_on_going refers to a value that is an integer
   (D) When keep_on_going refers to a value not equal to 999
   (E) When keep_on_going refers to a value equal to 999
   **ANS: E**

24. In Python, the variable in the `for` clause is referred to as the ______ because it is the target of an assignment at the beginning of each loop iteration.
   (A) target variable
   (B) loop variable
   (C) for variable
   (D) count variable
   (E) terminating variable
   **ANS: A**

25. Which of these represents an example of adding variable `number` to an accumulator variable `total`?
   (A) `total + number = total`
(B) number += number
(C) total = total + number
(D) total += number
(E) Both C & D
ANS: E

26. The Python library functions that are built into the Python ______, such as print() can be used by simply calling the function, without importing a module.

(A) code
(B) default module
(C) compiler
(D) linker
(E) interpreter
ANS: E

27. Python comes with ______ functions that have been already prewritten for the programmer.

(A) library
(B) standard
(C) built-in
(D) custom
(E) interpreted
ANS: A

28. Which of the following statements tells the interpreter to load the random module into memory?

(A) load random module
(B) load module random
(C) load random
(D) import random
(E) import module random
ANS: D

29. Which of the following will assign a random number in the range of 1 through 50 to the variable number?

(A) number = random.randint(0,50)
(B) number = random(0,50)
(C) number = random.randomrange(0,50)
(D) number = random.range(0,50)
(E) None of the above
ANS: E

30. What is the result of the following statement? \( x = \text{random.randint}(5, 15) \times 2 \)

(A) A random integer from 10 to 30, multiplied by 2, assigned to the variable x
(B) A random integer from 5 to 15 assigned to the variable x
(C) A random integer from 5 to 15, multiplied by 2, assigned to the variable x
(D) A random integer from 5 to 15, selected in 2 steps, assigned to the variable x
(E) A random integer from 5 to 15, raised to the power of 2, assigned to the variable x
ANS: C

31. What type of value is returned by the uniform function?
   (A) bool
   (B) list
   (C) int
   (D) double
   (E) float
ANS: E

32. The is_Prime(num) function is what type of function?
   (A) boolean
   (B) even
   (C) binomial
   (D) math
   (E) deciding
ANS: A

33. What does this function do?
   def x(y):
       for x in range(2, y):
           if y % x == 0:
               return True
       return False
   (A) Determines whether y is even or odd
   (B) Determines if x is an integer
   (C) Returns smallest possible divisor
   (D) Determines whether y is prime
   (E) Determines if y = 0
ANS: D

34. What allows for easier code reuse between two or more programs?
   (A) moderators
   (B) modules
   (C) procedures
   (D) value returning functions
   (E) functions
ANS: B
35. You have a group of conditional statements, each with associated actions to perform if the condition is true. In the case that you want only one of the cases to be true, you should use the _____ control structure

(A) if
(B) if/else
(C) if/elif/else
(D) if/else
(E) if/elif/end

ANS: C

36. What does the following line mean?
\[ \text{number1, number2 = getMaxAndMin()} \]

(A) The function getMaxAndMin() takes two arguments, number1 and number2
(B) The function getMaxAndMin() returns one argument, saved in both number1 and number2
(C) The statement causes a syntax error.
(D) The statement causes a runtime error.
(E) The function getMaxAndMin() returns two arguments, saved in number1 and number2 respectively.

ANS: E

37. Given the following definition for the \textit{magic} function, what does the statement print(magic(15)) output?

\begin{verbatim}
def magic(n): return num + 3 * 25
\end{verbatim}

(A) 70
(B) 280
(C) 90
(D) 450
(E) 455

ANS: C

38. What happens when a piece of data is written to a file?

(A) Data is copied from a variable in RAM to a file.
(B) Data is copied from a variable in the program to a file.
(C) Data is copied from the program to a file.
(D) Data is copied from a file object to a file.
(E) Data is copied from a string to a file.

ANS: A

39. Which line creates a connection between a program and a file "x.txt"?

(A) \texttt{read("x.txt")}
(B) \texttt{import("x.txt")}
(C) \texttt{"x.txt".open()}
(D) \texttt{open("x.txt", "r")}
40. What type of file allows a program to jump directly to a piece of data without reading all data before it?
   (A) Sequential
   (B) Random-Access
   (C) Text-Based
   (D) Cached
   (E) Indexed
   \text{ANS: B}

41. Which mode specifier will clear the contents of the file if it previously exists or create a new file if it previously does not exist?
   (A) 'r'
   (B) 'a'
   (C) 'd'
   (D) 'w'
   (E) 'e'
   \text{ANS: D}

42. A control structure is _____.
   (A) A logical design that controls the order in which a set of statements execute.
   (B) A statement that ends execution of your program
   (C) A statement that controls output
   (D) A way of obtaining input
   (E) A shortcut to programming functions
   \text{ANS: A}

43. Multiple complete boolean statements can be combined using the logical operators "and" and "or" to create _____ expressions.
   (A) multiple
   (B) logical
   (C) mathematical
   (D) compound
   (E) combinatorial
   \text{ANS: D}

44. When using the "and" operator _____.
   (A) All subexpressions must evaluate to False for the entire expression to evaluate to True.
   (B) Only one subexpression must evaluate to False for the entire expression to evaluate to True.
   (C) All expressions must evaluate to True for the entire expression to evaluate to True.
   (D) Only one subexpression must evaluate to True for the entire expression to evaluate to True.
45. Which line properly determines if a value $x$ is in the range of 0 to 100?

(A) if $x >= 0$ or $x <= 100$:
(B) if $x <= 0$ or $x >= 100$
(C) if $x >= 0$ and $<= 100$:
(D) if $x >= 0$ and $x <= 100$:
(E) while $x <= 100$ or $x >= 0$:

ANS: D

46. Assume $x = 5$, $y = 4$, and $z = 6$. $result = (x < y) \text{ and } (z > x)$. What is the data type of $result$?

(A) True
(B) 5
(C) Boolean
(D) Int
(E) None of the above

ANS: C

47. Which of the following ranges has a length of 4?

(A) range(10,5,-1)
(B) range(4)
(C) range(55,59)
(D) range(1,8,2)
(E) All of the above

ANS: E

48. The following loop is an example of:

\[
x=0;
while x == 0:
    x = 4 \mod 2
\]

(A) A control statement
(B) An infinite loop
(C) A for loop
(D) A multiconditional while loop
(E) A mathematical loop

ANS: B

49. Given the following code, which value would be printed?

\[
\text{for } y \text{ in range}(2):
    \text{for } x \text{ in range}(2):
        \text{print}(x ** y)
\]

(A) 1
(B) 2
What does the following statement do?:

```python
print(random.randrange(20,30))
```

(A) Prints random integer in range 1 through 30
(B) Prints a random integer in range 20 through 29
(C) Prints random integer in range 2 through 5
(D) Prints a random integer in range 20 through 50
(E) None of the above

**ANS: B**