**Multiple Choice [10 Marks]**

Circle the best answer from the choices for each question below:

1. What is not a property of a digital “bit”?
   1. It is the building block for computer logic and memory
   2. Four bits are needed to represent alphanumeric (ASCII) characters
   3. Four bits are called a “byte”
   4. It can have a value of “0” or “1”
2. What is not a property of a digital “word”?
   1. It can have a minimum signed integer value of -32,768
   2. It can have a maximum unsigned integer value of 65,535
   3. It is made up of 8 “bits”
   4. It is made up of 2 “bytes”
3. The decimal equivalent of the binary number “1011” is:
   1. 8 + 2 + 1 = 11
   2. 1000 + 2 + 1 = 1003
   3. 10 + 11 = 21
   4. 10 + 3 = 13
4. The hexadecimal equivalent of the binary number “1011 1001” is:
   1. ABA1
   2. B09
   3. 1109
   4. B9
5. What is not a property of a Python string?
   1. A string is a Python data type
   2. A string is defined using quotation marks
   3. A string stores letters a variable stores numbers
   4. A string can contain punctuation marks
6. What is not a property of a Python Booleans?
7. A Boolean is a Python data type
8. A Boolean can have a value of True or False
9. A Boolean can have a value of 0 or 1
10. An example of a Boolean expression is “5 >= 6”
11. Which of the following expressions is not a valid Python string type?
12. ‘String’[6]
13. “String”
14. “Word”[2]
15. “True”
16. Which of the following expressions the variable ‘Number’ a value of 5?
17. Number == 5
18. Number = 5
19. Number = Five
20. Number += 4
21. Which of the following expressions is not a valid string operation?
22. “word” == “Three”
23. “word” + “Three”
24. “word”[3]
25. “word” \* “Three”
26. Which of the following Python statements is the most correct for opening the indicated binary file type for writing?
    1. Open(“myFile.bmp”, “w”)
    2. Open(“myFile.bmp”, “wb”)
    3. Open(“myFile.txt”, “wb”)
    4. Open(“myFile.bmp”, “b”)

**Day 1 Task – Object Oriented Programming [10 Marks]**

1. Write a Java class that implements a standard mathematical function and that demonstrates some principles of object-oriented programming. Your program should do the following:
   1. Implement a simple mathematical sequence function (e.g. Factorial function).
   2. Provide a constructor that initializes the class.
   3. Define and use one or more private variables.
   4. Provide a method to calculate the sequence function.
   5. Provide “getter” methods to return the values of the private variables.
   6. Bonus: Demonstrate the property of inheritance.
   7. Note: Your code ***does not have to*** implement a main program that reads and writes data to the standard output.
   8. Provide a written version of your code below.

**Day 2 – Short Answer Questions [12 Marks]**

Note: Each question is worth 4 marks. 3x4marks = 12 marks.

1. Provide an example of each of the following programming concepts.
   1. Syntax Programming Error
   2. Logic Programming Error
   3. Python Single Line Comment.
   4. Python Multiple Line (Block) Comment.

1. Provide and explain one (1) example of how computer technology has caused a negative impact on the environment and one (1) example of how computer technology has caused a positive impact on the environment.
2. Provide and explain two (2) examples of how computer technology or artificial intelligence will change traditional careers / jobs in the future.

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