Introduction to Programming with Python

Final Test

1. Which of the following is a valid variable name in Python?

    a) `1variable`
    b) `variable_name`
    c) `variable-name`
    d) `variable name`

2. What is the output of the following code?

```python
x = 10
y = "10"
print(x + int(y))
```

    a) `1010`
    b) `20`
    c) Type Error
    d) Syntax Error

3. What is the output of the following code?

```python
my_list = [1, 2, 3, 4]
print(my_list[1] + my_list[3])
```

    a) `3`
    b) `5`
    c) `6`
    d) `7`

4. What is the output of the following code?

```python
x = [1, 2, 3]
y = x
y.append(4)
print(x)
```

    a) `[1, 2, 3]`
    b) `[1, 2, 3, 4]`
    c) `[4, 2, 3, 1]`
    d) `[4, 1, 2, 3]`

5. What is the output of the following code?

```python
a = [1, 2, 3, 4]
b = a
b[2] = 5
print(a)
```

    a) `[1, 2, 3, 4]`
    b) `[1, 2, 5, 4]`
    c) `[1, 2, 3, 5]`
    d) `[5, 2, 3, 4]`

6. Explain the difference between a list and a dictionary in Python.

7. Explain the difference between a for loop and a while loop in Python.

8. Explain what the `len()` function does in Python and provide an example of how it is used with a list.

9. Describe what the continue statement does in a loop. Provide an example with a for loop.

10. Describe what the break statement does in a loop. Provide an example with a for loop.

11. Write a Python function that takes a list of numbers and returns the sum of all the **even numbers** in the list.

12. Write a program that asks the user for their name and age. If the age is greater than 18, print "You are an adult." Otherwise, print "You are not an adult."

13. Write a Python function that takes a list of words and returns a dictionary with the words as keys and their lengths as values.

14. Write a Python program that takes a list of numbers as input from the user, removes all duplicate numbers while preserving the original order, and prints the new list.