Section 1: Basics of Python

1. What will be the output of the following code?
   ```python
   x = 4
   y = 2
   print(x**y, x//y, x%y)
   ```
   a) `16 2 0`
   b) `16 2 2`
   c) `8 2 0`
   d) `16 1 0`

2. Which of the following statements will raise an error in Python?
   a) `a = 10 + '20'`
   b) `b = "Hello" + "World"`
   c) `c = 10 / 2`
   d) `d = 10 * 2.5`

3. What will be the output of the following code?
   ```python
   a = 10
   b = 20
   c = a
   a = b
   b = c
   print(a, b)
   ```
   a) `10 20`
   b) `20 10`
   c) `10 10`
   d) `20 20`

4. What will be the output of the following code?
   ```python
   my_list = [1, 2, 3]
   my_list.insert(0, 0)
   print(my_list)
   ```
   a) `[1, 2, 3, 0]`
   b) `[0, 1, 2, 3]`
   c) `[1, 0, 2, 3]`
   d) `Error`

5. Which of the following is used to get the length of a list `my_list` in Python?

a) `my_list.len()`
b) `len(my_list)`
c) `length(my_list)`
d) `size(my_list)`

6. What is the output of the following code?
```python
print(type([]) == list)
```
a) `True`
b) `False`
c) `None`
d) `Error`

7. How can you create a new list that contains only the even numbers from an existing list `nums = [1, 2, 3, 4, 5, 6]`?
a) `[x for x in nums if x%2 == 0]`
b) `[x for x in nums if x/2]`
c) `filter(lambda x: x%2==0, nums)`
d) `map(lambda x: x%2==0, nums)`

8. Which of the following data types is immutable in Python?
a) List
b) Set
c) Dictionary
d) Tuple

9. What will be the output of the following code?
```python
my_tuple = (1, 2, 3)
print(my_tuple[1])
```
a) `1`
b) `2`
c) `3`
d) `Error`

10. What will be the output of the following code?
```python
my_set = {1, 2, 3}
my_set.add(4)
print(my_set)
```
a) `{1, 2, 3}`
b) `{1, 2, 3, 4}`
c) `[1, 2, 3, 4]`
d) `Error`

11. Given a dictionary `data = {'a': 1, 'b': 2, 'c': 3}`, which statement will remove the key-value pair `'b': 2`?
    a) `data.remove('b')`
    b) `del data['b']`
    c) `data.pop('b', 2)`
    d) `data['b'] = None`

12. What will be the output of the following code?
    ```python
    my_dict = {"name": "Alice", "age": 25}
    my_dict["age"] += 1
    print(my_dict["age"])
    ```
    a) `25`
    b) `26`
    c) `Error`
    d) `None`

13. Which of the following is a valid way to define a lambda function that returns the square of a number?
    a) `lambda x: x**2`
    b) `def square(x): return x**2`
    c) `lambda x: return x**2`
    d) `lambda x: x^2`

14. What will be the output of the following code?
    ```python
    def multiply(a, b=5):
        return a * b

    print(multiply(2))
    ```
    a) `10`
    b) `7`
    c) `5`
    d) `Error`

15. What is the correct syntax to create a function in Python?
    a) `def myFunction:`
    b) `function myFunction:`
    c) `def myFunction():`
    d) `function myFunction()`

16. What will be the output of the following code?
    ```python
    my_list = [0, 1, 2, 3, 4]
    ```

```
print(my_list[1:-1])
```
a) `[1, 2, 3, 4]`
b) `[1, 2, 3]`
c) `[2, 3, 4]`
d) `[0, 1, 2, 3]`

17. Which of the following is used to check the type of an object in Python?
a) `type()`
b) `isinstance()`
c) `both a) and b)`
d) `id()`

18. What will be the output of the following code?
```python
my_dict = {"name": "Alice", "age": 25}
print("age" in my_dict)
```
a) `True`
b) `False`
c) `Error`
d) `None`

19. Which of the following will create a set in Python?
a) `my_set = set([1, 2, 3])`
b) `my_set = {1, 2, 3}`
c) `my_set = set((1, 2, 3))`
d) All of the above

20. Which of the following is correct syntax for a list comprehension?
a) `[x for x in range(10) if x % 2 == 0]`
b) `(x for x in range(10) if x % 2 == 0)`
c) `x for x in range(10) if x % 2 == 0`
d) `None of the above`

Section 2: Control Structures

21. What will be the output of the following code?
```python
for i in range(5):
    if i == 3:
        break
    else:
        print(i)
```

a) `0 1 2 3`
b) `0 1 2`
c) `0 1 2 3 4`
d) `0 1`

22. How many times will the loop execute?
```python
n = 0
while n < 5:
    n += 1
print(n)
```
a) 4
b) 5
c) 6
d) Infinite loop

23. Which of the following keywords is used to exit a loop in Python?
a) `exit`
b) `stop`
c) `break`
d) `return`

24. What will be the output of the following code?
```python
for i in range(5):
    print(i)
    if i == 2:
        break
else:
    print("Finished")
```
a) `0 1 2`
b) `0 1 2 Finished`
c) `0 1 2 3 4 Finished`
d) `0 1 2 3 4`

25. What will be the output of the following code?
```python
x = 2
match x:
    case 1 | 2:
        print("One or Two")
    case 3:
        print("Three")
    case _:
        print("Other")
```

```
a) `One or Two`
b) `Three`
c) `Other`
d) `Error`

26. What will be the output of the following code?
```python
x = 10
while x > 0:
    x -= 2
print(x)
```
a) `0`
b) `-2`
c) `2`
d) `None`

27. Which of the following is true about the `continue` statement in Python?
a) It exits the loop.
b) It skips the remaining code inside the loop for the current iteration.
c) It causes an error.
d) None of the above.

28. What will be the output of the following code?
```python
i = 1
while i < 10:
    if i % 2 == 0:
        i += 1
        continue
    print(i)
    i += 1
```
a) `1 3 5 7 9`
b) `1 2 3 4 5 6 7 8 9`
c) `2 4 6 8`
d) `1 3 5 7`

29. How would you reverse the string `"hello"` using slicing?
a) `"hello"[::-1]`
b) `"hello".reverse()`
c) `reversed("hello")`
d) `slice("hello")`
```

30. Which statement is correct for handling exceptions in Python?
    a) `try-except`
    b) `try-except-finally`
    c) `try-finally`
    d) All of the above

31. What will be the output of the following code?
    ```python
    x = 10
    if x > 5:
        x += 1
    elif x < 15:
        x -= 1
    else:
        x = 0
    print(x)
    ```
    a) `11`
    b) `9`
    c) `0`
    d) `Error`

32. Which of the following is a valid match case structure in Python?
    a)
    ```python
    match x:
        case 1:
            print("One")
        case 2:
            print("Two")
    ```
    b)
    ```python
    match x:
        case 1 | 2:
            print("One or Two")
    ```
    c)
    ```python
    match x:
        case 1:
            print("One")
        case _:
            print("Other")
    ```
    d) All of the above

33. What will be the output of the following code?
```python
x = 5
for i in range(10):
    if i == x:
        continue
    print(i)
```
a) `0 1 2 3 4 5 6 7 8 9`
b) `0 1 2 3 4 6 7 8 9`
c) `0 1 2 3 4 5 6 7 8`
d) `Error`

34. What will be the output of the following code?
```python
x = 3
if x < 5:
    print("Less than 5")
elif x > 5:
    print("More than 5")
else:
    print("Equal to 5")
```
a) `Less than 5`
b) `More than 5`
c) `Equal to 5`
d) `Error`

35. What will be the output of the following code?
```python
x = 5
while x:
    print(x)
    x -= 1
```
a) `5 4 3 2 1`
b) `5 4 3 2 1 0`
c) `0 1 2 3 4 5`
d) `5 4 3 2`

Section 3: Functions

36. What will be the output of the following code?
```python
```

```
def add(x, y):
    return x + y

print(add(5, 10))
```
a) `15`
b) `510`
c) `Error`
d) `None`

37. What is the output of the following code?
```python
def greet(name):
    print(f"Hello, {name}!")

greet("Alice")
```
a) `Hello, Alice!`
b) `Hello, {name}!`
c) `Hello, greet!`
d) `Error`

38. What will be the output of the following code?
```python
def square(x):
    return x * x

result = square(3)
print(result)
```
a) `6`
b) `9`
c) `12`
d) `Error`

39. What will be the output of the following code?
```python
def my_func(x):
    x += 1
    return x

result = my_func(5)
print(result)
```
a) `5`
b) `6`
c) `None`

d) `Error`

40. What will be the output of the following code?
```python
def add(a, b):
    return a + b

result = add(3, 4)
print(result)
```
a) `7`
b) `34`
c) `Error`
d) `None`

41. How can you define a function that accepts a variable number of arguments?
a) `def func(*args)`
b) `def func(args)`
c) `def func(#args)`
d) `def func(args*)`

42. What will be the output of the following code?
```python
def outer():
    x = 10
    def inner():
        return x
    return inner()

print(outer())
```
a) `10`
b) `Error`
c) `None`
d) `inner()`

43. What will be the output of the following code?
```python
def greet(name="John"):
    return f"Hello, {name}!"

print(greet("Alice"))
```
a) `Hello, Alice!`
b) `Hello, John!`
c) `Hello, greet!`

d) `Error`

44. What is the purpose of the `return` statement in a function?
a) To exit the function and return a value.
b) To print a value to the console.
c) To define a variable inside a function.
d) To repeat a block of code.

45. What will be the output of the following code?
```python
def multiply(a, b=2):
    return a * b

print(multiply(3))
```
a) `6`
b) `5`
c) `3`
d) `Error`

46. What will be the output of the following code?
```python
def divide(x, y):
    return x / y

result = divide(10, 2)
print(result)
```
a) `5.0`
b) `5`
c) `2`
d) `Error`

47. What will be the output of the following code?
```python
def power(x, y=2):
    return x ** y

result = power(3)
print(result)
```
a) `9`
b) `6`
c) `3`
d) `Error`

48. What will be the output of the following code?

```python
def add(x, y):
    return x + y

result = add(y=5, x=10)
print(result)
```
a) `15`
b) `510`
c) `Error`
d) `None`

49. What will be the output of the following code?
```python
def increment(x):
    return x + 1

result = increment(4)
print(result)
```
a) `4`
b) `5`
c) `6`
d) `Error`

50. What will be the output of the following code?
```python
def concatenate(str1, str2):
    return str1 + str2

result = concatenate("Hello, ", "World!")
print(result)
```
a) `Hello, World!`
b) `Hello World`
c) `Error`
d) `None`

Section 4: Data Structures

51. What will be the output of the following code?
```python
list1 = [1, 2, 3]
list2 = list1
list2.append(4)
```

```
print(list1)
```
a) `[1, 2, 3]`
b) `[1, 2, 3, 4]`
c) `Error`
d) `None`

52. What will be the output of the following code?
```python
my_set = {1, 2, 3, 2, 1}
print(len(my_set))
```
a) `3`
b) `4`
c) `

5`
d) `6`

53. Which of the following will remove all elements from a list?
a) `list.clear()`
b) `list.remove()`
c) `list.pop()`
d) `list.delete()`

54. What will be the output of the following code?
```python
my_tuple = (1, 2, 3)
print(my_tuple[1:])
```
a) `(2, 3)`
b) `(1, 2, 3)`
c) `2`
d) `Error`

55. What will be the output of the following code?
```python
my_dict = {"name": "Alice", "age": 25}
my_dict.update({"age": 26})
print(my_dict["age"])
```
a) `25`
b) `26`
c) `Error`
d) `None`

56. What will be the output of the following code?

```python
numbers = [1, 2, 3]
result = [x**2 for x in numbers]
print(result)
```

a) `[1, 4, 9]`
b) `[2, 4, 6]`
c) `[1, 2, 3]`
d) `Error`

57. What will be the output of the following code?
```python
my_list = [1, 2, 3, 4]
print(my_list[::2])
```

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

58. What will be the output of the following code?
```python
my_set = {1, 2, 3}
my_set.remove(2)
print(my_set)
```

a) `{1, 3}`
b) `{1, 2, 3}`
c) `Error`
d) `None`

59. What will be the output of the following code?
```python
my_tuple = (1, 2, 3)
my_tuple += (4,)
print(my_tuple)
```

a) `(1, 2, 3)`
b) `(1, 2, 3, 4)`
c) `(4,)`
d) `Error`

60. What will be the output of the following code?
```python
my_dict = {"name": "Alice", "age": 25}
print(len(my_dict))
```

a) `1`
b) `2`
c) `3`
d) `Error`

61. Which of the following is a valid way to create a dictionary?
a) `my_dict = {}`
b) `my_dict = dict()`
c) `my_dict = {"key": "value"}`
d) All of the above

62. What will be the output of the following code?
```python
list1 = [1, 2, 3]
list2 = list1.copy()
list2.append(4)
print(list1)
```
a) `[1, 2, 3]`
b) `[1, 2, 3, 4]`
c) `Error`
d) `None`

63. Which of the following is not a valid dictionary method?
a) `keys()`
b) `values()`
c) `items()`
d) `add()`

64. What will be the output of the following code?
```python
my_list = [1, 2, 3]
my_list.reverse()
print(my_list)
```
a) `[1, 2, 3]`
b) `[3, 2, 1]`
c) `Error`
d) `None`

65. What will be the output of the following code?
```python
my_dict = {"name": "Alice", "age": 25}
my_dict["city"] = "New York"
print(my_dict)
```
a) `{"name": "Alice", "age": 25}`

b) `{"name": "Alice", "age": 25, "city": "New York"}`
c) `Error`
d) `None`

66. What will be the output of the following code?
```python
numbers = [1, 2, 3]
numbers.insert(1, 4)
print(numbers)
```
a) `[1, 2, 3, 4]`
b) `[1, 4, 2, 3]`
c) `Error`
d) `None`

67. What will be the output of the following code?
```python
my_set = {1, 2, 3}
my_set.add(4)
print(my_set)
```
a) `{1, 2, 3}`
b) `{1, 2, 3, 4}`
c) `[1, 2, 3, 4]`
d) `Error`

68. What will be the output of the following code?
```python
my_tuple = (1, 2, 3)
my_tuple = my_tuple[:1] + (4,) + my_tuple[1:]
print(my_tuple)
```
a) `(1, 4, 2, 3)`
b) `(1, 2, 3)`
c) `Error`
d) `None`

69. Which of the following is used to remove a key-value pair from a dictionary?
a) `pop()`
b) `remove()`
c) `discard()`
d) `delete()`

70. What will be the output of the following code?
```python
my_dict = {"name": "Alice", "age": 25}
del my_dict["age"]
```

```
print(my_dict)
```
a) `{"name": "Alice"}`
b) `{"age": 25}`
c) `Error`
d) `None`

Section 5: Strings and Traversals

71. What will be the output of the following code?
```python
s = "hello"
print(s[1:4])
```
a) `ell`
b) `hel`
c) `he`
d) `h`

72. What will be the output of the following code?
```python
s = "hello"
print(s[::-1])
```
a) `hello`
b) `olleh`
c) `Error`
d) `None`

73. How can you convert a string `s = "123"` into an integer?
a) `int(s)`
b) `str(s)`
c) `s.to_int()`
d) `s.to_integer()`

74. What will be the output of the following code?
```python
s = "hello"
print(s.upper())
```
a) `hello`
b) `HELLO`
c) `Hello`
d) `Error`

75. What will be the output of the following code?
    ```python
    s = "hello world"
    print(s.split())
    ```
    a) `['hello', 'world']`
    b) `['hello world']`
    c) `hello world`
    d) `Error`

76. What will be the output of the following code?
    ```python
    s = "   hello   "
    print(s.strip())
    ```
    a) `hello`
    b) `hello   `
    c) `   hello`
    d) `   hello   `

77. What will be the output of the following code?
    ```python
    s = "hello"
    print(s.find('l'))
    ```
    a) `2`
    b) `3`
    c) `4`
    d) `1`

78. What will be the output of the following code?
    ```python
    s = "hello"
    print(len(s))
    ```
    a) `5`
    b) `4`
    c) `6`
    d) `Error`

79. Which of the following can be used to replace a character in a string?
    a) `s.replace('a', 'b')`
    b) `s.replace('a')`
    c) `s.change('a', 'b')`
    d) `s.alter('a', 'b')`

80. What will be the output of the following code?

```python
s = "hello"
s += " world"
print(s)
```

a) `hello`
b) `hello world`
c) ` world`
d) `Error`