

Section 1: Multiple-Choice Questions (15x2 = 30)

1. Which of the following is a mutable data type in Python?
a) tuple b) str c) list d) int

2. What will be the output of the following expression: $4 + 3 * 2 ** 2$?
a) 28 b) 16 c) 20 d) 49

3. Which reserved keyword is used to start an exception handling block that catches errors?
a) raise b) assert c) except d) finally

4. What is the correct syntax for defining a custom function named calculate that takes two arguments?
a) function calculate(a, b):
b) def calculate[a, b]:
c) def calculate(a, b):
d) create function calculate(a, b):

5. Which list method is used to remove and return an element at a specified index?
a) .remove() b) .delete() c) .pop() d) .discard()

6. What is the result of slicing my_tuple = (10, 20, 30, 40) as my_tuple[1:3]?
a) (10, 20, 30) b) .delete() c) .pop() d) .discard()

7. What is a key feature of the set data type?
a) Allows duplicate elements
b) Stores data as key-value pairs
c) Elements are ordered by insertion
d) Elements must be unique

8. How many times will the print() statement execute?

```
i = 0
while i < 5:
    print("Hello")
    i += 2
```


a) 5 b) 4 c) 3 d) 2

9. If my_dict = {'a': 1, 'b': 2}, what happens when you try to access my_dict['c']?
a) It returns None.
b) It raises a KeyError.
c) It returns 0.
d) It adds {'c': None} to the dictionary.

10. Which built-in function is used to get the length (number of items) of a sequence?
a) size() b) len() c) length() d) count()

11. What is the purpose of the break statement inside a loop?

- a) Skips the current iteration and continues to the next.
- b) Exits the loop entirely.
- c) Skips the rest of the code in the function.
- d) Restarts the loop from the beginning.

12. Which operator is used for floor division (integer division) in Python?

- a) /
- b) //
- c) div
- d) %

13. Which type conversion function would you use to convert the string "123.45" into a number that retains the decimal part?

- a) int()
- b) str()
- c) float()
- d) list()

14. Which of these is a Python reserved keyword?

- a) string
- b) print
- c) class
- d) main

15. What is the outcome of print("py" + "thon" * 2)?

- a) pythonpython
- b) python 2
- c) pythonthon
- d) pythontwo

Section 2: Short Answer Questions (10x3 = 30)

1. Explain the difference between the is operator and the == operator.
2. What is the key difference between a tuple and a list regarding mutability?
3. Give one advantage of using a set over a list when you need to store a collection of items.
4. Write a simple for loop that iterates over the keys of a dictionary named inventory and prints each key.
5. What is the purpose of the else block in an exception handling structure (try...except...else)?
6. Explain the concept of string formatting. Give a one-line example using an f-string.
7. Describe the role of the return statement within a custom function.
8. What is an IndexError, and what causes it in list/tuple/string slicing or indexing?
9. If you have a list data = [1, 2, 3], what does data.append([4, 5]) do to the list?
10. In conditional statements, what is the key difference in purpose between elif and a separate, new if statement?

Section 3: Problem Solving (2x20 = 40)

1. Function and Dictionary Problem

Write a Python function named calculate_stats that takes a list of numbers as its single argument. The function should calculate the sum and the average of the numbers in the list. Finally, it must return a dictionary with two key-value pairs: 'total_sum' and 'average'.

Example Call: calculate_stats([10, 20, 30])

Expected Output: {'total_sum': 60, 'average': 20.0}

2. String, Loop, and Conditional Problem

Write a Python program that prompts the user for a sentence. The program must then count the number of vowels (a, e, i, o, u, case-insensitive) in the sentence and print the final count.

Example:

User Input: "Learning Python is fun"

Expected Output: The total number of vowels is 6.