Python for DSA

Assignment 1

MCQ Type:

Q1) which of the following is a valid way to check multiple conditions in Python?

- a) `if (x = 5 and y == 10):`
- b) `if (x == 5 or y = 10):`
- c) `if (x == 5 and y == 10):`
- d) `if (x == 5 && y == 10):`

Answer:

c) `if (x == 5 and y == 10):`

Q2) which of the following statements about Python sets is TRUE?

- a) Sets allow duplicate elements
- b) Sets maintain insertion order
- c) Sets are mutable but their elements must be immutable
- d) Sets can contain lists as elements

Answer:

c) Sets are mutable but their elements must be immutable

Descriptive Type:

Q1 (7 Marks):

Explain the difference between **lists, tuples, and sets** in Python with examples. Mention at least 2 key properties of each data structure.

Answer:

List:

```
l = [1, 2, 2, 3]
l[0] = 10       # allowed
print(l)  # [10, 2, 2, 3]
```

1) Ordered, mutable (can change elements).
2) Allows duplicate values.

Tuple:

1) Ordered, immutable (cannot change elements after creation).
2) Allows duplicates.

```
t = (1, 2, 2, 3)
# t[0] = 10 → Error (immutable)
```

Set:

1) Unordered, mutable (can add/remove items).
2) **No duplicates allowed**; elements must be immutable.

```
s = {1, 2, 2, 3}
print(s)  # {1, 2, 3}
```

Q2 (5 Marks):

Write a Python program that checks whether a given number is **prime or not** using a loop. Explain how the program works.

Answer:

n = 17

flag = True

```python
for i in range(2, n):
    if n % i == 0:
        flag = False
        break

if flag:
    print(n, "is Prime")
else:
    print(n, "is Not Prime")
```