**Level 7: The Record Room**

**Sets**

**MCQs:**

1. Which of the following data structures does not allow duplicates?  
   a) List  
   b) Tuple  
   c) Set ✅  
   d) Dictionary
2. What will be the output of len({1, 2, 2, 3})?  
   a) 3  
   b) 4  
   c) 2  
   d) 3 ✅

**Fill in the Blanks:**

1. A set in Python is defined using \_\_\_\_\_\_\_\_\_\_ brackets. (curly)
2. The union() method is used to combine \_\_\_\_\_\_\_\_\_\_ sets. (multiple)

**True/False:**

1. Sets allow duplicate values. (False ❌)
2. The discard() method removes an element from a set without raising an error. (True ✅)
3. The order of elements in a set is preserved. (False ❌)

**Tuples (8 Questions)**

**MCQs:**

1. Which of these is a valid tuple?  
   a) (1, 2, 3) ✅  
   b) {1, 2, 3}  
   c) [1, 2, 3]  
   d) tuple[1, 2, 3]
2. What happens if you try to change an element in a tuple?  
   a) The element is updated  
   b) Error occurs ✅  
   c) It deletes the tuple  
   d) None

**Fill in the Blanks:**

1. Tuples are \_\_\_\_\_\_\_\_\_\_, meaning their values cannot be changed. (immutable)
2. A tuple can store \_\_\_\_\_\_\_\_\_\_ data types. (multiple)

**True/False:**

1. You can convert a list to a tuple using tuple() function. (True ✅)
2. A tuple must contain at least two elements. (False ❌ – It can have one with a comma, e.g., (5,))
3. Tuple elements can be accessed using an index. (True ✅)
4. You can append elements to a tuple. (False ❌)

**Comparison Questions: Lists vs Sets vs Tuples vs Dictionaries**

**MCQs**

1. **Which data structure maintains the insertion order in Python (Python 3.7+)?**  
   a) List ✅  
   b) Set  
   c) Tuple  
   d) Dictionary ✅
2. **Which of the following data structures does NOT allow duplicate values?**  
   a) List  
   b) Tuple  
   c) Dictionary (keys) ✅  
   d) Set ✅
3. **What is the key difference between a list and a tuple?**  
   a) Lists are immutable, but tuples are mutable  
   b) Tuples are immutable, but lists are mutable ✅  
   c) Both are immutable  
   d) Lists are ordered, but tuples are unordered
4. **Which of the following data structures is best for fast lookups and key-value storage?**  
   a) List  
   b) Set  
   c) Tuple  
   d) Dictionary ✅
5. **Which data structure does NOT support indexing?**  
   a) List  
   b) Tuple  
   c) Dictionary  
   d) Set ✅

**Fill in the Blanks**

1. Lists and tuples both allow **\_\_\_\_\_\_\_\_\_\_** values. (duplicate)
2. A **\_\_\_\_\_\_\_\_\_\_** is the only data structure that uses key-value pairs. (dictionary)
3. Unlike lists, sets do not allow **\_\_\_\_\_\_\_\_\_\_** values. (duplicate)
4. **\_\_\_\_\_\_\_\_\_\_** are used when data should not change after assignment. (tuples)
5. **\_\_\_\_\_\_\_\_\_\_** provide the fastest way to check if an item exists using keys. (dictionaries)

**True/False**

1. Tuples are mutable, meaning they can be modified after creation. (**False ❌**)
2. Sets store elements in an unordered way. (**True ✅**)
3. A dictionary key can be any mutable object. (**False ❌ – Keys must be immutable**)
4. Lists are generally slower than sets for membership tests (in). (**True ✅**)
5. A dictionary can have duplicate keys. (**False ❌ – Keys must be unique**)

**Scenario-Based Comparison Questions**

1. **Which data structure should be used when data must not be modified after creation?**

* **Answer:** Tuple ✅

1. **Which data structure would be best for storing unique student roll numbers efficiently?**

* **Answer:** Set ✅

1. **If you need to access elements using keys instead of indexes, which data structure should be used?**

* **Answer:** Dictionary ✅

1. **Which data structure allows both numeric and string indexing?**

* **Answer:** List ✅

1. **If you need to store a sequence of items and prioritize iteration speed, which data structure is best?**

* **Answer:** Tuple ✅