a) Dictionaries are ordered collections of items:

This statement is false. Prior to Python 3.7, dictionaries were unordered collections of items, meaning the order of elements was not guaranteed. However, starting from Python 3.7, dictionaries maintain the insertion order of their elements. So, in Python 3.7 and later versions, dictionaries are ordered, but it's important to note that this order is based on the order of insertion, not on the natural order of keys.

b) Dictionary keys must be immutable:

This statement is true. In Python dictionaries, keys must be of an immutable data type, meaning they cannot be changed after they are created. This restriction is in place because dictionaries use a hashing mechanism to store and retrieve values efficiently, and mutable objects (objects that can be changed after creation, like lists) cannot be hashed.

c) Dictionary values must be unique:

This statement is false. While dictionary keys must be unique, dictionary values can be duplicated. In other words, different keys can map to the same value in a dictionary.

d) Dictionaries are accessed by index:

This statement is false. Unlike sequences like lists and tuples, where elements are accessed by their index position, dictionaries are accessed by their keys. You use a key to retrieve the corresponding value from a dictionary, not an index.

So, the correct statement about Python dictionaries is:

b) Dictionary keys must be immutable