# ANSWER KEY

# PYTHON WORKBOOK – SECTION 4

## Data Structures in Python

Programmer's Hub – by CodeWithVivek
https://www.youtube.com/@code-with-vivek

**4.1 Introduction to Data Structures**

**4.2 Lists**

**Debug This:**
fruits[6] doesn't exist — list index out of range.

**Slicing (nums = [5,10,15,20,25])**

**Expression Answer**

nums[0]    [5]

nums[-1]    [25]

nums[1:4]    [10,15,20]

**4.3 Tuples**

Cannot modify — tuples are immutable.

**4.4 Dictionaries**

**Debug This:**
student[name] → name must be in quotes → "name"

Correct:

student["name"]

**4.5 Sets Operations**

Given: a = {1,2,3}, b = {3,4,5}

| Operation | Result |
| --- | --- |
| a.union(b) | {1,2,3,4,5} |
| a.intersection(b) | {3} |
| a.difference(b) | {1,2} |

**Practice Problems – Answers**

**1. Largest number in list**

```python
lst = [10,50,20,5]
print(max(lst))
```

**2. Word frequency counter**

```python
sentence = input("Enter sentence: ").lower().split()
freq = {}

for word in sentence:
    freq[word] = freq.get(word,0) + 1

print(freq)
```

**3. Remove duplicates using set**

```python
lst = [1,2,2,3,4,4]
unique = list(set(lst))
print(unique)
```

**Mini Assignment – Employee Dictionary**

```python
employees = {

    1: {"name": "A", "age": 30, "salary": 50000},

    2: {"name": "B", "age": 28, "salary": 60000},

    3: {"name": "C", "age": 35, "salary": 55000},

    4: {"name": "D", "age": 40, "salary": 70000},

    5: {"name": "E", "age": 25, "salary": 52000}

}


# Highest salary

high = max(emp["salary"] for emp in employees.values())


# Average age

avg_age = sum(emp["age"] for emp in employees.values()) / len(employees)


# Uppercase names

for emp in employees.values():

    emp["name"] = emp["name"].upper()


print(high, avg_age, employees)
```