Chapter 9
Lists, Tuples, Sets and Dictionary

PART – 1
1. Choose The Best Answer

Question 1.
Pick odd one in connection with collection data type?
(a) List
(b) Tuple
(c) Dictionary
(d) Loop
Answer:
(d) Loop

Question 2.
Let list1=[2 ,4, 6, 8, 10], then print (List1[-2]) will result in ……..
(a) 10
(b) 8
(c) 4
(d) 6
Answer:
(b) 8

Question 3.
Which of the following function is used to count the number of elements in a list?
(a) Count( )
(b) Find( )
(c) Len( )
(d) Index( )
Answer:
(c) Len( )

Question 4.
If List=[10, 20, 30, 40, 50] then List[2]=35 will result –
(a) [35, 10, 20, 30, 40, 50]
(b) [10, 20, 30, 40, 50, 35]
(c) [10, 20, 35, 40, 50]
(d) [10, 35, 30, 40, 50]
Answer:
(c) [10, 20, 35, 40, 50]

Question 5.
If List=[17, 23, 41, 10] then List.append (32) will result –
(a) [32, 17, 23, 41, 10]
(b) [17, 23, 41, 10, 32]
(c) [10, 17, 23, 32, 41]
(d) [41, 32, 23, 17, 10]
Answer:
(b) [17, 23, 41, 10, 32]

Question 6.
Which of the following Python function can be used to add more than one element within an existing list?
(a) append( )
(b) append_more( )
(c) extend( )
(d) more( )
Answer:
(c) extend( )

Question 7.
What will be the result of the following Python code?
S = [x**2 for x in range(5)]
print(S)
(a) [0, 1, 2, 4, 5]
(b) [0, 1, 4, 9, 16]
(c) [0, 1, 4, 9, 16, 25]
(d) [1, 4, 9, 16, 25]
Answer:
(b) [0, 1, 4, 9, 16]

Question 8.
What is the use of type( ) function in python?
(a) To create a Tuple
(b) To know the type of an element in tuple.
(c) To know the data type of python object.
(d) To create a list.
Answer:
(c) To know the data type of python object.

Question 9.
Which of the following statement is not correct?
(a) A list is mutable
(b) A tuple is immutable.
(c) The append( ) function is used to add an element.

(d) The extend( ) function is used in tuple to add elements in a list.
Answer:
(d) The extend( ) function is used in tuple to add elements in a list.

Question 10.
Let set A={3, 6, 9}, set B={1, 3, 9} What will be the result of the following snippet?
print (setA|setB)
(a) {3, 6, 9, 1, 3, 9}
(b) {3, 9}
(c) {1}
(d) {1, 3, 6, 9}
Answer:
(d) {1, 3, 6, 9}

Question 11.
Which of the following set operation includes all the elements that are in two sets but not the one that are common to two sets?
(a) Symmetric difference
(b) Difference
(c) Intersection
(d) Union
Answer:
(a) Symmetric difference

Question 12.
The keys in Python, dictionary is specified by ……
(a) =
(b) ;
(c) +
(d) :
Answer:
(d) :

PART – II
II. Answer The Following Questions

Question 1.
What is List in Python?
Answer:
A list in Python is known as a "sequence data type" like strings. It is an ordered collection of values enclosed within square brackets [ ]. Each value of a list is called as element.

Question 2.
How will you access the list elements in reverse order?
Answer:

Function	Description	Syntax	Example
reverse ( )	Reverses the order of the element in the list.	List.reverse( )	MyList=[36 ,23 ,12] MyList.reverse() print(MyList) **Output:** [12 ,23 ,36]

Question 3.
What will be the value of x in following python code?
Answer:
List1=[2, 4, 6, [1, 3, 5]]
x=len(List1)
Ans: 4

Question 4.
Differentiate del with remove( ) function of List?
Answer:
There are two ways to delete an element from a list viz. del statement and remove( ) function, del statement is used to delete known elements whereas remove( ) function is used to delete elements of a list if its index is unknown. The del statement can also be used to delete entire list.

Question 5.
Write the syntax of creating a Tuple with n number of elements?
Answer:
Tuple with n number elements
Tuple _ Name = (E1, E2, E2 ……. En)
# Elements of a tuple without parenthesis
Tuple_Name = E1, E2, E3 …….. En

Question 6.
What is set in Python?
Answer:
In python, a set is another type of collection data type. A Set is a mutable and an unordered collection of elements without duplicates. That means the elements within a set cannot be repeated. This feature used to include membership testing and eliminating duplicate elements.

PART – III
III. Answer The Following Questions

Question 1.
What are the advantages of Tuples over a list?
Answer:

1. The elements of a list are changeable (mutable) whereas the elements of a tuple are unchangeable (immutable), this is the key difference between tuples and list.
2. The elements of a list are enclosed within square brackets. But, the elements of a tuple are enclosed by paranthesis.
3. Iterating tuples is faster than list.

Question 2.
Write a short note about sort( )?
Answer:
sort( ) function sorts the element in list.
Syntax:
List.sort (reverse = True/False, Key = myFunc)
Both arguments are optional

- If reverse is set as True, list sorting is in descending order.
- Ascending is default.
- Key=myFunc; "myFunc" – the name of the user defined function that specifies the sorting criteria.

Example
My List=['Thilothamma', 'Tharani', 'Anitha', 'SaiSree', 'Lavanya']
MyList.sort( )
print(MyList)
Output:
['Anitha', 'Lavanya', 'SaiSree', 'Tharani', 'Thilothamma']

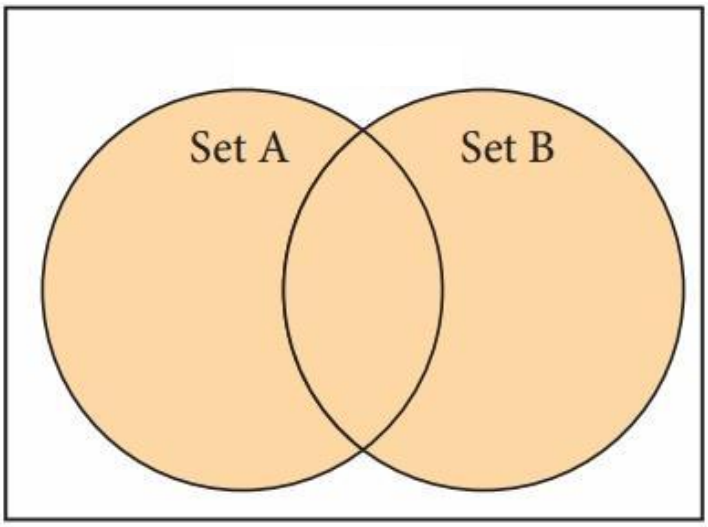
Question 3.
What will be the output of the following code?
list=[2**x for x in range(5)
print(list)
[1, 2, 4, 8, 16]

Question 4.
Explain the difference between del and clear( ) in dictionary with an example?
Answer:
In Python dictionary, del keyword is used to delete a particular element. The clear( )

function is used to delete all the elements in a dictionary. To remove the dictionary, we can use del keyword with dictionary name.

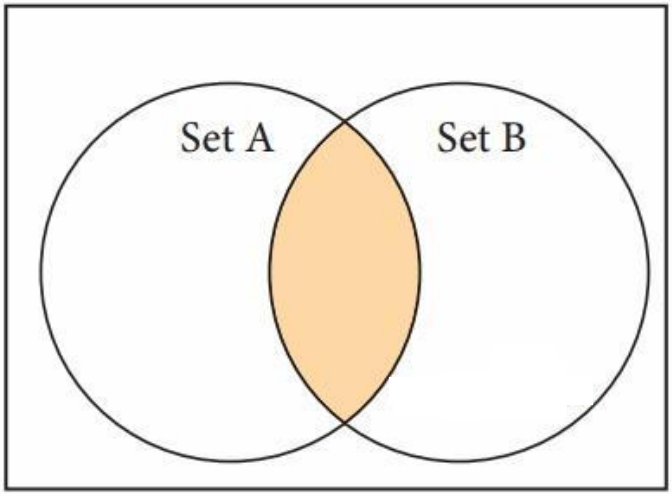
```
Dict={'Roll No': 12001, 'SName': 'Meena', 'Mark1': 98, 'Mar12': 86}
print("Dictionary elements before deletion: \n", Dict)
del Dict['Mark1'] # Deleting a particular element
Dict.clear( ) # Deleting all elements
```

Question 5.
List out the set operations supported by python?
Answer:
(i) Union:
It includes all elements from two or more sets



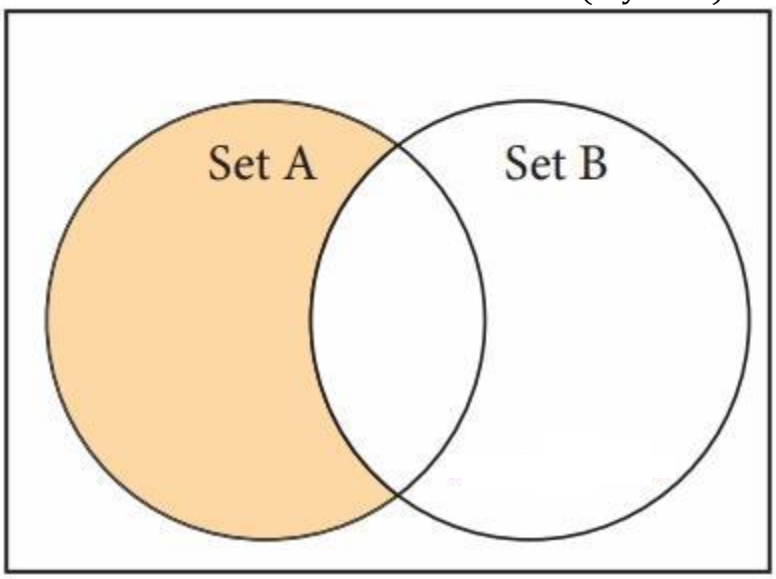
In python, the operator | is used to union of two sets. The function union( ) is also used to join two sets in python.

(ii) Intersection:
It includes the common elements in two sets



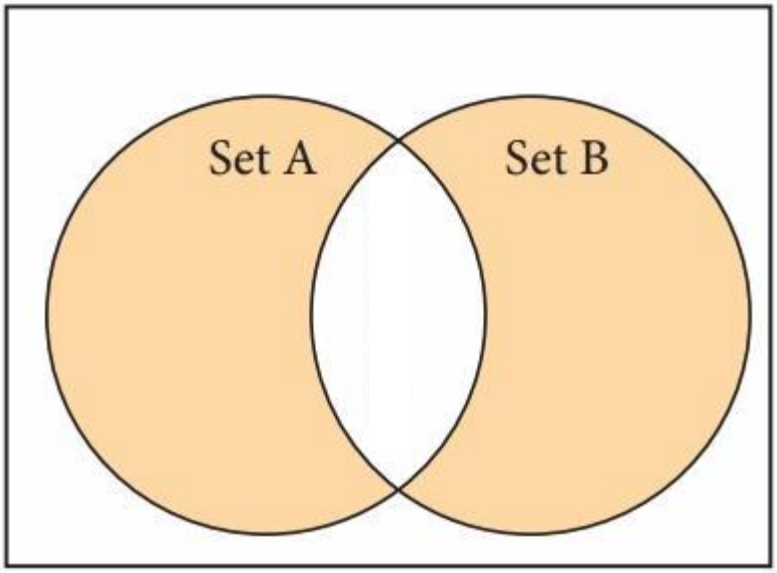
The operator & is used to intersect two sets in python. The function intersection( ) is also used to intersect two sets in python.

(iii) Difference:
It includes all elements that are in first set (say set A) but not in the second set (say set B)



The minus(-) operator is used to difference set operation in python. The function difference( ) is also used to difference operation.

(iv) Symmetric difference:
It includes all the elements that are in two sets (say sets A and B) but not the one that are common to two sets.



The caret (^) operator is used to symmetric difference set operation in python. The function symmetric_difference( ) is also used to do the same operation.

Question 6.
What are the difference between List and Dictionary?
Answer:
Difference between List and Dictionary

1. List is an ordered set of elements. But, a dictionary is a data structure that is used for matching one element (Key) with another (Value).
2. The index values can be used to access a particular element. But, in dictionary key represents index. Remember that, key may be a number of a string.
3. Lists are used to look up a value whereas a dictionary is used to take one value and look up another value.

PART – IV
IV. Answer The Following Questions

Question 1.
What the different ways to insert an element in a list. Explain with suitable example.
Inserting elements in a list?
Answer:
append( ) function in Python is used to add more elements in a list. But, it includes elements at the end of a list. If you want to include an element at your desired position, you can use insert () function is used to insert an element at any position of a list.
Syntax:
List, insert (position index, element)
Example:

```
>>> MyList=[34,98,47, 'Kannan', 'Gowrisankar', 'Lenin', 'Sreenivasan' ]
>>> print(MyList)
[34, 98, 47, 'Kannan', 'Gowrisankar', 'Lenin', 'Sreenivasan']
>>> MyList.insert(3, 'Ramakrishnan')
>>> print(MyList)
[34, 98, 47, 'Ramakrishnan', 'Kannan', 'Gowrisankar', 'Lenin', 'Sreenivasan']
```

In the above example, insertf) function inserts a new element 'Ramakrishnan' at the index value 3, ie. at the 4th position. While inserting a new element in between the existing elements, at a particular location, the existing elements shifts one position to the right.

Question 2.
What is the purpose of range( )? Explain with an example?
Answer:
(i) The range( ) is a function used to generate a series of values in Python. Using range( ) function, you can create list with series of values. The range( ) function has three arguments.
Syntax of range( ) function:

range (start value, end value, step value)
where,

- start value – beginning value of series. Zero is the default beginning value.
- end value – upper limit of series. Python takes the ending value as upper limit – 1.
- step value – It is an optional argument, which is used to generate different interval of values.

Example: Generating whole numbers upto 10

```
for x in range (1, 11):
print(x)
```

Output

```
1
2
3
4
5
6
7
8
9
10
```

(ii) Creating a list with series of values

Using the range( ) function, you can create a list with series of values. To convert the result of range( ) function into list, we need one more function called list( ). The list( ) function makes the result of range( ) as a list.

Syntax:

```
List_Varibale = list ( range ( ) )
```

Note

The list( ) function is all so used to create list in python.

Example

```
>>> Even_List = list(range(2,11,2))
>>> print(Even_List)
[2, 4, 6, 8, 10]
```

In the above code, list( ) function takes the result of range( ) as Even List elements. Thus, Even _List list has the elements of first five even numbers.

(iii) We can create any series of values using range( ) function. The following example explains how to create a list with squares of first 10 natural numbers.

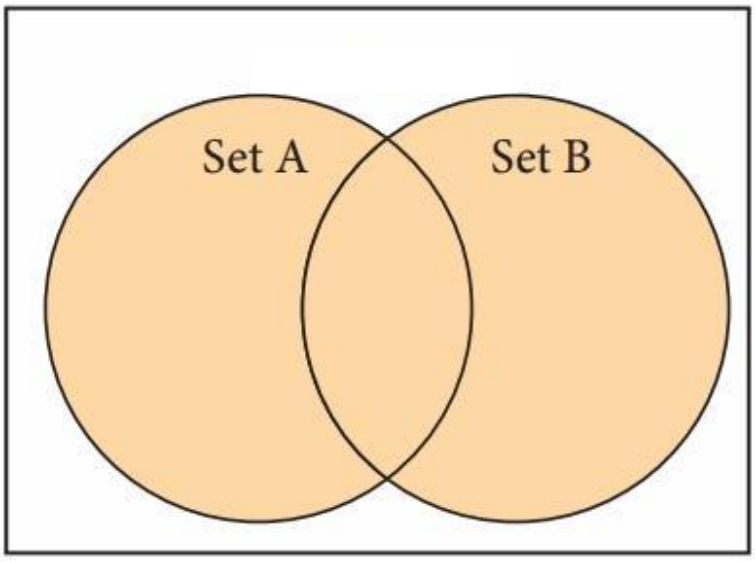
Example: Generating squares of first 10 natural numbers

```
squares = [ ]
for x in range(1,11):
s = x ** 2
```

squares.append(s)
print (squares)
Output
[1, 4, 9, 16, 25, 36, 49, 64, 81, 100]

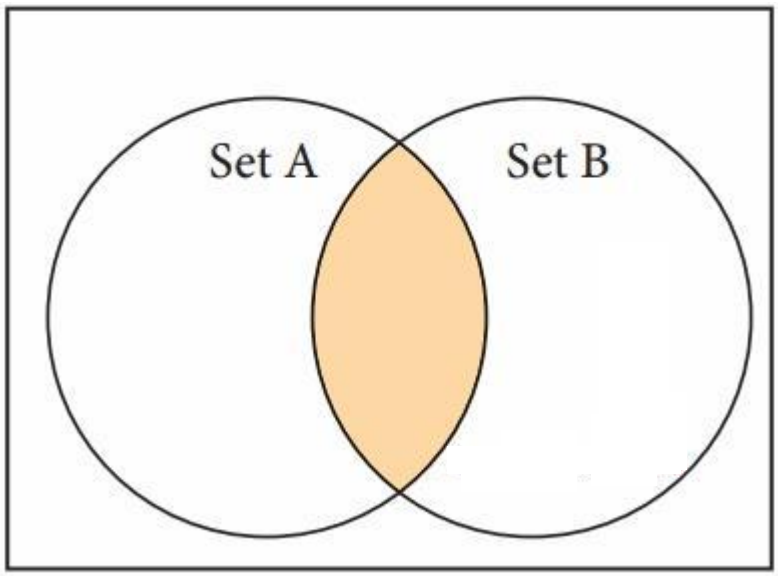
Question 3.
What is nested tuple? Explain with an example.?
Answer:
In Python, a tuple can be defined inside another tuple; called Nested tuple. In a nested tuple, each tuple is considered as an element. The for loop will be useful to access all the elements in a nested tuple.
Example:
Toppers = (("Vinodini", "XII-F", 98.7), ("Soundarya", "XII-H", 97.5),
("Tharani", "XII-F", 95.3), ("Saisri", "XII-G", 93.8))
for i in Toppers:
print(i)
Output:
('Vinodini', 'XII-F', 98.7)
('Soundarya', 'XII-H', 97.5)
('Tharani', 'XII-F', 95.3)
('Saisri', 'XII-G', 93.8)

Question 4.
Explain the different set operations supported by python with suitable example?
Answer:
Set Operations:
As you leamt in mathematics, the python is also supports the set operations such as Union, Intersection, difference and Symmetric difference.
(i) Union:
It includes all elements from two or more sets



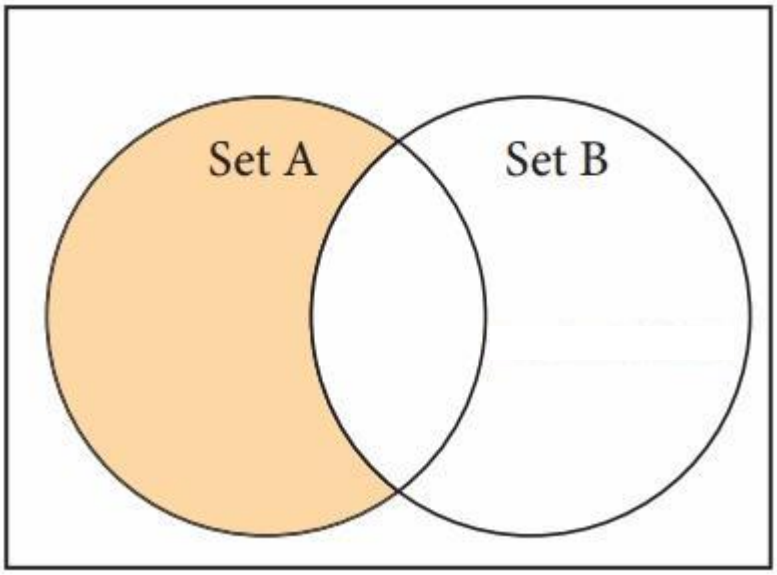
In python, the operator | is used to union of two sets. The function union( ) is also used to join two sets in python.
Example: Program to Join (Union) two sets using union operator
set_A={2,4,6,8}
set_B={'A', 'B', 'C, 'D'}
U_set=set_A|set_B
print(U_set)
Output:
{'D', 2, 4, 6, 8, 'B', 'C, A'}

(ii) Intersection:
It includes the common elements in two sets



The operator & is used to intersect two sets in python. The function intersection) is also used to intersect two sets in python.
Example: Program to insect two sets using intersection operator
set_A={A', 2, 4, 'D'}
set_B={A', 'B', 'C', 'D'}
print(set_A & set_B)
Output:
{'A, 'D'}
Example: Program to insect two sets using intersection operator
set_A={'A', 2, 4, 'D'}
set_B={A', 'B', 'C', 'D'}
print(set_A.intersection(set_B))
{'A', 'D'}

(iii) Difference:
It includes all elements that are in first set (say set A) but not in the second set (say set B)



The minus (-) operator is used to difference set operation in python. The function difference() is also used to difference operation.

Example: Program to difference of two sets using minus operator

set_A={'A', 2, 4, 'D'} set_B={'A', 'B', 'C, 'D'} print(set_A – set_B)

Output:

{2,4}

Example: Program to difference of two sets using difference function

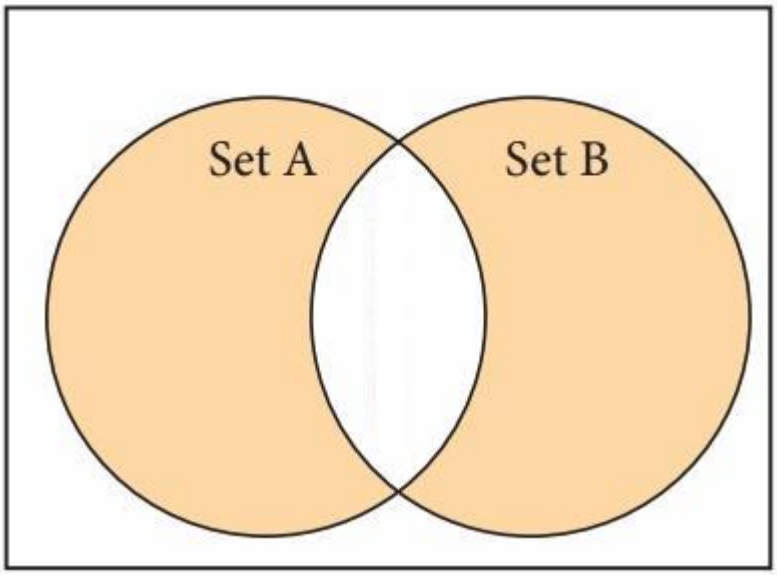
set_A={'A', 2, 4, TV} set_B={'A', 'B', 'C, 'D'} print(set_A.difference(set_B))

Output:

{2,4}

(iv) Symmetric difference:

It includes all the elements that are in two sets (say sets A and B) but not the one that are common to two sets.



The caret (^) operator is used to symmetric difference set operation in python. The function symmetric_difference( ) is also used to do the same operation.

Example: Program to symmetric difference of two sets using caret operator

```
set_A={'A', 2, 4, 'D'}
set_B={'A', 'B', 'C, 'D'}
print(set_A^A set_B)
```

Output:

{2, 4, 'B', 'C'}

Example: Program to difference of two sets using symmetric difference function

```
set_A={'A', 2, 4, 'D'}
set_B={'A', 'B', 'C', 'D'}
print(set_A. symmetric_difference(set_B))
```

Output:

{2, 4, 'B', 'C'}