SRM Institute of Science and Technology
College of Science and Humanities
Department of Computer Science
UCS18601 PYTHON – QUESTION BANK

UNIT 1

2 Marks :

1. Define python

Python is an object-oriented, high level language, interpreted, dynamic and multipurpose programming language.

2.Define variables. What are the rules for naming a variable?

A variable is a name that refers to a value. They can contain both letters and numbers but they do not begin with a letter.

Example:

>>> n=176

Here n is a variable name. The value of that variable is 176.

Rules are

Variable names can be arbitrarily long. They can contain both letters and digits, but they have to begin with a letter or an underscore. Although it is legal to use uppercase letters, by convention we don't. If you do, remember that case matters. Bruce and bruce are different variables. The underscore character (_) can appear in a name. Eg: my_name

3.What is the difference between intermediate mode and script mode?

•In immediate mode, you type Python expressions into the Python Interpreter window, and the interpreter immediately shows the result.

• Alternatively, you can write a program in a file and use the interpreter to execute the contents of the file. Such a file is called a script. Scripts have the advantage that they can be saved to disk, printed, and so on.

4.What is python interpreter?

The engine that translates and runs Python is called the Python Interpreter: There are two ways to use it: immediate mode and script mode. The >>> is called the Python prompt. The interpreter uses the prompt to indicate that it is ready for instructions.

5.List the basic or standard data types in python.

Python has five standard data Types:

- Numbers
- Strings
- List
- Tuples
- Dictionary

6.What is range() function?

The range() function returns a sequence of numbers, starting from 0 by default, and increments by 1 (by default), and stops before a specified number.

```
# Generate numbers between 0 to 6
for i in range(6):
    print(i)
```

7.Define Boolean Operators.

A Boolean expression is an expression that is either true (or) false. The Operator == which compares two operands and produces True if they are equal otherwise it is false.

```
>>> 5==5
True
>>> 5==6
False
```

8.What are different Membership Operators in python?

Membership operators are operators used to validate the membership of a value. It tests for membership in a sequence, such as strings, lists, or tuples.

in operator: The 'in' operator is used to check if a value exists in a sequence or not. Evaluate to true if it finds a variable in the specified sequence and false otherwise.

'not in' operator- Evaluates to true if it does not finds a variable in the specified sequence and false otherwise.

9.State about Identity operators.

In Python identity operators are used to determine whether a value is of a certain class or type. They are usually used to determine the type of data a certain variable contains.

There are different identity operators such as

'is' operator – Evaluates to true if the variables on either side of the operator point to the same object and false otherwise.

'is not' operator – Evaluates to false if the variables on either side of the operator point to the same object and true otherwise.

10. What are expressions?

An expression is a combination of values, variables, operators, and calls to functions. If you type an expression at the Python prompt, the interpreter evaluates it and displays the result:

```
>>> 1 + 1=2
```

11. What is chained conditional statement?

To check for multiple conditions elif Statement is used.This statement is like executing a if statement inside a else statement.

Syntax:

```
If statement:
    Statements
elif statement:
    statements
else:
    statements
```

12. Write the syntax and usage of while loop.

While Loop is used to execute number of statements or body till the condition passed in while is true. Once the condition is false, the control will come out of the loop.

13. What is python break statement?

Break statement is a jump statement that is used to pass the control to the end of the loop. Applying break statement makes the loop to terminate and controls goes to next line pointing after loop body.

14. What are logical operators and Bitwise operators?

Logical operators are the and, or, not operators. Bitwise operators act on operands as if they were string of binary digits. It operates bit by bit, hence the name. The operators are:&,|,`^,>>,<<

15.What are python comments.

Comments in Python are the lines in the code that are ignored by the interpreter during the execution of the program. Comments enhance the readability of the code and help the programmers to understand the code very carefully.

There are three types of comments in Python

- Single line Comments
- Multiline Comments
- Docstring Comments

PART-B

1.Write short notes on types of operators in python with appropriate example (16)

2.Explain briefly constant, variables, expression, keywords and statements available in python (16)

3.Explain the types of control statements available in python (16)

4. Write iterative control statements with diagram and example. (16)

5.Write a program to check number is prime or not (8)

6.Write a program to check the entered number is Armstrong number or not (8)

7.Write notes on comments in Python (8 Mark)
8.Write notes on Short Circuiting Techniques in Python (6 or 8 Mark)
9. Write notes on Python Tokens.(16 Mark)

UNIT II

2 Marks :

1.What is len function and explain how it is used on strings with an example.

The len function, when applied to a string, returns the number or character in a string.

Example:

>>>book=‘Problem Solving and Python Programming‘

>>>len(book)

38

2.Explain about string slicing with examples.

A substring of a string is obtained by taking a slice. The operator [n:m] returns the part of the string from the nth character to the mth character, including the first but excluding the last.

Example:

>>>book=‘Problem Solving and Python Programming‘

>>>print(book[0:7])

Problem

>>>print(book[21:27])

python

3.What is the use of str.upper() and str.lower() functions in string?

The functions str.upper() and str.lower() will return a string with all the letters of original string converted to upper or lower case letters.

>>>ss=‘srmist‘

>>>print(ss. upper())

>>>print(ss .lower())

4 How to open a new file in Python?

Opening a file creates a file object. In this example, the variable f refers to the new file object.

>>> f = open("test.dat","w")

The open function takes two arguments.

The first is the name of the file, and the second is the mode. Mode "w" means that we are opening the file for writing.

5.What is a text file?

Give an example for a text file. A text file is a file that contains printable characters and whitespace, organized into lines separated by newline characters. To demonstrate, we'll create a text file with three lines of text separated by newlines:

```
>>> f = open("test.dat","w")
>>>f.write("line one\nline two\nline three\n")
>>>f.close()
```

6 Write the use of str() function.
The str() function can be used to change any numeric type to a string.

7.How to split strings and what function is used to perform that operation?
The str.split() method is used to split strings up.

```
>>>book='Problem Solving and Python Programming'
>>>print(book.split())
['Problem', 'Solving', 'and', 'Python', 'Programming']
```

8..Differentiate between read() and readline().

read() : Returns the read bytes in form of a string. Reads n bytes, if no n specified, reads the entire file.

File_object.read([n])

readline() :Reads a line of the file and returns in form of a string.

For specified n, reads at most n bytes. However, does not reads more than one line, even if n exceeds the length of the line.

9.What is module and package in Python?
In Python, module is the way to structure program. Each Python program file is a module, which imports other modules like objects and attributes.

9. What is the purpose of OS module?
The OS module in Python provides functions for interacting with the operating system.

10.What is the purpose of sys.argv ?

sys.argv returns a list of command line arguments passed to a Python script. The item at index 0 in this list is always the name of the script. The rest of the arguments are stored at the subsequent indices.

```
    test.py

    import sys

    print("You entered: ",sys.argv[1], sys.argv[2], sys.argv[3])
```

```
C:\python36> python test.py Python C# Java
You entered: Python C# Java
```

11.What are the different file modes?

'r' - reading mode. The default. It allows you only to read the file, not to modify it. When using this mode the file must exist.

'w' - writing mode. It will create a new file if it does not exist, otherwise will erase the file and allow you to write to it.

'a' - append mode. It will write data to the end of the file. It does not erase the file, and the file must exist for this mode.

'rb' - reading mode in binary. This is similar to r except that the reading is forced in binary mode. This is also a default choice.

'r+' - reading mode plus writing mode at the same time. This allows you to read and write into files at the same time without having to use r and w.

'w+' - writing and reading mode. The exact same as r+ but if the file does not exist, a new one is made. Otherwise, the file is overwritten.

'a+' - appending and reading mode. Similar to w+ as it will create a new file if the file does not exist. Otherwise, the file pointer is at the end of the file if it exists.

12. Write a python program to rename a directory.

Python rename() file is a method used to rename a file or a directory in Python programming. The Python rename() file method can be declared by passing two arguments named src (Source) and dst (Destination).

Syntax

This is the syntax for os.rename() method

os.rename(src, dst)

Parameters

src: Source is the name of the file or directory. It should must already exist.

dst: Destination is the new name of the file or directory you want to change.

Example:

```
import os

os.rename('guru99.txt','career.guru99.txt')
```

13, List down the methods of sys module in python

sys.argv

sys.argv returns a list of command line arguments passed to a Python script. The item at index 0 in this list is always the name of the script. The rest of the arguments are stored at the subsequent indices.

sys.exit

This causes the script to exit back to either the Python console or the command prompt. This is generally used to safely exit from the program in case of generation of an exception.

sys.maxsize

Returns the largest integer a variable can take.

sys.path

This is an environment variable that is a search path for all Python modules.

sys.version

This attribute displays a string containing the version number of the current Python interpreter.

14.What is python pass statement?

When you do not want any code to execute, pass Statement is used. It is same as the name refers to. It just makes the control to pass by without executing any code.

Syntax:

Pass

15.Write the syntax and usage of for loop

The range function returns an immutable sequence object of integers between the given start integer to the stop integer

range(start,stop,[step])

Syntax:

```
for i in range(1,10,2):
    print(i)
```

PART-B

1.Explain in detail about Python Files, its types, functions and operations that can be performed on files with examples. (16)

2.Write notes on OS module and its functions in python. (16)

3.Explain in brief about sys module in python. (16)

4. Explain the process of Reading and writing CSV/TSV files with Python(16)

5.Write notes on String slicing. Illustrate how string slicing is done with suitable example(16)

6. Write python program to sort the string in the order. (8)

UNIT III

2 Marks :

1.What are the different ways to create a list?

Create Python Lists

In Python, a list is created by placing elements inside square brackets [], separated by commas.

 # list of integers

my_list = [1, 2, 3]

A list can have any number of items and they may be of different types (integer, float, string, etc.).

 # empty list

my_list = []

 # list with mixed data types

my_list = [1, "Hello", 3.4]

A list can also have another list as an item. This is called a nested list.

nested list

my_list = ["mouse", [8, 4, 6], ['a']]

2.State negative indexing in list with example.

The negative indexing is the act of indexing from the end of the list with indexing starting at -1 i.e. -1 gives the last element of list, -2 gives the second last element of list and so on.

The use of negative indexing can be done to use or display data from the end of the list and can also be used to reverse a number or string without using other functions.

>>>msg = "probe"

>>>msg[-3]

'o'

3. List out important characteristics of lists in Python.

The important characteristics of Python lists are as follows:

- Lists are ordered.
- Lists can contain any arbitrary objects.
- List elements can be accessed by index.
- Lists can be nested to arbitrary depth.
- Lists are mutable.
- Lists are dynamic.

4.What are the difference between append () and extend () build in functions used in list?

Append: Adds its argument as a single element to the end of a list. The length of the list increases by one.

extend(): Iterates over its argument and adding each element to the list and extending the list. The length of the list increases by number of elements in it's argument.

Syntax: list.append(obj)

5. Write a few methods that are used in Python Lists.

a) append()- add an element to end of list

b) insert()- insert an item at the defined index

c) remove()- removes an item from the list

d)clear()- removes all items from the list

e) reverse()- reverse the order of items in the list

6.What are the advantages of Tuple over List?

Tuples are fined size in nature i.e. we can't add/delete elements to/from a tuple. We can search any element in a tuple. Tuples are faster than lists, because they have a constant set of values. Tuples can be used as dictionary keys, because they contain immutable values like strings, numbers, etc.

7. What is meant by key-value pairs in a dictionary?

The elements of a dictionary appear in a comma-separated list. Each entry contains an index and a value separated by a colon. In a dictionary, the indices are called keys, so the elements are called key-value pairs.

Example

>>> print eng2sp {'one': 'uno', 'two': 'dos'}

One and two are keys and uno and dos are values

8.Explain how to create a dictionary in python?

Dictionaries are enclosed by curly braces ({ }) and values can be assigned and accessed using square braces ([]). The dictionary can be defined in any one of the following ways.

dict = {}

dict['one'] = "This is one"

dict[2] = "This is two"

tinydict = {'name': 'john','code':6734, 'dept': 'sales'}

9.What are Python's dictionaries?

Python's dictionaries are kind of hash table type. They work like associative arrays or hashes found in Perl and consist of key-value pairs. A dictionary key can be almost any Python type, but are usually numbers or strings. Values, on the other hand, can be any arbitrary Python object

10. List the python Built in functions.

Python has a set of built-in methods that you can use on dictionaries.

Method Description

clear() Removes all the elements from the dictionary

copy() Returns a copy of the dictionary

fromkeys() Returns a dictionary with the specified keys and value

get() Returns the value of the specified key

items() Returns a list containing a tuple for each key value pair

keys() Returns a list containing the dictionary's keys

pop() Removes the element with the specified key

popitem() Removes the last inserted key-value pair

setdefault() Returns the value of the specified key. If the key does not exist: insert the key, with the specified value

update() Updates the dictionary with the specified key-value pairs

values() Returns a list of all the values in the dictionary

11. How does del operation work on dictionaries? Give an example.

The del statement removes a key-value pair from a dictionary

>>>del inventory[‘pears‘]

>>> print inventory {‘oranges‘: 525, ‘apples‘: 430, ‘bananas‘: 312}

12.Difference between List and Dictionary

List	**Dictionary**
List is a collection of index values pairs as that of array in c++.	Dictionary is a hashed structure of **key and value** pairs.
List is created by placing elements in **[ ]** separated by commas “, “	Dictionary is created by placing elements in **{ }** as “key”:”value”, each key value pair is separated by commas “, “

The indices of list are integers starting from 0.	The keys of dictionary can be of any data type.
The elements are accessed via indices.	The elements are accessed via key-values.
The order of the elements entered are maintained.	There is no guarantee for maintaining order.

13.Difference between List and tuple

NO.	LIST	TUPLE
1	Lists are mutable	Tuples are immutable
2	Implication of iterations is Time-consuming	The implication of iterations is comparatively Faster
3	The list is better for performing operations, such as insertion and deletion.	Tuple data type is appropriate for accessing the elements
4	Lists consume more memory	Tuple consume less memory as compared to the list
5	Lists have several built-in methods	Tuple does not have many built-in methods.
6	The unexpected changes and errors are more likely to occur	In tuple, it is hard to take place.

14. What are tuples in Python?

A tuple is another sequence data type that is similar to the list. A tuple consists of number of values separated by commas. Unlike lists, however, tuples are enclosed within parentheses.

15. What are the methods that are used in Python Tuple?

Tuple functions in Python | Tuple methods in Python

len() method. This method returns number of elements in a tuple.

max() This method returns largest element of a tuple.

min() This method returns smallest element of a tuple.

index() This method is used to find first index position of value in a tuple.

count() This function is used to count and return number of times a value exists in a tuple. If the given value is not in the tuple, it returns zero.

PART-B

1.What are the basic list operations that can be performed in Python? Explain each operation with its syntax and example.

2.What is Dictionary? Explain Python dictionaries in detail discussing its operations and methods.

3. What are the basic tuple operations that can be performed in Python? Explain each operation with its syntax and example.

4. Explain the process of updating and deleting a item from a list in Python

5. Explain in detail about the various built in functions of a tuple.

6. Write a program for List operations(Use Minimimu10 functions)

7. Write a program for Dictionary operations(Use Minimimu10 functions)

8 Write a python program to concatenate two lists.(4)

9. Write a Python program to multiply two Matrices.(8)

UNIT IV

PART- A - 2 Marks :

1.Define function.

In Python, a function is a group of related statements that performs a specific task. Functions help break our program into smaller and modular chunks.

2. What is default argument?

If the value of any of the arguments is not provided at the time of function call, then that argument can be initialized with the value given in the definition even if the argument is not specified at the function call.

3. What is Python Arbitrary Arguments?

Sometimes, we do not know in advance the number of arguments that will be passed into a function. Python allows us to handle this kind of situation through function calls with an arbitrary number of arguments

4.What are the Advantages of Recursion?

- Recursive functions make the code look clean and elegant.
- A complex task can be broken down into simpler sub-problems using recursion.
-

5. Define Formal arguments

Formal arguments are identifiers used in the function definition to represent corresponding actual arguments.

6.Define a class in python.

A Class in Python is a logical grouping of data and functions. It gives the freedom to create data structures that contains arbitrary content and hence easily accessible.

7.Write the basic principles of OOP

In Python, the concept of OOP follows some basic principles:

- Class
- Object
- Methods
- Encapsulation
- Inheritance
- Polymorphism

8.List the types of arguments.

- Referred or Positional arguments.
- Default arguments.
- Keyword arguments.
- Variable length arguments

9.Define self Parameter

The self parameter is a reference to the current instance(object) of a class, and is used to access variables that belongs to the class.

10.Give example for a class in python

```
class car:
    def __init__(self,modelname, year):
self.modelname = modelname
self.year = year
    def display(self):
        print(self.modelname,self.year)
```

11.What are the differences between formal and actual parameter.?

Actual parameters are those parameters that are specified in the calling function. While on the other hand, formal parameters are those parameters that are declared in the called function.

12.State about keyword arguments.

Keyword arguments (or named arguments) are values that, when passed into a function, are identifiable by specific parameter names. A keyword argument is preceded by a parameter and the assignment operator, =.

13.State about default arguments.

Python has a different way of representing syntax and default values for function arguments. Default values indicate that the function argument will take that value if no argument value is passed during the function call. The default value is assigned by using the assignment(=) operator of the form keywordname=value.

14. Define Positional arguments.

Positional argument means that the argument must be provided in a correct position in a function call.

15.What is range() function and how it is used in lists?.

The range() function is used to generate a sequence of numbers over time. At its simplest, it accepts an integer and returns a range object (a type of iterable). In Python 2, the range() returns a list which is not very efficient to handle large data.

Syntax:

range([start,] stop [, step]) -> range object

PARAMETER	**DESCRIPTION**
start	(optional) Starting point of the sequence. It defaults to 0.
stop	(required)Endpoint of the sequence. This item will not be included in the sequence.
step	(optional) Step size of the sequence. It defaults to 1.

PART-B

1.Explain the types of function arguments in python. (10)

2.Explain call by value and call by reference in python

3.Define function and its syntax.(4)

4. Write an algorithm and program to design simple calculator performing arithmetic functions like addition, subtraction, multiplication and division with the input given by user. (12)

3.Briefly explain about function prototypes

4.What is recursive function? Find a factorial of a given number using recursive function.(6)

5.Explain with an example about how to create a class and its objects and methods in python (16)

UNIT V

2 Marks :

1.What is Inheritance

Inheriting the base class properties to child class is called Inheritance. The existing class is called the base class and the new class is called the derived class.

2.What are the various types of Inheritances?

- Single Level inheritance
- Multilevel inheritance
- Multiple Inheritance
- Hybrid Inheritance
- Hierarchal Inheritance

3.Define Polymorphism.

The literal meaning of polymorphism is the condition of occurrence in different forms. Polymorphism is a very important concept in programming. It refers to the use of a single type entity (method, operator or object) to represent different types in different scenarios.

Example 1: Polymorphism in addition operator. The + operator used in operator overloading is used to add two integers as well as two strings.

4.Define Operator Overloading
Operator Overloading means giving extended meaning beyond their predefined operational meaning.

5.What is an exception?Explain with few examples.

Whenever a runtime error occurs, it creates an exception. Usually, the program stops and Python prints an error message.
For example, dividing by zero creates an exception:
>>> print 55/0
ZeroDivisionError: integer

6.List some few common Exception types and explain when they occur.

. •ArithmeticError- Base class for all errors that occur for numeric calculations.
•OverflowError- Raised when a calculation exceeds maximum limit for a numeric type.
•ZeroDivisionError- Raised when division or modulo by zero takes o place

7. Define Abstraction.

Abstraction is used to hide the internal functionality of the function from the users. The users only interact with the basic implementation of the function, but inner working is hidden. User is familiar with that "what function does" but they don't know "how it does."

8. What is abstract class?

In abstract class can be considered as a blueprint for other classes. It allows you to create a set of methods that must be created within any child classes built from the abstract class. A class which contains one or more abstract methods is called an abstract class. An abstract method is a method that has a declaration but does not have an implementation.

9.Write the use of Tkinter.

Python provides the standard library Tkinter for creating the graphical user interface for desktop based applications

10.What are the components available in Tkinter widget?

There are various widgets like button, canvas, checkbutton, entry, etc. that are used to build the python GUI applications.

11.What are the geometry methods provided by The python Tkinter?

The python Tkinter provides the following geometry methods.

- The pack() method
- The grid() method
- The place() method

12. Write the purpose of grid() geometry method.

The grid() geometry manager organizes the widgets in the tabular form. We can specify the rows and columns as the options in the method call.

13.List the Keywords used in Exception handling

1. try
2. except
3. else
4. finally

14.What are the steps by which the tkinter window can be created ?

1. import the Tkinter module.
2. Create the main application window.
3. Add the widgets like labels, buttons, frames, etc. to the window.
4. Call the main event loop so that the actions can take place on the user's computer screen.

15 .Write the syntax of pack() widget

syntax

widget.pack(options)

A list of possible options that can be passed in pack() is given below.

expand: If the expand is set to true, the widget expands to fill any space.

Fill: By default, the fill is set to NONE. However, we can set it to X or Y to determine whether the widget contains any extra space.

size: it represents the side of the parent to which the widget is to be placed on the window.

PART-B

1. **1.Explain the Exception handling in python with example(8)**
2. **Write a python program to handle the Divide by Zero Exception(8)**
3. **Explain the concept of operator overloading in python (8)**
4. **Briefly explain about the types of Inheritance**.(16 or 8)
5. Describe in detail about Tkinter library and its functions in python
6. Explain with an example how to create an event driven program in python (16)
7. Explain how to design a GUI in python using tkinter module(16)
8. **Explain how to create a simple GUI using Buttons,colors and fonts using tkinter module with an example** (16)