Campus :

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Subject : Date : Sign. of the Invigilator :

1) what are data types in python? explain

A) Python has following standard data types :-

Numeric :- it is representation of data which has a numeric value. it identifies three types

i) Integers :- Positive negative and whole numbers

ii) Float :- Any real number with floating Point represents fractional component by decimal symbol

iii) Complex :- A number with real and imaginary component by decimal symbol as $x+yj$.

2) Boolean :- Data with one of two built values True or False. Notice that 'T' and 'F' are capital True and False are not valid booleans.

3) Sequence Type :- it is an ordered collection of similar or different data types. Sequence allows to store multiple values in an organized and efficient fashion. There are several sequences

1) String

In Python strings are array of bytes representing unicode characters. A string is a collection of one or more characters put in a single quote, double-quote or triple quote. In Python there is no character data type, a character is a string of length one. It is represented by str class.

List :- A list is ordered collection of one / more data items, not necessarily of same types Put in square brackets.

Triple :- It is an ordered collection of similar or different data types

String :- it is collection of one / more characters Put in single, double or triple quotes

not necessarily of same type, Put in paranthesis

4) Dictionary :- It is an unordered collection of data in axey value pair form.

ex :- d = {1:"Steve" 2:"Bill"}

5) mutable and immutable objects :-

mutable object can be changed after it is created and an immutable object can't, objects of built-in types like int, float are immutable. objects of built-in types like list, dict are mutable.

2) Briefly Explain history of Python?

A) Python was conceived in the late 1980s by Guido van Rossum at Centrum Wiskunde & CWI in the Netherlands as a successor to the ABC language (itself inspired by SETL), capable of exception handling and interfacing with the Amoeba O.S.

- Python 2.0 realeased on ocbober 16, 2000 with many new features including cycle-detecting garbage collector for memory management and support
- Python 3.0, a major backwards-incompatible release was released on December 3, 2008 after a long period of testing many of its major feature have also been back ported to backwards compatible while by now unsupported, Python 2.6, 2.7

3) Explain all operators in Python

Ans) => Arithmetic operators :- Performs Arithmetic operations like

operator	Meaning	Example
-	Subtract 2 operands	x-y
+	Add 2 operands	x+y
x	Multiply 2 operands	x*y
/	Division (float)	x/y
//	Division (floor)	x//y
%	Modulus: return the remainder when first operand is divided by the second	x%y
* *	Power : Returns first raised to power second	x**y

=> Relation operators :- Relation operators compares values

operator	Description	Syntax
>	Greater than: operand is greater than right	x > y
<	Less than : operand is less than right operand	x < y
= =	Equal to True : if both are equal	x == y
! =	Not equal to - True : if operands are not equal	x != y
> =	greater than or equal to	x >= y
< =	less than or equal to	x <= y

=> Logical operators : Logical operator perform Logical AND, logical OR and Logical NOT operation.

operator	Description	Syntax
and	logical AND: True if both the operands are true	x and y
or	logical OR : True if either of the operands is true	x or y
not	logical NOT : True if operands is false	not x

=> Bitwise operators :- Bitwise operators acts on bits and performs bit by bit operation.

operator	Description	Syntax
&	Bitwise AND	x & y
|	Bitwise or	x | y
~	Bitwise NOT	~ x
^	Bitwise XOR	x ^ y
>>	Bitwise right shift	x >>
<<	Bitwise left shift	x <<

=> Special operators :- There are some special operators like

identity operator :- is and is not are the identity operators both are used to check if two values are located on the same part of memory.

is - True if the operands are identical

is not - True if the operands are not identical

- Membership operators

in and not in are the membership operators

in - True if value is found in sequence

not in - True if value is not found in sequence.

⇒ Assignment operators :- to assign the values

operator	description	Syntax
=	Assign value of right side of expression to left side operand	x = y + z
+=	Add AND	a += b a = + b
-=	Subtract AND	a -= b a = a - b
*=	Multiply AND	a *= b a = a * b
/=	Divide AND	a /= b a = a / b
%=	Modulus AND	a %= b a = a % b
//=	Divide floor AND	a //= b a = a // b
**=	Exponent AND	a **= b
&=	Performs Bitwise AND	a &= b a = a & b
|=	Performs Bitwise or	a |= b a = a | b
^=	Performs Bitwise XOR	a ^= b a = a ^ b

4) Explain features of Python?

A) 1) Easy to code:-

- Python is high level Programming language
- It is very easy to learn language as compared to C, C++ etc it is also developer friendly language

2) Free and open source:- Since it is open-source that means the source code is also available to Public So you can download it and use it as well as share it

3) object-oriented language:- it supports object oriented language and concepts of classes, object encapsulation etc.

4) GUI Programming Support :-

a) It can be code using a module such as wx Python , Pyqt5 in Python.

Pyqt5 is Popular

5) High-level language :- Python is high level language when we write Programs in Python , we do not need to remember the system architecture , nor do we need to manage memory

6) extensible feature :- we can write our some Python code into c/c++ language and also we can compile that code in c/c++ language.

7) Portable language :- if we have Python code for windows and if we want to run this code on other platform such as linux , unix and mac then we do not need to change it

8) interpreted language :- it is interpolated language because Python code is executed line by line at a time The source code of Python is converted into an immediate form called byte code.

3) Justify why Python is interactive interpreted language?

A) Unlike c/c++, Python is an interpreted object oriented Programming language by interpreted it is meant that each time a Program is run the interpreter instructions into machine - readable byte code. An interpreter is translator in computers language which translates given code line by line in machine readable byte codes

-) Python is interactive when a python statement is entered and is followed by Return key, if appropriate result will be Printed on screen immediately in next line in interactive mode, the advantage is debugging of Process.