**1.** **In the below elements which of them are values or an expression? eg:- values can be integer or string and expressions will be mathematical operators.**

\*

'hello'

-87.8

-

/

6

**Answer** :-

From the above question, values are : - ‘hello’ , - 87.8 , 6.

And Expression are :- \* , - , / , +.

**2. What is the difference between string and variable?**

**Answer :-**

**String :-** String is sequence of characters. We can use single quotesor double quotesto represent strings.

**Example :-** >>> name='Sagar'

>>> print(name)

Sagar

>>> type(name)

<class 'str'>

**Variable :-** Variables are often described as boxes you can store values in. It’s much better to think of variables as labels that you can assign to values. You can also say that a variable references a certain value. For example, in above code we took name as variable and to that we assign a value which is string. Variable names can contain only letters, numbers, and underscores. They can start with a letter or an underscore, but not with a number. For example, you can call a variable *message\_1* but not *1\_message*. Spaces are not allowed in variable names, but underscores can be used to separate words in variable names. For example, *greeting\_message* works, but *greeting message* will cause errors. We should also avoid using Python keywords and function names as variable names or they will also cause error.

**3. Describe three different data types.**

**Answer :-** In Python there are 14 data types and these are classified into 6 categories.

These categories are:

* + 1. **Numeric Types**
    2. **Boolean Type**
    3. **Sequence Types**
    4. **Set Types**
    5. **Mapping Type**
    6. **None Type**

1. Numeric types :-
   * + 1. Integer :- Used for storing integer numbers without any fractional part.

Eg :- >>> a=10

>>> print(a)

10

>>> type(a)

<class 'int'>

* + - 1. Float :- Used for storing fractional numbers.

Eg :- >>> a=10.5

>>> print(a)

10.5

>>> type(a)

<class 'float'>

* + - 1. Complex :- Used for storing complex numbers.

Eg :- >>> a=2+3j

>>> print(a)

(2+3j)

>>> type(a)

<class 'complex'>

**4. What is an expression made up of? What do all expressions do?**

**Answer :-** An expression is made up of values (such as numbers, strings, and variables) and operators (such as +, -, \*, /, %).

All expressions evaluate to a single value, which can be a number, a string, a Boolean, a list, or a tuple. In Python, expressions are typically used as part of a larger statement.

**5. This assignment statements, like spam = 10. What is the difference between an expression and a statement?**

**Answer :-**   
An expression is a combination of values, variables, and operators, while a statement is a command that tells the computer to do something. Expressions are evaluated to produce a value, while statements are executed. In the example of spam = 10, the '=' is an operator that assigns the value of 10 to the variable spam, which is an expression. The whole statement is a statement.

**6. After running the following code, what does the variable bacon contain?**

**bacon = 22**

**bacon + 1**

**Answer :-** The variable bacon contains the number 22. The second line of code adds 1 to the variable bacon, but it is not assigned to bacon, so the variable bacon still contains the number 22.

**7. What should the values of the following two terms be?**

**'spam' + 'spamspam'**

**'spam' \* 3**

**Answer :-** The value of ‘spam’ + ‘spamspam’ should be ‘spamspamspam’ and the value of ‘spam’ \* 3 should be ‘spamspamspam’.

**8. Why is eggs a valid variable name while 100 is invalid?**

**Answer :-** In Python, variables must begin with a letter or an underscore. Numbers are not allowed as the first character in a variable name, so 100 is not a valid variable name. Eggs is a valid variable name because it begins with a letter.

**9. What three functions can be used to get the integer, floating-point number, or string version of a value?**

**Answer :-**

**1. int():** This function returns the integer version of a number or converts a string to an integer.

**2. float():** This function returns the floating-point number version of a number or converts a string to a floating-point number.

**3. str():** This function returns the string version of a number or converts a number to a string.

**10. Why does this expression cause an error? How can you fix it?**

**'I have eaten ' + 99 + ' burritos.'**

**Answer :-** This expression causes an error because you cannot concatenate strings with integers without first converting the integer to a string.

To fix this, you can convert the integer to a string using the str() method, like this :

‘I have eaten ‘ + str(99) + ‘ burritos.’

**Or**

We can also fix this in a way that the number needs to be converted to a string by wrapping it in quotation marks :

‘I have eaten ‘ + ‘99’ + ‘ burritos.’