**1. In the below elements which of them are values or an expression? e.g.:- values can be**

**integer or string and expressions will be mathematical operators.**

**\***

**'hello'**

**-87.8**

**-**

**/**

**+**

**6**

**solution :** ***Values :-*** 'hello'

-87.8

6

***Expressions :-*** \*

-

/

**+**

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

**Solution** : String is a datatype & it always defines in quotes " " or ' ' and

Variable is something which we can used to assign any string or value.

**Example :-** a = "ineuron"

so here, a is a variable & "ineuron" is a string

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

**solution**: ***1. List*** :- It is a mutable datatype. It always defines in square bracket [ ] . It can include any datatype as an element . Inside list we can perform indexing, slicing operations and also there are multiple inbuilt functions like - append( ), pop( ), extend( ), etc. which we can use to solve our problems.

**example:-**

l = [21,32,"ineuron",(54,6,32,8),[5,6,3],{"k1":'space',"k2":'galaxy'},(2,2,3,4)]

where, l = List

**2. Dictionary** :- It is also a mutable datatype. It always defines in curly brackets { }. It contain information in key & value pair. It's indexing is based on keys. Here, Values can be any type but keys should be certain type or unique. If same keys are used for different values, the latest value will override to previous. Dictionary also contain multiple inbuilt functions like - items( ), keys( ), value( ), clear( ), etc.

**example:-** d = { "k1": 'space', "k2": 'galaxy' }

**3. set :-** It is a mutable datatype with unordered collection of data. It gives unique elements by deleting duplicate one. It always defines in curly braces { }. Though it is mutable but it can't kept mutable entities (like- list) inside it rather it allows immutable entities (like- strings, Tuples). We can't perform indexing operation in sets due to its unordered nature.

**example:-** s = {28,26, "ineuron", 22,65,26, (5,6,3,2), 22}

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

**solution:** Generally, Expressions are made up of combination of different numbers, variables, constants & operators but operators are very important part of an expression. They are of different types like- numerical(5+6-2/2\*3), arithmetic(2x+3), Boolean (True/False or 1/0)

Expressions gives result in the form of values & it helps us to solve problems in an easy way.

**example :-** (1) 45/5 = 9 , (2) 3x - 6 = 2

Here, LHS is an expression & RHS is a value in both the examples.

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

**solution:** Statements are some sort of instructions which will not necessarily gives result in the form of value like here, (spam = 10) Value 10 is stores in the spam variable & statements are executed by complier Whereas,

In the expressions we get result in the form of values like- 12 + 3 \* 2 = 18

so, expressions are part of statements & are evaluated by the complier.

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

**bacon = 22**

**bacon + 1**

**solution:-** bacon contains 22

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

**'spam' + 'spamspam'**

**'spam' \* 3**

**solution:-** Both expressions give result to the string 'spamspamspam'

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

**solution:-** Because to get valid result of any expression we need to assign valid variable which begins with letter and not number so, variables cannot begin with a number.

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

**solution:-** int( ), float( ) & str( ) are the functions to get result in integer, floating-point, & string respectively of the value passed to them.

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

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

**solution:-** The given expression causes an error because 99 is an integer & only strings can be concatenated to the other strings. So, to correct it we need to do typecasting of 99 to string

'I have eaten' + str(99) + 'burritos'