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

**Ans:-**

**Values: ‘hello’, -87.8 and 6.**

**Expressions: \*, -, / and +.**

2. What is the difference between string and variable?

**Ans:-**

**String is a collection of alphabets, words or other characters. It is one of the primitive data structures and are the building blocks for data manipulation. It is enclosed in single/double quotes during assignment. Python strings are "immutable" which means they cannot be changed after they are created.**

**Ex: a=’irfan’ b=”razi”**

**A variable is a reserved memory location to store values. In other words, a variable in a python program gives data to the computer for processing. Every value in Python has a datatype. Different data types in Python are Numbers, List, Tuple, Strings, Dictionary, etc. A variable can be mutable or immutable based on its datatype.**

**Ex: a=’irfan’ b=123 c=[1,2,’irfan’] d=(1,2,’razi’)**

3. Describe three different data types.

**Ans:**

**1. String is a collection of alphabets, words or other characters. It is one of the primitive data structures and are the building blocks for data manipulation. It is enclosed in single/double quotes during assignment. Python strings are "immutable" which means they cannot be changed after they are created.**

**Ex: a=’irfan’**

**2. A Tuple is a collection of Python objects separated by commas. In someway, a tuple is similar to a list in terms of indexing, nested objects and repetition but a tuple is immutable unlike lists which are mutable.**

**Ex: a=(1,2.3,’irfan’, (1,2), {‘irfan’:’razi’})**

**3. A dictionary is an unordered and mutable Python container that stores mappings of unique keys to values. Dictionaries are written with curly brackets ({}), including key-value pairs separated by commas (,). A colon (:) separates each key from its value.**

**Ex: {‘name’:’Irfan’,’lastname’: ‘Razi’}**

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

**Ans:- An expression is a combination of operators and operands that is interpreted to produce some other value. An expression is evaluated as per the precedence of its operators. So that if there is more than one operator in an expression, their precedence decides which operation will be performed first.**

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

**Ans:- Evaluation of an expression always Produces or returns a result value. Execution of a statement may or may not produces or displays a result value, it only does whatever the statement says. Every expression can't be a statement.**

**In this case, ‘spam=10’ is an statement, not an expression.**

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

bacon = 22

bacon + 1

**Ans:- bacon contains the value 22.**

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

'spam' + 'spamspam'

'spam' \* 3

**Ans:- In the both the case, value would be ‘spamspamspam’.**

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

**Ans: A variable name must start with a letter or the underscore character.**

**A variable name cannot start with a number.**

**A variable name can only contain alpha-numeric characters and underscores (A-z, 0-9,& \_ )**

**Variable names are case-sensitive (age, Age and AGE are three different variables).**

**As such, ‘eggs’ is valid variable name and 100 is invalid.**

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

**Ans: int(), float() and str() functions.**

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

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

**Ans:- As the error says, concatenation can not happen between integer and string. To fix this, we can convert 99 in string variable as shown below:**

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