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.

\* : values

'hello' : string

-87.8 : it is floating point number , and in question it was mentioned that we can say values to integer or string , so according to question it is not values and mathematical operators

- : expressions

/ : expression

* : expression

6 : values

2. What is the difference between string and variable?

The main difference between a string and a variable is that a string is a type of data that represents a sequence of characters, while variable is a named reference to a value or an object. A variable can hold any type of data, including strings, numbers, lists etc., while a string can only hold a sequence of characters.

3. Describe three different data types.

1. Integer (int): Used to represent whole numbers, positive or negative, without any decimal points. For eg: 5, -10, 0.
2. String (str): Used to represent a sequence of characters, enclosed in single or double quotes. For eg: 'Anil kamat', "Ineuron", '123'.
3. Float (float): Used to represent floating-point numbers (numbers with decimal points). For eg: 3.14, -2.59, 0.01.

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

An expression is made up of variables, values, and operators . It can be a single value or variable, or it can be a more complex combination of values, variables, and operators. In every expressions, the operator is applied to the operands to produce a result. For eg:

u=3 is an expression.

y= x+3 is an expression.

y = "anil" and z = 'kamat" then y+z is also an expression.

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

An expression is a combination of values, variables and operators that evaluates to a single value result , whereas a statement is a complete line of code that performs some action, such as assigning a value to a variable or calling a function.

In assignment statement, like spam =10 , value 10 is assigned to the variable spam.

Expressions do not change the state of the program, whereas statements may change the state of the program.

Expressions can be used in control structures like if statements or while loops to make decisions, whereas statements like if and while are used to control the flow of a program based on the value of an expression.

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

bacon = 22

bacon + 1

bacon contain the value = 22 ,2nd stament doesn’t change the value of bacon.

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

'spam' + 'spamspam'

'spam' \* 3

Both statement has the same result ‘spamspamspam’ .

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

According to naming convention variable names cannot start with a number , therefore "eggs" is valid because it starts with a letter . On the other hand, the number "100" cannot be used as a variable name because it starts with a number.

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

int() - This function can be used to convert a value to an integer.

float() - This function can be used to convert a value to a floating-point number.

str() - This function can be used to convert a value to a string.

But should be careful while using this function , because in python there is concept called hierarchy of data types that determines whether one type can be cast to another. For eg, you can convert an integer to a float, but you cannot convert a string to an integer (unless the string contains a valid integer representation).

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

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

This statement cause a type error : “can only concatenate str (not "int") to str”

To fix it we have to change 99 to string , so the valid expression which doesn’t cause an error is

'I have eaten ' + ‘99’ + ' burritos.'