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: \*, - , /, + are expression and ‘hello’, -87.8, 6 are values.**

2. What is the difference between string and variable?  
**Ans: A Variable is a store of information, and a String is a type of information you would store in a Variable. A String is usually words, enclosed with "" . example a = “Bhonu” in this example a is variable and we declare it is a string.**

3. Describe three different data types.

**ANS: 1) Integers: Integers are whole numbers, without a fractional component. They can be positive or negative. Example x = 5 y = -4  
2) Floats: Floats represent real numbers and are written with a decimal point.   
example a = 5.45.0 , b = -4.56   
3) Strings: Strings in Python are sequences of character data. They are created by enclosing characters in quotes. a = "bhonu\_yadav!"**

4. What is an expression made up of? What do all expressions do?  
**Ans: An expression is a combination of variables, constants, operators, and function calls that produces a value when evaluated. It represents a computation or a calculation in a programming or mathematical context. Here are the components typically found in expressions:**

**1. Variables: They are used to store and represent values that can change during the execution of a program. Variables can be assigned values and used in expressions to perform calculations.**

**2. Constants: These are fixed values that do not change during program execution. Examples of constants include numbers (e.g., 5, 3.14) and strings (e.g., "Hello").**

**3. Operators: Operators perform specific operations on one or more operands to produce a result. Common operators include arithmetic operators (+, -, \*, /), relational operators (>, <, ==), logical operators (&&, ||), and assignment operators (=).**

**4. Function calls: Functions are reusable blocks of code that perform specific tasks. Function calls are used in expressions to invoke a function and retrieve its return value. Functions can accept arguments (inputs) and may modify the program's state.**

5. This assignment statements, like spam = 10. What is the difference between an expression and a statement?  
**Ans: 1. Expressions: An expression is a combination of variables, constants, operators, and function calls that produces a value when evaluated. It represents a computation or a calculation. Expressions can be as simple as a single variable or constant or more complex with multiple components and operators. Examples of expressions include 2 + 3, x \* y, and my\_function(5). The main characteristic of an expression is that it has a value. Therefore, expressions can be used as part of larger expressions, assigned to variables, or passed as arguments to functions.**

**2. Statements: A statement is a complete instruction that performs an action or controls the flow of a program. It is a unit of code that can be executed by the computer. Unlike expressions, statements do not produce a value. They typically include keywords, operators, and expressions to specify the desired behavior. Examples of statements include variable assignments (spam = 10), conditional statements (if and else), loops (for and while), and function declarations. Statements are used to control the execution flow, manipulate data, or define program structure.**

**To summarize, the key difference between expressions and statements is that expressions produce a value, while statements are complete instructions that perform actions without producing a value. Expressions are often used within statements to provide the necessary data for calculations or decision-making.**

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

bacon = 22

bacon + 1

**ANS: 23**

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

'spam' + 'spamspam'

'spam' \* 3

ANS: 'spam' + 'spamspam'  
 ‘**spamspamspam’**

'spam' \* 3  
 **‘spamspamspam’**

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

**Ans: Based on these rules, eggs is a valid variable name because it starts with a letter and contains only letters. However, 100 is an invalid variable name because it starts with a digit, which violates the first rule.**

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().**

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

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

**ANS: Error reason: In this can only concatenate string to string not string to integer in this 99 is integer.**

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

**I have eaten 99 burritos.**