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.

Operators: +, -, *, /
Values: 'hello', -87.5, 6

* this is a mathematical expression used for multiplication

'hello' this value is a string

-87.8 since it has a decimal then it is a float with a negative mathematical expression

- mathematical expression for negative

/ mathematical expression used for division

+ mathematical expression used for addition

6 numerical value integer

2. What is the difference between string and variable?

Variables can be of many types string,boolean,interger,floating point.

Eg:

x = 1

name = “roshan”

rich = False

the above examples of integer, string and boolean . All the above are variables. String is just a type of variable which represented by “” or ‘’in the python language.

3. Describe three different data types.

Different data types are

1.Numeric

2.string

3.Boolean

1.Numeric

i) Integer ii) Floating Point ii) Complex Numbers

i)Integer – Any number ..can be how long it can be only constrained by the memory. It can be in decimal octal or hexadecimal formats as well.

ii) Float – Float is nothing but a floating decimal point on the number. Incan be of any nature also carry a negative or positive value.

iii) Complex Numbers generally consist of a real part and a imaginary part.

Eg 2+4j

2. String

string is a sequence of character data. String starts from a delimiter “” or ‘’ all part which comes between the delimiter belong to the string.

Eg x =”roshan”

3.Boolean

Objects of the Boolean type have only two values True or False.

```
>>> type(True)
<class 'bool'>
```

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

Ans.

Python expressions only contain identifiers, literals, and operators.

Identifiers: Any name that is used to define a class, function, variable module, or object is an identifier.

Literals: These are language-independent terms in Python and should exist independently in any programming language. In Python, there are the string literals, byte literals, integer literals, floating point literals, and imaginary literals.

Operators: In Python you can implement the following operations using the corresponding tokens.

Operator	Token
add	+
subtract	-
multiply	*
power	**
Integer Division	/
remainder	%
decorator	@
Binary left shift	<<
Binary right shift	>>
and	&
or	\
Binary Xor	^
Binary ones complement	~
Less than	<
Greater than	>
Less than or equal to	<=
Greater than or equal to	>=
Check equality	==
Check not equal	!=

Following are a few types of python expressions:

List comprehension

The syntax for list comprehension is shown below:

```
[ compute(var) for var in iterable ]
```

Dictionary comprehension

This is the same as list comprehension but will use curly braces:

```
{ k, v for k in iterable }
```

Generator expression

The syntax for generator expression is shown below:

```
( compute(var) for var in iterable )
```

Conditional Expressions

You can use the following construct for one-liner conditions:

```
true_value if Condition else false_value
```

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

Expressions are representations of value. They are different from statement in the fact that statements do something while expressions are representation of value.

Statements represent an action or command e.g print statements, assignment statements.

```
print 'hello', x = 1
```

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

bacon = 22

bacon + 1

bacon =22 The value of bacon remains the same given by the assignment statement.

The bacon variable is set to 22. The bacon + 1 expression does not reassign the value in bacon (that would need an assignment statement: bacon = bacon + 1)

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

'spam' + 'spamspam'

'spam' * 3

```
'spamspamspam'
```

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

Variable names 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?

The int(), float(), and str() functions will evaluate to the integer, floating-point number, and string versions of the value passed to them.

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

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

The expression causes an error because 99 is an integer, and only strings can be concatenated to other strings with the + operator.

The correct way is ‘I have eaten ' + str(99) + ' burritos.'.