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

Solution:   
Values –  
1. 'hello' (string)  
2. -87.8 (floating)  
3. 6 (integer)

Expression-  
1. \* (multiplication operator)  
2. - (subtraction operator)  
3. / (division operator)  
2. + (Addition operator)

2. What is the difference between string and variable?  
  
Answer: A string is a data type used to represent textual data such as words or sentences while variable is a symbolic name given to a memory location that stores data in a program.

3. Describe three different data types.  
  
Answer:  
1. Boolean: Represent truth values, typically either True or False.  
2. Integer: It is a whole number without a decimal point.  
3. Floating: It is a number represents real number and allows for decimal points.

4. What is an expression made up of? What do all expressions do?  
  
Answer: An expression in programming is made up of a combination of values, variables, operators and function calls that, when evaluated, results in a single value. Essentially, an expression is a set of elements that, when combined according to the rules of the programming language, produces a value.  
Expressions can be a simple or complex depending upon the combination of these elements they are used to calculate value make decision and perform various operation within the program next. All expressions when evaluate result in a single value. The purpose of an expression is to compute this value. The value can be used in assignment, conditions or other expression. Expressions place of fundamental role in programming allowing developer to manipulate data make decisions and control the flow of program.

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

Answer: An expression is a combination of values, variables, operators, or function calls that evaluates to a single value while A Statement is a complete line of course that perform an action, it may include expression but not required to, Statement often involve controlling the flow of program, defining a variable, or performing some operation.

Spam=10 is a statement because it is a complete line of code that assigns the value 10 and the variable spam.

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

bacon = 22

bacon + 1

Answer: After running this code, the variable ‘bacon’ still contains the original value of ‘22’.

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

'spam' + 'spamspam'

'spam' \* 3

Answer: After evaluate the two expressions the value of both terms are ‘spamspamspam’.

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

Answer: ‘eggs’ is valid variable name because start with a letter.  
‘100’ is invalid 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?

Answer:  
1. Integer Function:  
ex: value=6.2  
 integer\_value=int(value)  
 print(integer\_value)  
 # output: 6  
2. Floating Function:  
ex: value=6.2  
 floating\_value=float(value)  
 print(float\_value)  
 # output: 6.2  
3. String Function:  
ex: value=6  
 string\_value=str(value)  
 print(string\_value)  
 # output: 6

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

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

Answer: The expression’ I have eaten’+ 99+’ burritos’ cause an error because of attempting to concatenate a string (I have eaten) with the integer (99).

To fix this we need to convert integer ‘99’ to a string before concatenating it. we can use a string function for this purpose.

’ I have eaten’+ str(99)+’ burritos’  
# output: ’ I have eaten 99 burritos’