1. What is the relationship between def statements and lambda expressions ?

Ans: Both are used to perform particular task any no. of times just by calling. The difference is lambda function are anonymous and only single expressions can be defined.

2. What is the benefit of lambda?

Ans: Lambda functions are anonymous and used for short evaluations.

3. Compare and contrast map, filter, and reduce.

Ans: Map() : Map function takes function and list as arguments, a new list is returned which contains all the function modified items returned by that function for each item .

Filter(): Filter function takes function and list as arguments, it is used to filter out all the elements of a sequence “sequence”, for which the function returns True.

Reduce(): Reduce function takes function and list as arguments, the function is called with a lambda function and an iterable and a new reduced result is returned.

4. What are function annotations, and how are they used?

Ans: Function annotations are arbitrary python expressions that are associated with various part of functions. These expressions are evaluated at compile time and have no life in python’s runtime environment. Python does not attach any meaning to these annotations.

Usage: def function\_name(a : expression) -> expression: (this is return type)

5. What are recursive functions, and how are they used?

Ans: Recursion is a process in which a function calls itself directly or indirectly.Such functions are called as recursive functions.

Usage Eg: def recursive\_fibonacci(n):

    if n <= 1:

        return n

    else:

        return(recursive\_fibonacci(n-1) + recursive\_fibonacci(n-2))

6. What are some general design guidelines for coding functions?

Ans: Always use lower case with underscores for naming functions.

Use 4-space indentation instead of tab.

Using doc strings to explain functions.

7. Name three or more ways that functions can communicate results to a caller.

Ans: In non-fruitful type functions once function is called it performs some actions(results) and returns none.

In fruitful type functions once the function is called it returns a value or an result of expressions.

The returned value can be stored in variable or directly printed.