Q1. What are the benefits of the built-in array package, if any?

Ans : Functions of Array

* Get the Type Code. Since the type code is very important to an array, which determined what kind of elements that the array can have. ...
* Get Size of Array Item. ...
* Count the Number of Occurrences. ...
* Append and Extend. ...
* Manipulating the Index. ...
* Array to List.

Q2. What are some of the array package's limitations?

Ans : An array which is formed will be homogeneous. That is, in an integer array only integer values can be stored, while in a float array only floating value and character array can have only characters. Thus, no array can have values of two data types.

Q3. Describe the main differences between the array and numpy packages.

Ans : NumPy is the fundamental package for scientific computing in Python. Numpy arrays facilitate advanced mathematical and other types of operations on large numbers of data. Typically, such operations are executed more efficiently and with less code than is possible using Python's built-in sequences.

Q4. Explain the distinctions between the empty, ones, and zeros functions.

Ans : From the documentation: empty, unlike zeros, does not set the array values to zero, and may therefore be marginally faster. On the other hand, it requires the user to manually set all the values in the array, and should be used with caution.

Q5. In the fromfunction function, which is used to construct new arrays, what is the role of the callable argument?

Ans : fromfunction() function construct an array by executing a function over each coordinate and the resulting array, therefore, has a value fn(x, y, z) at coordinate (x, y, z). Parameters : function : [callable] The function is called with N parameters, where N is the rank of shape.

Q6. What happens when a numpy array is combined with a single-value operand (a scalar, such as an int or a floating-point value) through addition, as in the expression A + n?

Q7. Can array-to-scalar operations use combined operation-assign operators (such as += or \*=)? What is the outcome?

Ans : There are two reasons to use the assignment operators over the combination of a regular assignment and the binary operation. First, using the assignment

Q8. Does a numpy array contain fixed-length strings? What happens if you allocate a longer string to one of these arrays?

Ans :  NumPy arrays have a fixed size at creation, unlike Python lists (which can grow dynamically).

Once set, it will only be able to store new string having length not more than the maximum length at the time of the creation. If we try to

Q9. What happens when you combine two numpy arrays using an operation like addition (+) or multiplication (\*)? What are the conditions for combining two numpy arrays?

Ans : It returns a numpy array of the same shape with values resulting from multiplying values in each array elementwise. Note that both the arrays need to have the same dimensions.

Q10. What is the best way to use a Boolean array to mask another array?

Ans : Steps Required

1. Import the library.
2. Create a function for masking.
3. Masking can be done by following two approaches:- ...
4. Then return the masked from the function.
5. Now create the main function.
6. Create two arrays one for masking another.

Q11. What are three different ways to get the standard deviation of a wide collection of data using both standard Python and its packages? Sort the three of them by how quickly they execute.

12. What is the dimensionality of a Boolean mask-generated array?

Ans : What is returned is a one-dimensional array filled with all the values that meet this condition; in other words, all the values in positions at which the mask array is True .