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

Get the Type Code. ...

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?

An array which is formed will be homogeneous. ...

While declaring an array, passing size of an array is compulsory, and the size must be a constant. ...

Shifting is required for insertion or deletion of elements in an array.

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

**Array are by default Homogeneous, which means data inside an array must be of the same Datatype**. (Note you can also create a structured array in python). Element wise operation is possible. Numpy array has the various function, methods, and variables, to ease our task of matrix computation

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

**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. Return a new array setting values to zero.

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

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?

If such happens then each element in the array will be added with the scalar n

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

Yes += or \*= can be used according to output. If+= is used then it will the sum of all the elements in the array and with \*= is used then it will give the multiplication of all the arrays.

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

**import** numpy as np

country **=** np.array(['USA', 'Japan', 'UK', '', 'India', 'China'])

print(country)

country[country **==** ''] = 'New Zealand'

print(country)

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?

When you combine two numpy arrays with + or \* operators, one must make sure that the elements inside the arrays are numerical values , If it is so then, the array will do arithmetic operations according to our convenience

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

 boolean array can be created manually by using dtype=bool when creating the array. Values other than 0 , None , False or empty strings are considered True. Alternatively, numpy automatically creates a boolean array when comparisons are made between arrays and scalars or between arrays of the same shape.

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.

Use statistics which contains stddev() function.

Use the NumPy std() method

Use the NumPy var() method and then take the square root of the variance

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

It depends on the input given to the array. If it is just one list then the dimension is 1 , if it is just a integer or string just dimension is 0. As the list under list increase dimensionality increases.