Output

Q1.

main.py

```
import numpy as np
Z = np.array([10,12,13,14,15])
nz = 5
Z0 = np.zeros(len(Z) + (len(Z)-1)*(nz))
Z0[::nz+1] = Z
print(Z0)
```

Console Shell

```
[10.  0.  0.  0.  0.  0. 12.  0.  0.  0.  0.  0. 13.  0.  0.  0.  0.  0.
 14.  0.  0.  0.  0.  0. 15.]
```

Q2.

main.py

```
import numpy as np
x = np.random.randint(0,2,6)
print("First array:")
print(x)
y = np.random.randint(0,2,6)
print("Second array:")
print(y)
print("Test above two arrays are equal or not!")
array_equal = np.allclose(x, y)
print(array_equal)
```

Console Shell

```
First array:
[0 0 0 1 1 0]
Second array:
[1 0 0 0 1 0]
Test above two arrays are equal or not!
False
```

Q3.

main.py

```
import numpy  as np
print(0 * np.nan)
print(np.nan != np.nan)
print(np.inf > np.nan)
print(np.nan - np.nan)
print(0.3 == 3 * 0.1)

```

Console Shell

```
nan
True
False
nan
False
```

Q4.

main.py

```
import pandas as pd
ser = pd.Series(['amrita', 'school', 'of', 'engineering',
'chennai', 'campus'])
NewSeries = ser.str.title()
print(NewSeries)

```

Console Shell

```
0         Amrita
1         School
2             Of
3    Engineering
4        Chennai
5         Campus
dtype: object
```

Q5.1) addition of 2 numPy arrays

main.py

```
import numpy as np

arr1 = np.array([5, 2, 7,1,3])
arr2 = np.array([4, 7, 2,8,6])

print ("1st array   : ", arr1)
print ("2nd array   : ", arr2)

out_arr = np.add(arr1, arr2)
print ("added array : ", out_arr)
```

Console Shell

```
1st array   :  [5 2 7 1 3]
2nd array   :  [4 7 2 8 6]
added array :  [9 9 9 9 9]
```

Q5.4) Array datatype conversion

main.py

```
import numpy as np
print('Array data type conversion :-\n')
array = np.array([9.2, 5.6])
print(f'actuall data type {array.dtype}')
array = array.astype(np.int64)
print(f'After changing data type {array.dtype}')

```

Console Shell

```
Array data type conversion :-

actuall data type float64
After changing data type int64
```