CT-3

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Q21 b)

i). List in python are similar to arrays but they can store any type of elements in them. they are mutable. List in python are written as values seperated by commas enclosed within square brackets.

Some list functions are

- append() -> it adds the values in the end of list
- pop() -> it removes the value given by user from the list

- Tuple in python are similar to list but they are immutable which means we cannot change value once the tuple is created we add or remove values Tuple in python are written as values seperated by commas enclosed with parathensis [()].

Some tuple functions are:

tuple() -> Create a tuple from given values.

- pop() -> remove the value given by user from the tuple.

- Set in python is created as values seperated by commas enclosed with curly brackets. sets are mutable but it can only store immutable object in it. It is an unordered collection of elements. It has no duplicate elements

Some set functions are:

- add() -> it adds values given by user into sets.
- discard() -> it checks and removes the value given by user in the set.

Q-1
b)

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(ii)

```
from maths import factorial as fac
n= int(input("Number of row want to print in Pascal's triangle"))
for x in range(n):
    for y in range (n-x+1):
        print(end=" ")

    for z in range (x+1):
        print(fac(x)//(fac(z)*fac(x-z)), end=" ")
    print()
```

I/P

Number of row want to print in Pascals triangle 4

O/P

```
    1
   1 1
  1 2 1
 1 3 3 1
```

Q2 a)

Numpy

It is the fundamental library of python used to perform data analysis scientific computing. It provides multi dimensional arrays. Indexing in Numpy is very fast. Main tool in Numpy is arrays. Arrays in python are more memory efficient as we can assign memory for each array and it consumes less memory than lists and dataframes in pandas

Pandas.

It is an open source library in python, This used to perform data analysis in python. Pandas provides only 2 dimensional table. Pandas is built using Numpy. Indexing in Pandas is slower than in Numpy.

Q22 a)

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(ii) import pandas as pd.

1) ~~X = [None, 1.01, 4,~~

```
X = [[None, 2, 6.7, 2.34],
     [1.01, 8.66, 0.45, 13.0],
     [4, 10, 22, 17 ],
     [1.0, 2.1, 2.1, None ]]

df = pd.Dataframe (X, columns = ['A', 'B', 'C', 'D'])
print (df)
```

2) ~~df.iloc[[0][0]) =~~

~~df = X~~

```
X = int(input("Enter a Number for Null space"))
Y = int (input (" Enter a Number for Null space "))

df.iloc [[0][0]) = X
df. iloc [[0][0]) = Y
print (df)
```

3)

```
S = df. sum (axis = 1)
print (s) .
```