Q) Why to learn DSA?

    1. Raise level of programming
    2. Efficient Programming
    3. Able to solve complex problems
    4. Campus Placement
    5. A Grade Company Placements.

Q) Importance of Structuring Data?

    Eg :- Dictionary. Book, Maps,

Q) What is a Data Structure?

Data structure is a particular way of storing of organizing data in a computer so that it can be used efficiently.

Q) Classification of Data Structure.

① Linear DS

    Array; Dynamic, array; linked list; stack; queue; deque etc.

② Non- linear DS

    BST, AVL, B. Tree, B+tree, graph etc.

Algorithm:-

An algorithm is the step by step, linguistic representation of logic to solve a given problem.

Python to be known

- built - in - types
- control statements
- functions
- classes and objects
- __ init__ ()
- Types of variables and functions in class.

 # Array & List

Array:- collection of similar elements.

Agar sare integer values ho hal But should belong to same category to make an array.

Array is not a builtin data structure so need to be imported.

⊕ Creating Array:-

from array import *
a1 = array (type code, [, elements])

type code	C type
'b'	signed integer
'B'	unsigned integer
'u'	unicode character
'h'	signed integer
'H'	unsigned integer
'i'	signed integer
'I'	unsigned integer
'l'	signed integer
'L'	unsigned integer
'q'	signed integer
'Q'	unsigned integer
'f'	floating point
'd'	floating point

Array methods :-

append()
count()
extend()
from list()
index()
insert()

pop()
remove()
reverse()
to list()

Teacher's Signature.....................

List

→ list is a class
→ list is mutable
→ list elements are indexed
→ list is an iterable
→ list can grow (dynamic arrays)
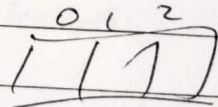→ list can contain different type elements

Array

→ collection of same type elements.
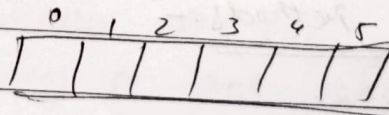→ fixed size
→ indexed

0	1	2	3	4
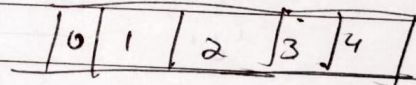
size = 5

Dynamic Array

→ collection of same type elements
→ resizable
→ indexed

0 1 2
| | 7 | |

size = 3

0 1 2 3 4 5
| | | | | | |

size = 6

Creating list

```
l1 = [10, 20, 30]
l2 = []
l3 = [10, 5.7, 'abc']
```

Methods of list

```
append ()
clear ()
count ()
extend ()
index ()
insert ()
pop ()
remove ()
sort ()
reverse ()
```

NumPy

```
import numpy as np

a = np. array ([1, 2, 3])
print (a)


b = np. array ([[1, 2, 3], [10, 20, 30]])
```
↑ 2D array.

compare array of max 3 loo beggg

```
c = np. array ([[1,2, 3], [10, 20]])
print (c)
```

↱ pica is array
with two list type
elements.