

CBSE Paper 2023

7. Fill in the blank. **1**

_____ function is used to arrange the elements of a list in ascending order.

- (a) `sort()` (b) `arrange()`
(c) `ascending()` (d) `asort()`

15. Which function returns the sum of all elements of a list ? **1**

- (a) `count()` (b) `sum()`
(c) `total()` (d) `add()`

19. Atharva is a Python programmer working on a program to find and return the maximum value from the list. The code written below has syntactical errors. Rewrite the correct code and underline the corrections made. **2**

```
def max_num (L) :  
    max=L(0)  
    for a in L :  
        if a > max  
            max=a  
    return max
```

21. (a) Given is a Python list declaration : **1**

`Listofnames=["Aman", "Ankit", "Ashish", "Rajan", "Rajat"]`

Write the output of :

```
print (Listofnames [-1:-4:-1])
```

(b) Consider the following tuple declaration : **1**

`tupl=(10,20,30,(10,20,30),40)`

Write the output of :

```
print(tupl.index(20))
```

30. (a) A list contains following record of customer:

[Customer_name, Room Type]

Write the following user defined functions to perform given operations on the stack named 'Hotel' :

- (i) Push_Cust() – To Push customers' names of those customers who are staying in 'Delux' Room Type.
- (ii) Pop_Cust() – To Pop the names of customers from the stack and display them. Also, display "Underflow" when there are no customers in the stack.

For example :

If the lists with customer details are as follows :

["Siddharth", "Delux"]

["Rahul", "Standard"]

["Jerry", "Delux"]

The stack should contain

Jerry

Siddharth

The output should be:

Jerry

Siddharth

Underflow

OR

(b) Write a function in Python, Push (Vehicle) where, Vehicle is a dictionary containing details of vehicles – {Car_Name: Maker}.

The function should push the name of car manufactured by 'TATA' (including all the possible cases like Tata, TaTa, etc.) to the stack. **3**

For example:

If the dictionary contains the following data:

Vehicle={"Santro":"Hyundai", "Nexon":"TATA", "Safari":"Tata"}

The stack should contain

Safari

Nexon

CBSE Paper 2022

1. “Stack is a linear data structure which follows a particular order in which the operations are performed.” 2

What is the order in which the operations are performed in a Stack ?

Name the List method/function available in Python which is used to remove the last element from a list implemented stack.

Also write an example using Python statements for removing the last element of the list.

8. • Write the definition of a user defined function **PushNV(N)** which accepts a list of strings in the parameter **N** and **pushes** all strings which have no vowels present in it, into a list named **NoVowel**. 3
- Write a program in Python to input 5 words and **push** them one by one into a list named **All**.

The program should then use the function **PushNV()** to create a stack of words in the list **NoVowel** so that it stores only those words which do not have any vowel present in it, from the list **All**. Thereafter, **pop** each word from the list **NoVowel** and display the popped word. When the stack is empty display the message **"EmptyStack"**.

For example :

If the Words accepted and pushed into the list **All** are

```
['DRY', 'LIKE', 'RHYTHM', 'WORK', 'GYM']
```

Then the stack **NoVowel** should store

```
['DRY', 'RHYTHM', 'GYM']
```

And the output should be displayed as

```
GYM RHYTHM DRY EmptyStack
```

OR

- Write the definition of a user defined function **Push3_5(N)** which accepts a list of integers in a parameter **N** and **pushes** all those integers which are **divisible by 3 or divisible by 5** from the list **N** into a list named **Only3_5**.
- Write a program in Python to input 5 integers into a list named **NUM**.

The program should then use the function **Push 3_5()** to create the stack of the list **Only3_5**. Thereafter **pop** each integer from the list **Only3_5** and display the popped value. When the list is empty, display the message "**StackEmpty**".

For example :

If the integers input into the list **NUM** are :

```
[10, 6, 14, 18, 30]
```

Then the stack **Only3_5** should store

```
[10, 6, 18, 30]
```

And the output should be displayed as

```
30 18 6 10 StackEmpty
```

CBSE Paper 2021

34. Write the definition of a function **Sum3(L)** in Python, which accepts a list **L** of integers and displays the sum of all such integers from the list **L** which end with the digit **3**. 3

For example, if the list **L** is passed

```
[ 123, 10, 13, 15, 23]
```

then the function should display the sum of **123, 13, 23**, i.e. **159** as follows :

```
Sum of integers ending with digit 3 = 159
```

37. (a) Write the definition of a function **POP_PUSH(LPop, LPush, N)** in Python. The function should Pop out the last **N** elements of the list **LPop** and Push them into the list **LPush**. For example : 3

If the contents of the list **LPop** are **[10, 15, 20, 30]**

And value of **N** passed is **2**,

then the function should create the list **LPush** as **[30, 20]**

And the list **LPop** should now contain **[10, 15]**

NOTE : If the value of **N** is more than the number of elements present in **LPop**, then display the message **"Pop not possible"**.

OR

- (b) Write a function in Python **POPSTACK(L)** where **L** is a stack implemented by a list of numbers. The function returns the value deleted from the stack. 3

CBSE Paper 2020

- (i) Write a Recursive function in Python **RecsumNat (N)**, to return the sum of the first N natural numbers. For example, if N is 10 then the function should return $(1 + 2 + 3 + \dots + 10 = 55)$. 3

OR

Write a Recursive function in Python **Power (X,N)**, to return the result of X raised to the power N where X and N are non-negative integers. For example, if X is 5 and N is 3 then the function should return the result of $(5)^3$ i.e. **125**. 3

- (j) Write functions in Python for **PushS (List)** and for **PopS (List)** for performing Push and Pop operations with a stack of List containing integers. 4

OR

Write functions in Python for **InsertQ (Names)** and for **RemoveQ (Names)** for performing insertion and removal operations with a queue of List which contains names of students. 4

- (i) Write a Recursive function in Python **RecsumNat (N)**, to return the sum of the first N natural numbers. For example, if N is 10 then the function should return $(1 + 2 + 3 + \dots + 10 = 55)$. 3

OR

CBSE Paper 2019

3. (a) Consider the following randomly ordered numbers stored in a list :

106, 104, 106, 102, 105, 10

Show the content of list after the First, Second and Third pass of the selection sort method used for arranging in **ascending order**.

3

Note : Show the status of all the elements after each pass very clearly encircling the changes.

OR

- (a) Consider the following randomly ordered numbers stored in a list :

106, 104, 106, 102, 105, 107

Show the content of list after the First, Second and Third pass of the bubble sort method used for arranging in **descending order**.

3

Note : Show the status of all the elements after each pass very clearly encircling the changes.

- (b) Write definition of a method/function **AddOddEven(VALUEs)** to display sum of odd and even values separately from the list of VALUEs.

3

For example :

If the VALUEs contain [15, 26, 37, 10, 22, 13]

The function should display

Even Sum: 58

Odd Sum: 65

- (b) Write definition of a method/function **HowMany(ID,Val)** to count and display number of times the value of Val is present in the list ID. 3

For example :

If the ID contains [115,122,137,110,122,113] and Val contains 122

The function should display

122 found 2 Times

- (c) Write **QueueUp(Client)** and **QueueDel(Client)** methods/functions in Python to add a new Client and delete a Client from a List of Clients names, considering them to act as insert and delete operations of the Queue data structure. 4

OR

- (c) Write **PushOn(Book)** and **Pop(Book)** methods/functions in Python to add a new Book and delete a Book from a List of Book titles, considering them to act as push and pop operations of the Stack data structure. 4

- (d) Write a python method/function **Swapper(Numbers)** to swap the first half of the content of a list Numbers with second half of the content of list Numbers and display the swapped values. 2

Note : Assuming that the list has even number of values in it.

For example :

If the list Numbers contains

[35,67,89,23,12,45]

After swapping the list content should be displayed as

[23,12,45,35,67,89]

OR

- (d) Write a python method/function **Count3and7(N)** to find and display the count of all those numbers which are between 1 and N, which are either divisible by 3 or by 7. 2

For example :

If the value of N is 15

The sum should be displayed as

7

(as 3,6,7,9,12,14,15 in between 1 to 15 are either divisible by 3 or 7)

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CBSE Paper 2018

3. (a) Consider the following randomly ordered numbers stored in a list : 3
786, 234, 526, 132, 345, 467
Show the content of the list after the First, Second and Third pass of the bubble sort method used for arranging in **ascending order** ?
Note : Show the status of all the elements after each pass very clearly underlining the changes.
- (b) Write the definition of a method **ZeroEnding(SCORES)** to add all those values in the list of SCORES, which are ending with zero (0) and display the sum. 3
For example :
If the SCORES contain [200, 456, 300, 100, 234, 678]
The sum should be displayed as 600
- (c) Write AddClient(Client) and DeleteClient(Client) methods in Python to add a new Client and delete a Client from a List of Client Names, considering them to act as insert and delete operations of the queue data structure. 4
- (d) Write a definition of a method COUNTNOW(PLACES) to find and display those place names, in which there are more than 5 characters. 2
For example :
If the list PLACES contains
["DELHI", "LONDON", "PARIS", "NEW YORK", "DUBAI"]
The following should get displayed :
LONDON
NEW YORK
- (e) Evaluate the following Postfix notation of expression : 2
22, 11, /, 5, 10, *, +, 12, -

- (e) Evaluate the following Postfix expression, showing the stack contents : 2

$250, 45, 9, /, 5, +, 20, *, -$

OR

- (e) Convert the following Infix expression to its equivalent Postfix expression, showing the stack contents for each step of conversion : 2

$A + B * C ^ D - E$

CBSE Paper 2017

3. (a) What will be the status of the following list after the First, Second and Third pass of the bubble sort method used for arranging the following elements in **descending order** ? 3

Note : Show the status of all the elements after each pass very clearly underlining the changes.

152, 104, -100, 604, 190, 204

- (b) Write definition of a method **OddSum(NUMBERS)** to add those values in the list of NUMBERS, which are odd. 3
- (c) Write **Addnew(Book)** and **Remove(Book)** methods in Python to Add a new Book and Remove a Book from a List of Books, considering them to act as PUSH and POP operations of the data structure Stack. 4
- (d) Write definition of a Method **AFIND(CITIES)** to display all the city names from a list of CITIES, which are starting with alphabet A. 2

For example :

If the list CITIES contains

["AHMEDABAD", "CHENNAI", "NEW DELHI", "AMRITSAR", "AGRA"]

The following should get displayed

AHMEDABAD

AMRITSAR

AGRA

- (e) Evaluate the following Postfix notation of expression : 2

2, 3, *, 24, 2, 6, +, /, -

CBSE Paper 2016

3. (a) What will be the status of the following list after the First, Second and Third pass of the insertion sort method used for arranging the following elements in descending order? 3
22, 24, -64, 34, 80, 43
Note : Show the status of all the elements after each pass very clearly underlining the changes.
- (b) For a given list of values in descending order, write a method in python to search for a value with the help of Binary Search method. The method should return position of the value and should return -1 if the value not present in the list. 2
- (c) Write Insert(Place) and Delete(Place) methods in python to add Place and Remove Place considering them to act as Insert and Delete operations of the data structure Queue. 4
- (d) Write a method in python to find and display the prime numbers between 2 to N. Pass N as argument to the method. 3
- (e) Evaluate the following postfix notation of expression. Show status of stack after every operation. 2
22, 11, /, 14, 10, -, +, 5, -

CBSE Paper 2015

- (e) Write a method in python to display the elements of list thrice if it is a number and display the element terminated with '#' if it is not a number. 2

For example, if the content of list is as follows :

```
ThisList=['41','DROND','GIRIRAJ','13','ZARA']
```

The output should be

414141

DROND#

GIRIRAJ#

131313

ZARA#

3. (a) What will be the status of the following list after fourth pass of bubble sort and fourth pass of selection sort used for arranging the following elements in descending order ? **3**
14, 10, -12, 9, 15, 35
- (b) Write a method in python to search for a value in a given list (assuming that the elements in list are in ascending order) with the help of Binary Search method. The method should return -1 if the value not present else it should return position of the value present in the list. **2**
- (c) Write PUSH (Books) and POP (Books) methods in python to add Books and remove Books considering them to act as Push and Pop operations of Stack. **4**
- (d) Write a method in python to find and display the prime numbers between 2 to N. Pass N as argument to the method. **3**
- (e) Evaluate the following postfix notation of expression. Show status of stack after every operation. **2**
84, 62, -, 14, 3, *, +

