For Office use	Space for Digital Data

தமிழ் நாடு அரசு

தொழில்நுட்பக் கல்வித் துறை, சென்னை 600 025 – வாரியத் தேர்வுகள்

அடுத்தப் பக்கத்தில் கொடுக்கப்பட்டுள்ள குறிப்புகளை படிக்கவும் (Read the instructions given in the next page)

Q. No.	A	B	C	Q. No.	A	B	C	Q. No.	A	B	C	Q. No.	A	B	C
1.				9.				17.				25.			
2.				10.				18.				26.			
3.				11.				19.				27.			
4.				12.				20.				28.			
5.				13.				21.				29.			
6.				14.				22.				30.			
7.				15.				23.				31.			
8.				16.				24.				Total Marks			

For Revaluation

For Central Valuation

Q. No.	A	B	C	Q. No.	A	B	C	Q. No.	A	B	C	Q. No.	A	B	C
1.	3			9.	3			17.				25.			
2.	3			10.	3			18.				26.			
3.	3			11.	12			19.				27.			
4.	3			12.	12			20.				28.			
5.	3			13.		5+5		21.				29.			
6.	3			14.	2			22.				30.			
7.	3			15.		14						31.			
8.	3			16.								Total Marks		80	

24 56

591-1757-23506313

Question Paper Code No. 1 7 5 7

வினாத்தாளின் குறியீட்டு எண்

ணிக்கை 28

Date of Examination : 12/11/2024 தேர்வு நாள்

Subject Name : python programming பாடத்தின் பெயர்

There are two types in this operator. They are

⇒ Binary operator

⇒ Unary operator

Binary operator

Binary Operator need two operand to perform the operation. The following table show the operators in Python.

தேர்வாளர்களுக்கான அறிவுரைகள்
INSTRUCTIONS TO CANDIDATES

1. விடைத்தாள் மாற்றிப் பெறுவதற்கு.
   Get the answer book replaced, if
   - விடைத்தாள் சரியாக சேர்ந்து பின் செய்யப்படாமல் இருந்தால்.
   - it is not stapled properly
   - விடைத்தாள் புத்தகப் பக்கங்களின் வரிசை எண் விடுபட்டிருந்தாலோ அல்லது வரிசையாக இல்லாமலிருந்தாலோ (மொத்தம் 30 பக்கங்கள்).
   - the page numbers are missing or not in order (there shall be 30 pages continuously numbered)
   - தலைப்பு பக்கத்தில் விடைத்தாள் புத்தகத்தின் கீழ்பகுதியில் வரிசை எண் அச்சிடப்படாமலிருந்தால்.
   - the serial number of the answer book is not printed at the bottom of the title page
2. உங்களுடைய பதிவு எண்ணையும், பெயரையும் அதற்காக கொடுக்கப்பட்டுள்ள தலைப்பு பக்கத்தின் கீழ்பகுதியில் மட்டும் எழுதவும்; அதைத் தவிர்த்து பதிவு எண், பெயர் ஆகியவற்றை விடைத்தாளில் மற்றப் பக்கங்களில் எழுதக்கூடாது. எந்தவிதமான அடையாளக் குறியீட்டையும் விடைத்தாளில் எழுதக்கூடாது.
   You are prohibited from writing your REGISTER NUMBER or NAME in any part of the answer book, other than the space provided at the bottom of the title page. You are prohibited from writing or leaving any distinguishing marks so as to identify your answer book.
3. தலைப்புப் பக்கத்தில் கொடுக்கப்பட்டுள்ள அதற்குரிய கட்டங்களில் விவரங்களை எழுதவும்.
   Fill up all the particulars, in the relevant boxes, in the title page.
4. கேள்விகளுக்கு பதில் எழுதும் போது விடைத்தாளில் இரண்டு பக்கங்களையும் பயன்படுத்த வேண்டும். பக்கங்களில் தொடர்ந்து விடை எழுதாமல் வெற்றிடம் விடக் கூடாது.
   Use both sides of the paper for answering questions, without leaving spaces/ lines in between.
5. இந்த விடைத்தாள் புத்தகம் போதுமான பக்கங்களை கொண்டிருக்கிறது. இதைத் தவிர கூடுதல் விடைத்தாள் அளிக்கப்படமாட்டாது.
   This answer book contains sufficient pages and no additional sheets will be issued.
6. கேள்விக்கு விடையளிக்கும் முன்பு வினாத்தாள் எண், வருடம், மாதம், காலம் இவைகளை சரிபார்க்கவும்.
   Check the Code Number, Month and year of Examination, Duration etc., in the question paper before answering the questions.
7. கொடுக்கப்பட்டுள்ள வரைப்படத்தாள் / கிராப் ஷுட் தவிர வேறு எந்த விடைத்தாளையும் சேர்க்க கூடாது. விடைத்தாள் புத்தகத்திலிருந்து எந்த பக்கத்தையும் கிழிக்கக் கூடாது.
   No extra sheet is to be attached except the drawing/graph sheets supplied and no sheet is to be teared from the answer book.
8. கைபேசி, துண்டுக் காகிதம் மற்றும் தடை செய்யப்பட்ட இதர பொருட்கள் வைத்திருத்தல், தேர்வுக்கு எதிரான முறைகேடுகளில் ஈடுபடுதல் அனைத்தும் தேர்வு வாரிய விதிகளின்படி தண்டனைக்குரிய குற்றமாகும்.
   POSSESSION OF ANY PROHIBITED MATERIAL, CELL PHONE, BITS OF PAPERS, etc., AND INVOLVEMENT IN MALPRACTICE OF ANY NATURE SHALL BE PUNISHABLE AS PER BOARD'S RULES.

Part-B

11) a) Operators

Operators are defined as a symbol that are used to perform the mathematical operations on the operands. The following are important operators in python. They are

* Arithmetic operator
* Relational operator
* Logical operator
* Short-hand assignment operator
* Bitwise operator
* Membership operator
* Identity operator.

b) Arithmetic operator

Arithmetic operator are used to do arithmetic operations on the operand. There are two types in this operator. They are

⇒ Binary operator
⇒ Unary operator

Binary operator

Binary Operator need two operand to perform the operation. The following table show the operators in python.

Operator	Operation	Example
+	addition	a = 5+2
-	Subtraction	a = 6-3
*	Multiplication	b = 2*5
/	division	b = 10/2
%	module division	c = 10/2
**	Exponentation	c = 2**3
//	Floor division	c = 20/2

Unary operator

Unary operator need only one operand to perform operation

Operator	operation	Example
-	Unary minus	a = -5

ii) Relational operator

Relational operator are used to find the relationship between the two operand. It need two operands to perform operation The following table shows the operators in relational operator

Operator	Operation	Example
<	less than	A < B
>	greater than	B > C

<=	less than or equal to	A <= B
>=	greater than or equal to	A >= B
==	equal to	A == B
!=	not equal to	A != B

iii) Logical operator

Logical operator is used to find the relationship between two relational operator. The following table shows the operator in logical operator.

Operator	Operation	Example
and	Logical AND	a = 20 b = 50 a < 30 and b < 100 True
or	Logical OR	a < 30 or b < 100 True
not	Logical NOT	not (a < 30 and b < 100) False

iv) Shorthand assignment operator.

Short-hand assignment operator is used to simplify the coding and perform the operations on the operand. The following table shows the operator of this operator.

Operator	Example
+=	b += 5
-=	c -= 10
*=	d *= 2
/=	a /= 2
%=	a %= 5

v Bitwise operator

Bitwise operator is used to do bit by bit operations on the bitwise operands

Note:

* The decimal numbers converted to binary numbers
* And then perform the bitwise operations on the bit patterns.

The general form is

bitpattern1 operator bitpattern2

Operator	Operation
&	Bitwise AND
|	Bitwise OR
~	Bitwise One's complement
^	Bitwise EX-OR
>>	Bitwise Right shift
<<	Bitwise left shift

vi) Membership operator

Membership Operator is used to find whether operand present or not. The membership operator are given below.

Operator	Example
is	x=10, y=10
	x is y
	True
is not	x is not y
	False

vii) Identity operator

Identity operator is used to find whether the operand present or not The identy operator are given below in table.

Operator	Example
in	x = (1, 2, 3, 4)
	2 in x
	True
not in	5 not in x
	True.

12) a) Decision making statements

Decision making statements are used to skip or execute a group of statements. The following are decision making statements in python. They are.

* if statement
* if ... else statement
* if ... elif statement

* if statement

if statement is used to execute a group of statement. The general form is

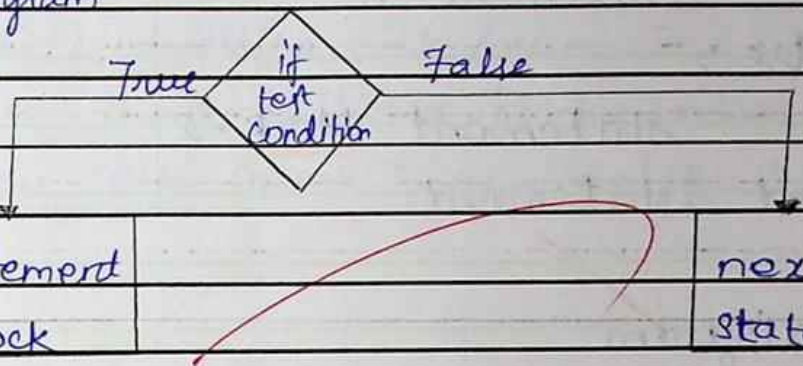
Syntax

```
if test condition:
        Statement-1
        :
        Statement-n
next statement.
```

Indent diagram

```
if test condition:
<- 4spaces -> statement
next statement
```

Flow diagram



If the test condition is true the control transfered to statement block. else the control transfered to the next statement.

Example.

```
mark = 70
grade = A
if mark == 70:
    print ('grade = A')
print ('program executed successfully')
```

ii) if ... else statement

if ... else statement is used to execute a group of statement if condition true exeute if block else else block.

The general form is.

Syntax.

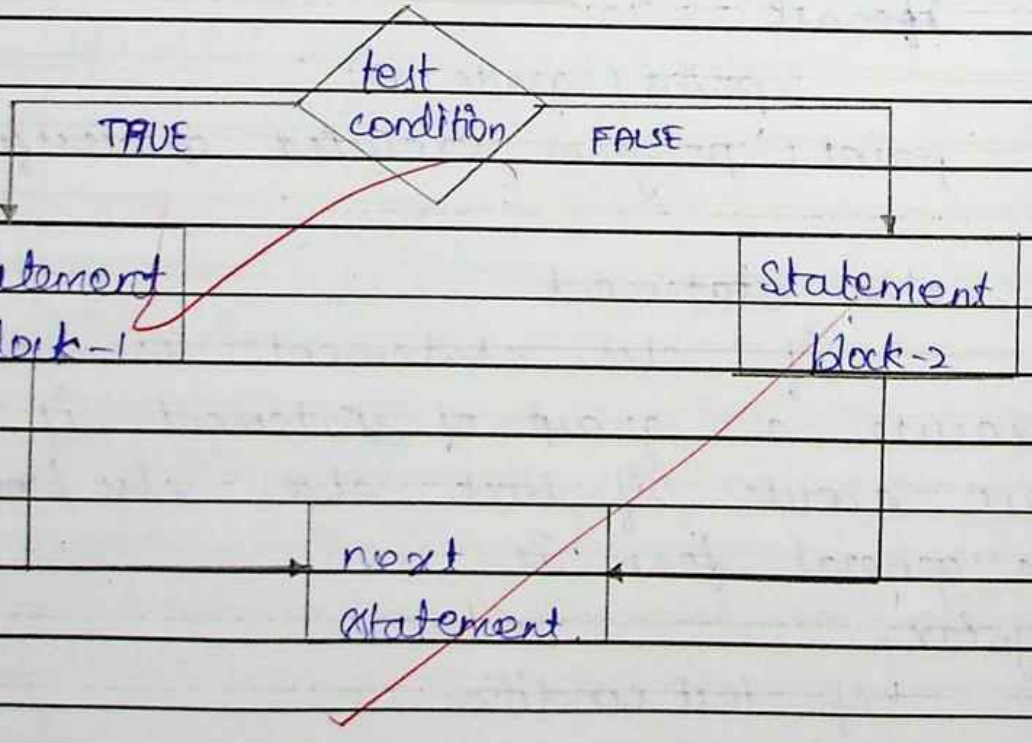
```
if test condition:
    statement-1
```

```
        Statement-n
    else:
        statement block-2
    next statement
```

Ident diagram

```
if test condion:
    statement block-1
else:
    Statement Block-2
next statement
```

Flow diagram



The control checks the test condition if the test condition is true it execute the if blak or trued suit or block else it execute the else block or False suit or blak.

Example.

```
A=10, B=20
if A < B:
    print ('Maximum is B')
else:
    print ('Maximum is A')
print ('program executed successfully')
```

if ... elif statement.

if ... elif statement is used to execute a group of statement that will match with test condition. other statements skiped. The general form is.

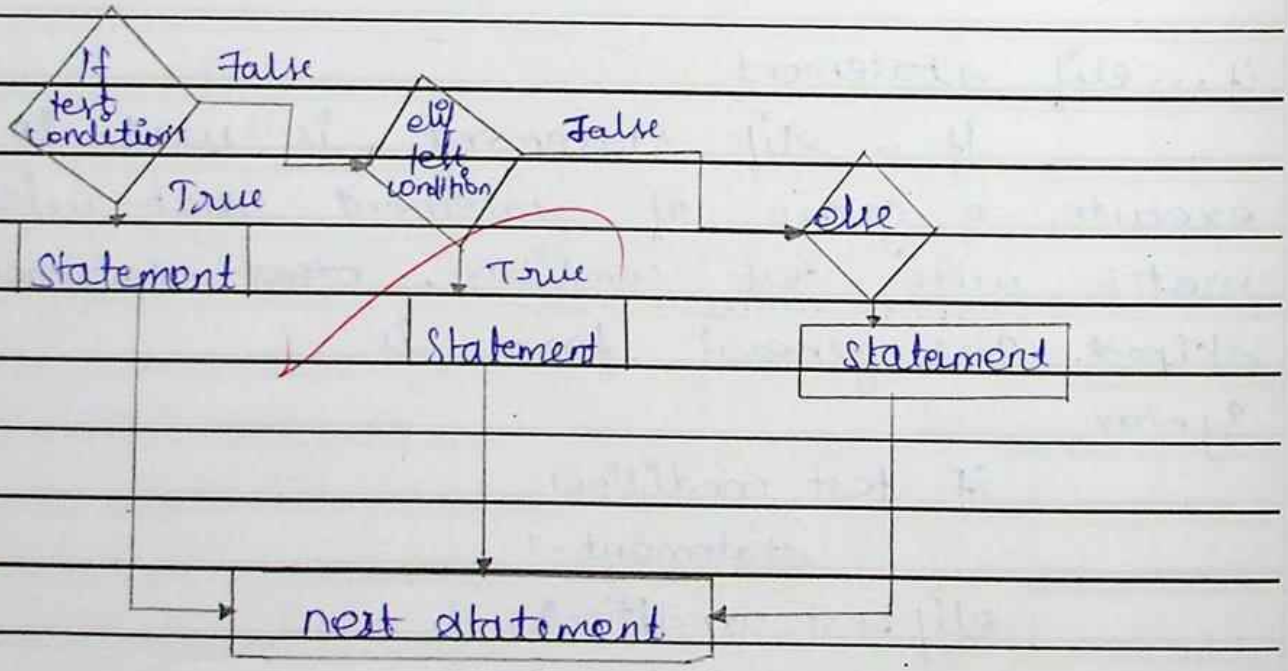
Syntax.

```
if test condition1:
        statement-1
elif test condition2:
        statement-2
    :
else:
        Statement
next statement.
```

identation diagram

```
if test condition 1:
    statement 1
elif test condition 2:
    statement 2
    :
else :
    statement
next statement
```

Flow diagram



The control checks the condition first. Then find which statement is match to the to condition that statement block will be

executed, Otherwise the else block statement will execute and then go to the next statement the control.

Example:

```
n = int (input ("Enter the value of n:"))
if n == 0:
        print ("Number is zero")
elif n < = 0:
        print (" Number is negative ")
elif n >= 0:
        print (" Number is positive ")
else:
        print (" Enter the integer value ")
print (" program executed successfully")
```

13) b) i) Creation of List

The ordered collection of object, enclosed within the [] brackets is called list The creation of list is given below.

Creating a List and Accessing a List

consider the following as a list.

L = [5, 10, 'good', 'bad', '7.9']

	5	10	good	bad	7.9
+ve index	0	1	2	3	4
-ve index	-5	-4	-3	-2	-1

memory representation of the list is given above.

where

0 - 4 - positive index

-1 - -5 - negative index

The index are used to access and store the data of variable of object in the list. The 0 to 4 positive index are used to access the data from left to right. The -1 to -5 Negative index are used to access the data from right to left

Accessing a list divided into two types They are

* Accessing a individual element
* Slicing a list

Accessing a individual element.

Accessing a individual element in list is given below. The general form is

Syntax

```
list variable [ index ]
```

where

list variable - name of the created list
index - integer value.

Example.

```
L = [1, 2, 3, 4]
print ( L[2] )
```

output : 3

Slicing a list.

Slicing a list is a process of taking a range of element in the list. The general form is

```
list variable [ start : stop ]
```

where

list variable - name of the created list.
start - optional. starting index of integer value
stop - optional: Ending index of integer value.

Example

```
L = [ 1, 2, 3, 4, 5, 6, 7]
print (L[0:2])
```

output : 1,2

13) b) ii) Copying the list.

Copying the list is used to take copy of the list from existing list that creates a new listname. The general form is

```
variable = copy( list variable)
```

where

variable - user defined name. The copied list will be stored in this variable

copy() - method of list

list variable - to copying list variable name. It will be already existing list.

The above syntax is used to copy the list from using assignment operator.

copy() method copy the list and then it stored the copied list in the left hand side variable.

Example.

```
L = [1, 2, 'good', 'girl', 'bad', 7.5]
n = copy(L)
print('The copied list is:', n)
```

The output is:

```
The copied list is:
[1, 2, 'good', 'girl', 'bad', 7.5]
```

14) a) program to return their sum using function

```
def sum(a,b):
    c = a+b
    return(c)
# main function.
n1 = int(input('Enter the first value:'))
n2 = int(input('Enter the second value:'))
z = sum(n1,n2)
Print('The sum of {} and {} is {}'.format(n1,n2,z))
```

15) b) Directory methods.

Directory methods are used to perform various operation on the file and directory. Directory have many methods here are some of the methods are discused and detaily explained about the directory method. The following are the directory methods given below. They are

* getcwd()
* mkdir()
* chdir()
* rmdir()
* listdir()
* rename()

i) getcwd()

This method getcwd() is used to get the current working directory. The general form is

```
import os
os.getcwd()
```

Directory name

where

import - Keyword

OS - module name

Example

```
import OS
OS.getcwd()
```

The output : D:/Documents.

ii) mkdir()

This mkdir() method is used to create a new directory in the given path. if the path is not given then the directory created on the current working directory The general form is.

```
import OS
OS.mkdir(directory name)
```

where

import - keyword

OS - module name

directory name - name given to new directory

Example:

```
import os
os.mkdir(E:/downloads)
print(`directory created successfully')
```

Output is

Directory created successfully.

iii) chdir()

This chdir() method is used to change the current working directory name to new name. if the path is given then that directory name will be changed. The general form is.

```
import os
os.chdir(existing directory location, new
                                directory name.
```

where

import - keyword

os - module

existing directory location - name to be change directory location.

new directory name - user defined name to be

change to the directory.

Example.

```
import os
os.chdir('D:/documents, downloads')
print('Directory name was changed')
```

Output is

Directory name was changed.

iv) rmdir()

This rmdir() method is used to remove the empty directory. If the file is exist in the directory it will generate an error message. or occurs any error. The general form is

```
import os
os.rmdir(directory name)
```

where

import - keyword
os - module
directoryname - directory to be removed.

Example.

```
import os
os.remove('E:/downloads')
print('Removed successfully')
```

Output is :

Removed Successfully.

v) listdir()

This listdir() method is used to list all the files in current working directory. If the path is specified then the specified directory content will be displayed. The general form is

```
import os
os.listdir(directory location)
```

where

import - keyword
os - module.

Example

```
import os
os.listdir('D:/downloads')
```

vi) rename()

This method is used to change name of the directory. The general form is

```
import os
os.rename(directory location, new name)
```

where

import - keyword
os - module
directory location - existing directory
new name - name to be changed.

Example:

```
import os
os.rename(abc, xyz)
print('File name is changed')
```

Output is:

File name is changed

Part - A

1. **Features of Python**

* Easy to learn
* Expressive language
* Free and open source
* Object oriented language
* Extensible & mixable
* Graphical user Interface support (GUI)
* Intrepreted language
* Portable
* Dynamically typed language.
* Large standard library
* Easy to use
* Developer productivity
* Robust.

2) **Expression**

Expression is defined as a condition, given in relational & logical operators are used to create expression. Using relational and logical operators and the operands & values creates a Expression Group of operands and operators is called Expression.

Example

i) a = 10

ii) b = 20

iii) if a < b

These are all the expression in python.

3)	break	Continue
i	Break statement is used to exit from the loop while the test condition is true.	Continue statement is used to transfer the control to beginning of the loop.
ii	Syntax: break	Syntax: Continue
iii)	If the test condition is true the statement block will be executed and then the control transfer to next statement.	If the test condition is true the statements are executed the control can come to continue then the control transfer to the beginning of the loop

4) Advantages of functions.

* The user can create a program in his own way of thinking
* Functions are used to simplify the program and to understand easily
* Some built-in functions are very useful to create or write own program.
* Because of built-in function are so less in python .. so the programmer can easily understand the language.

5) Immutable property.

Once the object is created then it cannot be changed that is called immutable property. The following are two types in this property.

* mutable property
* immutable property

mutable property is defined once the object is created then that can be changed

immutable property is defined as

once the object is created then that can not be changed.

6) Pop Operator

* pop operator is used to remove last element in the sequence such as list, string, tuple, dictionary, etc.

* The general form for pop operator is

```
functionname. pop [index]
```

where

functionname - name of the function such as list, tuple, String, etc.

index - optional

* These are the use of pop operator.

7) Accessing a value in tuple

Accessing a value in tuple is divided into two types. they are

* Accessing a value in tuple
* Slicing a tuple.

Accessing a value in tuple

tuple variable ['index]

where

tuple variable - name of tuple
index - integer value.

Ex:

```
p = (1, 2, 3, A, B, C)
print (p[3])
```

O/p ⇒ A

Slicing a tuple

Slicing is a process of taking a range of element in tuple

tuple variable [start: stop]

Example

```
t = (1, 2, A, B, 3, 4, C, D)
print (t[1:4])
```

O/P ⇒ 2, A, B

8) Dictionary

Dictionary is a collection of unordered collection of object is called ditionary. Objects should be a key, value

pair. The objects are enclosed within the curly braces {}. Objects are seperated by comma.

Syntax:

```
dictionary name = { list of key,value pair }
```

Example:

```
d={}  # empty dictionary
d= { 1:100, 2:200, 3:300}
```

a) Renaming operation.

Rename() this method is used to change the file or directory name. If the path is given or sperified then the name changed to given directory location.

Syntax.

```
import OS
OS.rename(existing directory, new name)
```

Where

import - keyword

os - module

existing directory - name should be change.

new name - new name to the existing file

10) Exception

Exception is defined as an error in the program is called as Exception. Exception have three types. They are

* Syntax error
* Logical error
* Runtime error.

⇒ Syntax error is occur when the poor understanding of language.

⇒ Logical error is occur when the poor understanding of the problem

⇒ Runtime error is occur when the system keyboard, mouse, cpu have an trouble to give input.

No. of pages written in this Answer book - 28

13/2/25
Principal & Chief Coordinator
217- SSM Polytechnic College
Komarapalayam - 638 183.