Review of Python

Very Short Answer Type Questions (1 mark)

Question 1.
Name the Python Library modules which need to be imported to invoke the following functions:

1. load ()
2. pow () **[CBSE Delhi 2016]**

Answer:

1. pickle
2. math

Question 2.
Name the modules to which the following func-tions belong:

1. Uniform ()
2. fabs () **[CBSE SQP 2016]**

Answer:

1. random ()
2. math ()

Question 3.
Differentiate between the round() and floor() functions with the help of suitable example. **[CBSE Comptt. 2016]**

Answer:
The function round() is used to convert a fractional number into whole as the nearest next whereas the function floor() is used convert to the nearest lower whole number, e.g.,
round (5.8) = 6, round (4.1) = 5 and floor (6.9) = 6, floor (5.01) = 5

Short Answer Type Questions (2 marks)

Question 1.
Out of the following, find those identifiers, which cannot be used for naming Variables or functions in a Python program:
Total * Tax, While, Class, Switch, 3rd Row, finally, Column 31, Total. **[CBSE Outside**

Delhi-2016]

Answer:
Total * Tax, class, 3rd Row, finally

Question 2.
Name the Python Library modules which need to be imported to invoke the follwing functions :

1. sqrt()
2. dump() **(CBSE Outside Delhi-2016)**

Answer:

1. math
2. pickle

Question 3.
Out of the following, find the identifiers, which cannot be used for naming Variable or Functions in a Python program: **[CBSE Delhi 2016]**
_Cost, Price*Qty, float, switch, Address one, Delete, Number12, do

Answer:
Price *Qty, float, Address one, do

Question 4.
Out of the following find those identifiers, which can not be used for naming Variable or Functions in a Python Program :
Days * Rent, For, A_price, Grand Total, do, 2Clients, Participantl, My city

Answer:
Illegal variables or functions name are as below: Days * Rent, do, 2Clients, For and Grant Total Because of being either keyword or including space or operator or starting with integar.

Question 5.
Name the function / method required for **[CBSE SQP 2015]**

1. Finding second occurrence of m in madam.
2. get the position of an item in the list.

Answer:

1. find

2. index

Question 6.
Which string method is used to implement the following:

1. To count the number of characters in the string.
2. To change the first character of the string in capital letter.
3. To check whether given character is letter or a number.
4. To change lowercase to uppercase letter.
5. Change one character into another character. [CBSE TextBook]

Answer:

1. len(str)
2. str.capitalize()
3. ch.isalnum()
4. str.upper()
5. str.replace(old,new)

Question 7.
What is the difference between input() and raw_input()?

Answer:
raw_input() takes the input as a string whereas input() basically looks at what the user enters, and automatically determines the correct type. We use the inputQ function when you are expecting an integer from the end-user, and raw_input when you are expecting a string.

Question 8.
What are the two ways of output using print()?

Answer:
Ordinarily, each print statement produces one line of output. You can end the print statement with a trailing ' to combine the results of multiple print statements into a single line.

Question 9.
Why does the expression 2 + 3*4 result in the value 14 and not the value 24?

Answer:
Operator precedence rules* make the expression to be interpreted as 2 + (3*4) hence the result is 14.

Question 10.
How many times will Python execute the code inside the following while loop? You should answer the question without using the interpreter! Justify your answers.

```
i = 0
 while i < 0 and i > 2 :
 print "Hello ..."
 i = i+1
```

Answer:
0 times.

Question 11.
How many times will Python execute the code inside the following while loop?

```
i = 1
 while i < 10000 and i > 0 and 1:
 print " Hello ..."
 i = 2 * i
```

Answer:
14.

Question 12.
Convert the following for loop into while loop, for i in range (1,100):

```
if i % 4 == 2 :
 print i, "mod", 4 , "= 2"
```

Answer:

```
i=1
 while i < 100:
 if i % 4 == 2:
 print i, "mod", 4 , "= 2"
 i = i +1
```

Question 13.
Convert the following for loop into while loop.

```
for i in range(10):
 for j in range(i):
 print '$',
 print"
```

Answer:

```
i=0
 while i < 10:
 j=0
 while j < i:
 print '$'
 print"
```

Question 14.
Rewrite the following for loop into while loop: **[CBSE Text Book]**

```
for a in range(25,500,25):
 print a
```
Answer:

```
a=25
 while a < 500:
 print a
 a = a + 25
```

Question 15.
Rewrite the following for loop into while loop: **[CBSE Text Book]**

```
for a in range(90, 9, -9):
 print a
```
Answer:

```
a = 90
 while a > 9:
 print a
 a = a-9
```

Question 16.
Convert the following while loop into for loop:

```
i = 0
 while i < 100:
 if i % 2 == 0:
 print i, "is even"
 else:
 print i, "is odd"
 i = i + 1
```
Answer:

```
for i in range(100):
 if i % 2 == 0:
 print i, "is even"
 else :
 print i, "is odd"
```

Question 17.
Convert the following while loop into for loop

```
char = ""
 print "Press Tab Enter to stop ..."
 iteration = 0
 while not char == "\t" and not iteration > 99:
 print "Continue?"
 char = raw_input()
 iteration+ = 1
```

Answer:

```
char = ""
 print "Press Tab Enter to stop ..."
 for iteration in range(99):
 if not char == '\t':
 print "Continue?"
 char = raw_input()
```

Question 18.
Rewrite the following while loop into for loop:

```
i = 10
 while i<250:
 print i
 i = i+50
```

Answer:

```
for i in range(10, 250, 50):
 print i
```

Question 19.
Rewrite the following while loop into for loop:

```
i=88
 while(i>=8): print i
 i- = 8
```

Answer:

```
for i in range(88, 9, -8)
 print i
```

Question 20.
Write for statement to print the series 10,20,30, ……., 300

Answer:

```
for i in range(10, 301, 10):
 print i
```

Question 21.
Write for statement to print the series 105,98,91,….7

Answer:

```
for i in range(105, 8, -7):
 print i
```

Question 22.
Write the while loop to print the series: 5,10,15,100

Answer:

```
i=5
while i <= 100:
print i
i = i + 5
```

Question 23.
How many times is the following loop executed? **[CBSE Text Book]**
for a in range(100,10,-10):
print a

Answer:
9 times.

Question 24.
How many times is the following loop executed? **[CBSE Text Book]**

```
i = 100
 while (i<=200):
```

```
print i
i + =20
```

Answer:
6 times

Question 25.
State whether the statement is True or False? No matter the underlying data type if values are equal returns true,

```
char ch1, ch2;
 if (ch1==ch2)
 print "Equal"
```

Answer:
True. Two values of same data types can be equal.

Question 26.
What are the logical operators of Python?

Answer:
or, and, not

Question 27.
What is the difference between '/' and '//' ?

Answer:

```
// is Integer or Floor division whereas / is normal division
 (eg) 7.0 // 2 → 3.0
 7.0/2 → 3.5
```

Question 28.
How can we import a module in Python?

Answer:
1. using import

```
Syntax:
 import[,,...]
 Example:
 import math, cmath
```
2. using from

```
Syntax:
 fromimport[, ,.. ,]
 Example: .
 from fib. import fib, fib2.
```

Question 29.
What is the difference between parameters and arguments?

Answer:

S.No.	Parameters	Arguments
1	Values provided in function header	Values provided in function call.
2	(eg) def area (r): —> r is the parameter	(eg) def main() radius = 5.0 area (radius) —> radius is the argument

Question 30.
What are default arguments?

Answer:
Python allowes function arguments to have default values; if the function is called without the argument, the argument gets its default value

Question 31.
What are keyword arguments?

Answer:
If there is a function with many parameters and we want to specify only some of them in function call, then value for such parameters can be provided by using their names instead of the positions. These are called keyword argument.

```
(eg) def simpleinterest(p, n=2, r=0.6)
 ' def simpleinterest(p, r=0.2, n=3)
```

Question 32.
What are the advantages of keyword arguments?

Answer:
It is easier to use since we need not remember the order of the arguments.
We can specify the values for only those parameters which we want, and others have default values.

Question 33.
What does "in" do?

Answer:

"in" is a membership operator. It evaluates to true if it finds a variable/string in the specified sequence : Otherwise i+evaluates to false.

```
(eg) S = "Hello World"
 if "Hell" in S:
 print "True"
 will print True.
```

Question 34.

What does "not in" do?

Answer:

"not in" is a membership operator. It evaluates to true if it does not finds a variable/string in the specified sequence. Otherwise it evaluates to false,

```
(eg) S = "Hello World"
 if "Hell" not in S:
 print "False"
 will print False.
```

Question 35.

What does "slice" do?

Answer:

The slice[n:m] operator extracts subparts from a string. It doesn't include the character at index m.

```
(eg) S = "Hello World"
 print s[0:4] → Hell
```

Question 36.

What is the use of negative indices in slicing?

Answer:

Python counts from the end (right) if negative indices are given.

```
(eg) S = "Hello"
 print S[:-3] >> He
 print S[-3:] >> llo
```

Question 37.

Explain find() function?

Answer:

find (sub[,start[,end]])
This function is used to search the first occurrence of the substring in the given string. It returns the index at which the substring starts. It returns -1 if the substring doesn't occur in the string.

```
(eg) str = "computer" -
 str.findf("om") → 1
```

Question 38.
What are the differences between arrays and lists?

Answer:
An array holds fixed number of values. List is of variable-length – elements can be dynamically added or removed
An array holds values of a single type. List in Python can hold values of mixed data type.

Question 39.
What is the difference between a tuple and a list?

Answer:
A tuple is immutable whereas a list is a mutable.
A tuple cannot be changed whereas a list can be changed internally.
A tuple uses parenthess (()) whereas a list uses square brackets ([]).
tuple initialization: a = (2, 4, 5)
list initialization: a = [2, 4, 5]

Question 40.
Carefully observe the following python code and answer the question that follows:
x=5
def func2():
x=3
global x
x=x+1
print x
print x
On execution the above code produces the following output.
6
3
Explain the output with respect to the scope of the variables.

Answer:
Names declared with global keyword have to be referred at the file level. This is because the global scope. If no global statement is being used the variable with the local scope is accessed.

Hence, in the above code the statement succeeding the statement global x informs Python to increment the global variable x
Hence, the output is 6 i.e. 5 + 1 which is also the value for global x.
When x is reassingned with the value 3 the local x hides the global x and hence 3 printed.
(2 marks for explaning the output) (Only 1 mark for explaining global and local namespace.)

Question 41.
Explain the two strategies employed by Python for memory allocation.
[CBSE SQP 2016]

Answer:
Pythonuses two strategies for memory allocation-
(i) Reference counting
(ii) Automatic garbage collection
Reference Counting: works by counting the number of times an object is referenced by other in the system. When an object's reference count reaches zero, Python collects it automatically.
Automatic Garbage Collection: Python schedules garbage collection based upon a threshold of object allocations and object deallocation. When the number of allocations minus the number of deallocations are greater that the threshold number, the garbage collector is run and the unused blocks of memory is reclaimed.

TOPIC – 2
Writing Python Programs

Question 1.
Rewrite the following code in Python after removing all syntax errors(s). Underline each correction done in the code. **[CBSE Delhi-2016]**
for Name in [Amar, Shveta, Parag]
if Name [0] = 's':
Print (Name)

Answer:

```
for Name in ["_Amar", "_Shveta_" , "_Parag_"] :
 if Name [0] E == 'S' :
 Print (Name)
```

Question 2.
Rewrite the following code is Python after removing all syntax errors(s). Underline each correction done in the code. **[CBSE Outside Delhi-2016]**
for Name in [Ramesh, Suraj, Priya]
if Name [0] = 'S':

Print (Name)

Answer:

```
for Name in ["_Ramesh_", "_Suraj_" , "_Priya_"]
 if Name [0] =_='S' :
 print (Name)
```

Question 3.
What will be the output of the following python code considering the following set of inputs?
AMAR
THREE
A123
1200
Also, explain the try and except used in the code.
Start = 0
while True :
Try:
Number = int (raw input ("Enter Number"))
break
except valueError : start=start+2
print ("Re-enter an integer")
Print (start)

Answer:
Output:

```
Enter Number AMAR
 Re-enter an integer
 Enter Number THREE
 Re-enter an integer
 Enter Number A123
 Re-enter an integer
 Enter Number 12006
```

Explanation : The code inside try makes sure that the valid number is entered by the user. When any input other an integer is entered, a value error is thrown and it prompts the user to enter another value.

Question 4.
Give the output of following with justification.
[CBSE SQP 2015]

```
x = 3
 x+ = x-x
```

```
print x
```

Answer:
Output: 3
Working:

```
x = 3
 x = (x+ x-x ):x = 3 + 3 - 3 = 3
```

Question 5.
What will be printed, when following Python code is executed? **[CBSE SQP 2015]**

```
class person:
 def init (self,id):
 self.id = id arjun = person(150)
 arjun. diet ['age'] = 50
 print arjun.age + len(arjun. diet )
```
Justify your answer.

Answer:
52
arjun.age = 50
arjun.dict has 2 attributes so length of it is 2. So total = 52.

Question 6.
What would be the output of the following code snippets?
print 4+9
print "4+9"

Answer:
13 (addition), 49 (concatenation).

Question 7.
Highlight the literals in the following program
and also predict the output. Mention the types of
variables in the program.

```
a=3
 b='1'
 c=a-2
 d=a-c
 e="Kathy"
 f='went to party.'
 g='with Sathy'
 print a,g,e,f,a,g,",",d,g,",",c,g,"and his",e,f
```

Answer:
a, c,d = integer
b, e,f,g = string
Output: 3 with Sathy Kathy, went to party. 3 with Sathy, 2 with Sathy , 1 with Sathy and his Kathy, went to party.

Question 8.
What is the result of 4+4/2+2?

Answer:
4 + (4/2) + 2 = 8.

Question 9.
Write the output from the following code:
[CBSE Text Book]

```
x= 10
 y = 20
 if (x>y):
 print x+y
 else:
 print x-y
```

Answer:
– 10

Question 10.
Write the output of the following code:
print "Python is an \n interpreted \t Language"

Answer:
Python is an interpreted Language

Question 11.
Write the output from the following code:

```
s = 0
 for I in range(10,2,-2):
 s+=I
 print "sum= ",s
```

Answer:
sum= 28

Question 12.
Write the output from the following code:
 [CBSE TextBook]

```
n = 50
i = 5
s = 0
while i<n:
s+ = i
i+ = 10
print "i=",i
print "sum=",s
```

Answer:

```
i= 15
i= 25
i= 35
i= 45
i= 55
sum= 125
```

Question 13.
Write the output from the following code: **[CBSE TextBook]**

```
n = 50
i = 5
s = 0
while i<n:
s+ = i
i+ = 10
print "i=",i
print "sum=",s
```

Answer:

```
i= 15
i= 25
i= 35
i= 45
i= 55
sum= 125
```

Question 14.
Observe the following program and answer the question that follows:

```
import random
x = 3
N = random, randint (1, x)
for 1 in range (N):
print 1, '#', 1 + 1
```
a. What is the minimum and maximum number of times the loop will execute?
b. Find out, which line of output(s) out of (i) to (iv) will not be expected from the program?
i. 0#1
ii. 1#2
iii. 2#3
iv. 3#4

Answer:
a. Minimum Number = 1
Maximum number = 3
b. Line iv is not expected to be a part of the output.

Question 15.
Observe the following Python code carefully and obtain the output, which will appear on the screen after execution of it. **[CBSE SQP 2016]**

```
def Findoutput ():
 L = "earn"
 X = " "
 count = 1
 for i in L:
 if i in ['a', 'e',' i', 'o', 'u']:
 x = x + 1. Swapcase ()
 else:
 if (count % 2 ! = 0):
 x = x + str (len (L[:count]))
 else:
 x = x + 1
 count = count + 1
 print x
 Findoutput ()
```

Answer:
EA3n

Question 16.
Find and write the output of the following Python code:

```
Number = [9,18,27,36] for N in Numbers:
```

```
print (N, "#", end = " ")
print ()
```

Answer:

Element	Stack of operators	Postfix Expression
1#	0	0
1#	(1#)	(1#)
2#	(1#)	(1#2#)
1#	(2#)	(1#2#3#)
2#	(1#)	1#
3#	(2#)	1#2#
	(3#)	1#2#3#

Question 17.
What are the possible outcome(s) executed from the following code? Also, specify the maximum and import random. **[CBSE Delhi 2016]**

```
PICK=random.randint (0,3)
 CITY= ["DELHI", "MUMBAI", "CHENNAI", "KOLKATA"];
 for I in CITY :
 for J in range (1, PICK)
 print (I, end = " ")
 Print ()
```

(i)	(ii)
DELHIDELHI	DELHI
MUMBAIMUMBAI	DELHIMUMBAI
CHENNAICHENNAI	DELHIMUMBAICEHNNAI
KOLKATAKOLKATA	
(iii)	(iv)
DELHI	DELHI
MUMBAI	MUMBAIMUMBAI
CHENNAI	KOLKATAKOLKATAKOLKATA
KOLKATA	

Option (i) and (iii) are possible option (i) only
PICKER maxval = 3 minval = 0

Question 18.
Find and write the output of the following Python code : **[CBSE Outside Delhi-2016]**

```
Values = [10,20,30,40]
 for val in Values:
 for I in range (1, Val%9):
 print (I," * ", end= " ")
 print ()
```

Answer:

Element	Stack of operators	Postfix Expression
1*	0	0
1*	(1.*)	(1*)
2*	0	(1*2*)
1*	(1,*)	(1*2*3*)
2*	(2.*)	1*
3*	0	1*2*
	(1.*)	1*2*3*
	(2,*)	
	(3,*)	

Question 19.
Write the output from the following code:

```
y = 2000
 if (y%4==0):
 print "Leap Year"
 else:
 print "Not leap year"
```

Answer:
Leap Year.

Question 20.
What does the following print?

```
for i in range (1,10):
 for j in'range (1,10):
 print i * j,
 print
```

Answer:
1 2 3 4 5 6 7 8 9
2 4 6 8 10 12 14 16 18
3 6 9 12 15 18 21 24 27
4 8 12 16 20 24 28 32 36
5 10 15 20 25 30 35 40 45
6 12 18 24 30 36 42 48 54
7 14 21 28 35 42 49 56 63
8 16 24 32 40 48 56 64 72
9 18 27 36 45 54 63 72 81

Question 21.
What will be the output of the following statement? Also, justify the answer.

```
>> print 'Radhsa's dress is pretty'.
```

Answer:
SyntaxError: invalid syntax.
The single quote needs to be replaced by V to get the expected output.

Question 22.
Give the output of the following statements :

```
>>> str='Honesty is the best policy'
 >>> str.replace('o','*')
```

Answer:
'H*nesty is the best p*licy'.

Question 23.
Give the output of the following statements :

```
>> str='Hello Python'
 >>> str.istitle()
```

Answer:
True.

Question 24.
Give the output of the following statements:

```
>> str='Hello Python'
 >>> print str.lstrip("Hel")
```

Answer:
Hello Python

Question 25.
Write the output for the following codes:

```
A={10:1000,20:2000,30:3000,40:4000,50:5000}
 print A.items()
 print A.keys()
 print A.values()
```

Answer:
[(40,4000), (10,1000), (20,2000), (50,5000), (30,3000)] [40,10, 20, 50, 30] [4000,1000, 2000, 5000, 3000]

Question 26.
Write the output from the following code:

```
t=(10,20,30,40,50)
 print len(t)
```

Answer:
5

Question 27.
Write the output from the following code:

```
t=('a','b','c','A','B')
 print max(t)
 print min(t)
```

Answer:
'c'
A'

Question 28.
Find the output from the following code:

```
T=(10,30,2,50,5,6,100,65)
 print max(T)
 print min(T)
```

Answer:
100
2

Question 29.
Write the output from the following code:

```
T1=(10,20,30,40,50)
 T2 =(10,20,30,40,50)
 T3 =(100,200,300)
 cmp(T1, T2)
 cmp(T2,T3)
 cmp(T3,T1)
```

Answer:
0
-1
1

Question 30.
Write the output from the following code:

```
T1=(10,20,30,40,50)
 T2=(100,200,300)
 T3=T1+T2
print T3
```

Answer:
(10,20,30,40,50,100,200,300)

Question 31.
Find the output from the following code:

```
t=tuple()
 t = t +('Python',)
 print t
 print len(t)
```

```
t1=(10,20,30)
print len(t1)
```

Answer:
('Python',)
1
3

Question 32.
Rewrite the following code in Python after remo¬ving all syntax error(s). Underline each correction done in the code.

```
for student in [Jaya, Priya, Gagan]
 If Student [0] = 'S':
 print (student)
```

Answer:
for studednt in values ["Jaya", "Priya", "Gagan"]:
if student [0] = = "S"
print (student)

Question 33.
Find and write the output of the following Python code:

```
Values = [11, 22, 33, 44] for V in Values:
 for NV in range (1, V%10):
 print (NV, V)
```

Answer:
1, 11
2,22
3,33
4, 44

Question 34.
What are the possible outcome(s) executed from the following code? Also, specify the maximum and minimum values that can be assigned to variable SEL.

```
import random
 SEL=random. randint (0, 3)
 ANIMAL = ["DEER", "Monkey", "COW", "Kangaroo"];
 for A in ANIMAL:
 for AAin range (1, SEL):
 print (A, end ="")
```

```
print ()
```

(i)	(ii)	(iii)	(iv)
DEERDEER	DEER	DEER	DEER
MONKEYMONKEY	DELHIMONKEY	MONKEY	MONKEYMONKEY
COWCOW	DELHIMONKEYCOW	COW	KANGAROOKANGAROOKANGAROO
KANGAROOKANGAROO		KANGAROO	

Answer:
Maximum value of SEL is 3.
The possible output is below
DEER
Monkey Monkey
Kangaroo Kangaroo Kangaroo
Thus (iv) is the correct option.

TOPIC-3
Random Functions

Question 1.
What are the possible outcome(s) executed from the following code ? Also specify the maximum and minimum values that can be assigned to variable PICKER. **[CBSE Outside Delhi-2016]**

```
import random
 PICKER = random randint (0, 3)
 COLOR = ["BLUE", "PINK", "GREEN", "RED"]:
 for I in COLOR :
 for J in range (1, PICKER):
 Print (I, end = " ")
 Print ()
```

(i)	(ii)	(iii)	(iv)
BLUE	BLUE	PINK	SLUEBLUE
PINK	BLUEPINK	PINKGREEN	PINKPINK
GREEN	BLUEPINKGREEN	GREENRED	GREENGREEN
RED	BLUEPINKGREENRED		REDRED

Answer:
Option (i) and (iv) are possible
OR
option (i) only
PICKER maxval = 3 minval = 0

Question 2.
What are the possible outcome(s) expected from the following python code? Also specify maximum and minimum value, which we can have. **[CBSE SQP 2015]**

```
def main():
 p = 'MY PROGRAM'
 i = 0
 while p[i] != 'R':
 l = random.randint(0,3) + 5
 print p[l],'-',
 i += 1
```
(i) R – P – O – R –
(ii) P – O – R – Y –
(iii) O -R – A – G –
(iv) A- G – R – M –

Answer:
Minimum value=5
Maximum value=8
So the only possible values are O, G, R, A
Only option (iii) is possible.

TOPIC-4
Correcting The Errors

Question 1.
Rewrite the following Python code after removing all syntax error(s). Underline the corrections done. **[CBSE SQP 2015]**

```
def main():
 r = raw-input('enter any radius : ')
 a = pi * math.pow(r,2)
 print " Area = " + a
```

Answer:

```
def main ():
 r = raw_input('enter any radius : ')
 a = pi * math.pow(r,2)
 print " Area = ", a
```

Question 2.
Rectify the error (if any) in the given statements.

```
>> str="Hello Python"
 >>> str[6]='S'
```

Answer:

```
str[6] = 'S' is incorrect 'str' object does not support item
assignment.
 str.replace(str[6],'S').
```

Question 3.
Find the errors from the following code:
T=[a,b,c]
print T

Answer:
Name Error: name 'a' is not defined .
T=['a','b','c']

Question 4.
Find the errors from the following code:
for i in 1 to 100:
print I

Answer:
for i in range (1,100):
print i

Question 5.
Find the errors from the following code:

```
i=10 ;
 while [i<=n]:
 print i
 i+=10
```

Answer:

```
i=10
 n=100
 while (i<=n):
 print i
 i+=10
```

Question 6.
Find the errors from the following code:

```
if (a>b)
 print a:
 else if (a<b)
 print b:
 else
 print "both are equal"
```

Answer:

```
if (a>b) // missing colon
 print a:
 else if (a<b) // missing colon // should be elif
 print b:
 else // missing colon
 print "both are equal"
```

Question 7.
Find errors from the following codes:

```
c=dict()
 n=input(Enter total number)
 i=1
 while i<=n:
 a=raw_input("enter place")
 b=raw_input("enter number")
 c[a]=b
 i=i+1
 print "place","\t","number"
 for i in c:
 print i,"\t",c[a[i]]
```

Answer:

```
c=dict()
```

```
n=input(''Enter total number")
i=1
while i<=n :
a=raw_input("enter place")
b=raw_inputf enter number")
c[a]=b
i=i+1
print "place","\t","number"
for i in c:
print i,"\t",c[i]
```

Question 8.
Observe the following class definition and answer the question that follows : **[CBSE SQP 2016]**

```
class info:
 ips=0
 def _str_(self): #Function 1
 return "Welcome to the Info Systems"
 def _init_(Self):
 self. _ Sstemdate= " "
 self. SystemTime = " "
 def getinput (self):
 self . Systemdate = raw_input ("enter data")
 self , SystemTime = raw_Input ("enter data")
 Info, incrips ()
 Estaiomethod # Statement 1
 def incrips ():
 Info, ips, "times"
 I = Info ()
 I. getinput ()
 Print I. SystemTime
 Print I. _Systemdate # Statement 2
```
i. Write statement to invoke Function 1.
ii. On Executing the above code, Statement 2 is giving an error explain.

Answer:
i. print I
ii. The statement 2 is giving an error because _Systemdate is a private variable and hence cannot to be printed outside the class.

TOPIC – 5
Short Programs

Question 1.
Write a program to calculate the area of a rectangle. The program should get the length

and breadth ; values from the user and print the area.

Answer:

```
length = input("Enter length")
 breadth = input("Enter breadth")
 print "Area of rectangle =",length*breadth
```

Question 2.
Write a program to calculate the roots of a quadratic equation.

Answer:

```
import math
 a = input("Enter co-efficient of x^2")
 b = input("Enter co-efficient of x")
 c = inputfEnter constant term")
 d = b*b - 4*a*c
 if d == 0:
 print "Roots are real and equal"
 root1 = root2 = -b / (2*a)
 elif d > 0:
 print "Roots are real and distinct"
 root1 = (- b + math.sqrt(d)) / (2*a)
 root2 = (-b - math.sqrt(d)) / (2*a)
 else:
 print "Roots are imaginary"
 print "Roots of the quadratic equation are",root1,"and",root2
```

Question 3.
Write a program to input any number and to print all the factors of that number.

Answer:

```
n = inputfEnter the number")
 for i in range(2,n):
 if n%i == 0:
 print i,"is a factor of'.n
```

Question 4.
Write a program to input ,.any number and to check whether given number is Armstrong or not.
(Armstrong 1,153,etc. 13 =1, 13+53 +33 =153)

Answer:

```
n = inputfEnter the number")
 savedn = n
 sum=0
 while n > 0:
 a = n%10
 sum = sum + a*a*a
 n = n/10
 if savedn == sum:
 print savedn,"is an Armstrong Number"
 else:
 print savedn,"is not an Armstrong Number"
```

Question 5.
Write a program to find all the prime numbers up to a given number

Answer:

```
n = input("Enter the number")
 i = 2
 flag = 0
 while (i < n):
 if (n%i)==0:
 flag = 1
 print n,"is composite"
 break
 i = i+ 1
 if flag ==0 :
 print n,"is prime"
```

Question 6.
Write a program to convert decimal number to binary.

Answer:

```
i=1
 s=0
 dec = int ( raw_input("Enter the decimal to be converted:"))
 while dec>0:
 rem=dec%2
 s=s + (i*rem)
 dec=dec/2
 i=i*10
 print "The binary of the given number is:",s raw_input()
```

Question 7.
Write a program to convert binary to decimal

Answer:

```
binary = raw_input("Enter the binary string")
 decimal=0
 for i in range(len(str(binary))):
 power=len (str (binary)) - (i+1)
 decimal+=int(str(binary)[i])*(2**power)
 print decimal
```

Question 8.
Write a program to input two complex numbers and to find sum of the given complex numbers.

Answer:

```
areal = input("Enter real part of first complex number")
 aimg = input("Enter imaginary part of first complex number")
 breal = input("Enter real part of second complex number")
 bimg = input("Enter imaginary part of second complex number")
 totreal = areal + breal
 totimg = aimg + bimg
 print "Sum of the complex numbers=",totreal, "+i", totimg
```

Question 9.
Write a program to input two complex numbers and to implement multiplication of the given complex numbers.

Answer:

```
a = input("Enter real part of first complex number")
 b = input("Enter imaginary part of first complex number")
 c = input("Enter real part of second complex number")
 d = input("Enter imaginary part of second complex number")
 real= a*c - b*d
 img= a*d + b*c
 print "Product of the complex numbers=",real, "+i",img
```

Question 10.
Write a program to find the sum of all digits of the given number.

Answer:

```
n = inputfEnter the number")
 rev=0
 while (n>0):
 a=n%10
 sum = sum + a
 n=n/10
 print "Sum of digits=",sum
```

Question 11.
Write a program to find the reverse of a number.

Answer:

```
n = input("Enter the number")
 rev=0
 while (n>0):
 a=n%10
 rev=(rev*10)+a
 n=n/10
 print "Reversed number=",rev
```

Question 12.
Write a program to print the pyramid.
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5

Answer:

```
for i in range(1,6):
 for j in range(1,i+1):
 print i,
 print
```

Question 13.
Write a program to input username and password and to check whether the given username and password are correct or not.

Answer:

```
import string
 usemame= raw_input("Enter username")
 password = raw_input("Enter password")
 if cmp(username.strip(),"XXX")== 0:
 if cmp(password,"123") == 0:
 print "Login successful"
 else:
 print "Password Incorrect"
 else:
 print "Username Incorrect"
```

Question 14.
Write a generator function generatesq () that displays the squareroots of numbers from 100 to n where n is passed as an argument.

Answer:

```
import math
 def generatesq (n) :
 for i in range (100, n) :
 yield (math, sqrt (i))
```

Question 15.
Write a method in Python to find and display the prime number between 2 to n. Pass n as argument to the method.

Answer:

```
def prime (N) :
 for a in range (2, N):
 for I in range (2, a):
 if N%i ==0 :
 break print a
 OR
 def prime (N):
 for a in range (2, N):
 for I in range (2, a) :
 if a%1= = 0 :
 break
 else :
 print a
```

Question 16.
Write a program to input username and password and to check whether the given

username and password are correct or not.

Answer:

```
import string
 usemame= raw_input("Enter username")
 password = raw_input("Enter password")
 if cmp(usemame.strip(),"XXX")== 0:
 if cmp(password,"123") == 0:
 print "Login successful"
 else:
 print "Password Incorrect"
 else:
 print "Username Incorrect"
```

Question 17.
Which string method is used to implement the following: **[CBSE Text Book]**

1. To count the number of characters in the string.
2. To change the first character of the string in capital letter.
3. To check whether given character is letter or a number.
4. To change lowercase to uppercase letter.
5. Change one character into another character.

Answer:

1. len(str)
2. str.title() or str.capitalize()
3. str.isalpha and str.isdigit()
4. lower(str[i])
5. str.replace(char, newchar)

Question 18.
Write a program to input any string and to find the number of words in the string.

Answer:

```
str = "Honesty is the best policy"
 words = str.split()
 print len(words)
```

Question 19.
Write a program to input n numbers and to insert any number in a particular position.

Answer:

```
n=input("Enter no. of values")
 num=[]
 for i in range (n):
 number=input("Enter the number") num.append(number)
 newno = input("Enter the number to be inserted")
 pos = input("Enter position") num.insert(newno,pos)
 print num
```

Question 20.
Write a program to input n numbers and to search any number from the list.

Answer:

```
n=input("Enter no. of values")
 num=[]
 flag=0
 for i in range (n):
 number=input("Enter the number")
 num. append(number)
 search = input("Enter number to be searched")
 for i in range(n):
 if num[i]==search:
 print search,"found at position",i
 flag=1
 if flag==0:
 print search, "not found in list"
```

Question 21.
Write a program to search input any customer name and display customer phone number if the customer name is exist in the list.

Answer:

```
def printlist(s):
 i=0
 for i in range(len(s)):
 print i,s[i]
 i = 0
 phonenumbers = ['9840012345','9840011111','
9845622222','9850012345','9884412345']
 flag=0
 number = raw_input("Enter the phone number to be searched")
 number = number.strip()
```

```
try:
i = phonenumbers.index(number)
if i >= 0:
flag=1
except ValueError:
pass
if(flag <>0):
print "\nphone number found in Phonebook at index", i
else:
print'\iphonenumbernotfoundin phonebook"
print "\nPHONEBOOK"
printlist(phonenumbers)
```

Question 22.
Write a program to input n numbers and to reverse the set of numbers without using functions.

Answer:

```
n=input("Enter no. of values")
 num=[]
 flag=0
 for i in range (n):
 number=input("Enter the number")
 num. append(number)
 j=n-1
 for i in range(n):
 if i<=n/2:
 num[i],num[j] = num[j],num[i]
 j=j-1
 else:
 break
 print num
```

Question 23.
Find and write the output of the following Python code: **[CBSE Complementry-2016]**

```
class Client:
 def init (self, ID = 1, NM="Noname") #
 constructor
 self.CID = ID
 self. Name = NM
 def Allocate (self, changelD, Title) :
 self.CID = self.CID + ChangeId
 self.Name = Title + self. Name
 def Display (self) :
```

```
print (self. CID). "#", self. Name)
C1 = Client ()
C2 = Client (102)
C3 = Client (205, ''Fedrick")
C1 . Display ()
C2 . Display ()
C3 . Display ()
C2 . Allocate (4, "Ms.")
C3 .Allocate (2, "Mr.")
C1. Allocate (1, "Mrs.")
C1. Display ()
C2 . Display ()
C3 . Display ()
```

Answer:

```
CID Name
— Fedrick
102 Mr. Fedrick
205 Mrs. Fedrick
— Mr. & Mrs. Fedrick
```

Question 24.
What will be the output of the following Python code considering the following set of inputs?

```
MAYA
 Your 5 Apples
 Mine2
 412
 Also, explain the try and except used in the code.
 Count = 0
 while True :
 try:
 Number=int (raw input ("Input a Number :"))
 break
 Except valueError :
 Count=Count + 2
 # For later versions of python, raw_input
 # Should be consider as input
```
mehtods:
– DenCal () # Method to calcualte Density as People/Area
– Add () # Method to allow user to enter values Dcode, DName, People, Area and Call DenCal () Mehtod
– View () # Method to display all the data members also display a message ""High Population" if the Density is more than 8000.

Answer:
Output is below
2 Re Enter Number
10 Re Enter Number
5 Input = Number
3 Input = number
Try and except are used for handling exception in the Pythan code.

Question 25.
Write a method in Python and display the prime numbers between 2 to N. Pass as argument to the methods.

Answer:

```
def prime (N) :
 for a in range (2, N)
 Prime=1
 for I in range (2, a):
 if a%i= = 0 :
 Prime = 0
 if Prime = = 1:
 print a
 OR
 def prime (N) :
 for a in range (2, N):
 for I in range (2, a) :
 if a%i = = 0:
 break
 else :
 print a
 OR
 Any other correct code performing the same
```

Question 1.
Aastha wnats to create a program that accepts a string and display the characters in the reverse in the same line using a Stack. She has created the following code, help her by completing the definitions on the basis of requirements given below:**[CBSE SQP 2016]**

```
Class mystack :
 def inin (self):
```

```
selfe. mystr=      # Accept a string
self.mylist=       # Convert mystr to a list
# Write code to display while removing element from the stack.
def display (self) :
:
:
```

Answer:

```
class mystack :
 def _init_ (self) :
 self.myster= rawjnput ("Enter the string")
 self.mylist = list (self.mystr)
 def display (self) :
 x = len (self. mylist)
 if (x > 0) :
 for i in range (x) :
 print self.mylist.pop (),
 else :
 print "Stack is empty"
```