

CBSE GUESS - 2015
Class – XII
Subject - Computer Science

Time allowed: 3 Hours

Maximum Marks: 70

Note (i) All questions are compulsory.

(ii) Programming Language: Python

1) (a) What are functions with varying parameters? Give one example.

2

(b) Identify the names of built in modules for the functions given below.

1

i) randint()

ii) spam()

(c) Tarunaj has just started working as programmer in the JAGAT WORLD SOFTWARE company. In the company, he has got his first assignment to develop a small Python module to find the largest value from a list of negative numbers passed as parameter. Somehow he has committed a few logical mistakes while writing this code and so he is not getting the desired result from the code. Find out the mistakes and correct this Python code so that it provides the desired result (do not add any new statement in the code and the logical mistakes are only in the function Largest(L)). Underline each correction made.

```
def Largest(L):
    big=0
    n=int(len(L)/2)
    for i in range(n):
        if big>L[i]:
            L[i]=big
    return big
def main9():
    L=[-5,-8,-4,-15,-3,-9]
    print('the largest value is', Largest(L))
if __name__=='__main__':
    main9()
2
```

(d) Observe the following Python code carefully and obtain the output, which will

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appear on the screen after execution of it.

3

```
class Mausam:
    Humidity=63
    def __init__(self, C=1):
        self.City=C
        self.Temp=10
    def Sun(self, T):
        self.Temp+=T
    def Rain(self, H):
        Mausam.Humidity+=H
    def CheckOut(self):
        print(self.City,":",self.Temp,"&",self.Humidity,"%")

def main6():
    M=Mausam()
    N=Mausam(2)
    M.Sun(5);
    M.CheckOut();
    N.Rain(10);
    N.Sun(2);
    N.CheckOut();
    M.Rain(15);
    M.CheckOut();

if __name__=="__main__":
    main6()
```

(e) Find the output of the following program:

```
2
YourNum=20
def withdef(HisNum = 30):
    for I in range(20,HisNum+1,5):
        print(I,end=",")
    print()
def Control(MyNum ):
    global YourNum
    YourNum += MyNum
    withdef(YourNum)
def main8( ):
    Control(YourNum )
    withdef( )
```

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```
print("Number=",YourNum)
if __name__=="__main__":
    main8()
```

f) Chose the correct alternative from the options (i)- (iv). Justify your answer.

```
2
def Getval(N):
    if N%2 ==0:
        return N+1
    else:
        return N+2
def main7( ):
    from random import randint
    num= randint(3,6)
    for I in range(num,num+3):
        print(Getval(I),end='@')
```

```
if __name__=="__main__":
    main7()
```

- Options: a) 3@5@7@
 b) 7@7@9@
 c) 7@9@9@
 d)7@9@11@

2. (a) What is meant by type casting? Explain with suitable example.

2

(b) Observe the program below carefully and fill in the blank statements marked as statement1, 2, 3, and 4 by **calling appropriate functions** of the above class so as to get the output given below.

```
2
class cat:
    def __init__(self,initialAge):
        self.itsAge=initialAge
    def getAge(self):
        return self.itsAge
    def setAge(self,Age):
        self.itsAge=Age
    def meow(self):
        print('Meow',end = ' ')
def main7():
    _____ #statement 1
    Friskey.meow()
    print('Friskey is a cat who is ')
    print(_____, 'years old') #statement 2
    _____ #statement 3
```

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```
print('Now Friskey is ', _____, 'years old') #statement 4
if __name__=='__main__':
    main7()
```

Output:

**Meow Friskey is a cat who is
5 years old
Now Friskey is 7 years old**

(c) Define a class PhoneBill in Python with the following specifications.

4

data properties:

- CustomerName of string
- PhoneNumber of string
- No_of_units of type integer
- Rent of type integer
- Amount of type float.

calculate() This private method should calculate the value of amount as Rent+ cost for the units. Where cost for the units can be calculated according to the following conditions.

<u>No_of_units</u>	<u>Cost</u>
First 50 calls	Free
Next 100 calls unit	0.80 @
Next 200 calls unit	1.00 @
Remaining calls unit	1.20 @

other methods:

- * A constructor to assign initial values of CustomerName as 'Raju', PhoneNumber as '259461', No_of_units as 50, Rent as 100, Amount as 100.
- * A method accept () which allows user to enter CustomerName, PhoneNumber, No_of_units and Rent and should invoke the function calculate ().
- * A method Display () to display the values of all the data properties on the screen.

(d) Define a class Rural_Games in Python with the following descriptions:

4

Data properties:

- Game string for name of the game
- No_of_Participants integer for number of participants
- Participants a list to store the each participant name
- Position a list to store the position won for each participant
- Points a list to store the points based on position of each participant

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methods:

- Get_Data () to read the values for Name of the game, number of participants and input all their names, and position.
Assign_Points () a private method to assign points value based on the following condition

Position	Points
I	7
II	5
III	3

If number of participants is more than 7, then points for each position will be doubled.

- Show_Data() that invokes the method Assign_Points() and then displays the value of all the data properties on screen.
- (e) Differentiate between procedure oriented programming and Object oriented programming. **2**

3. (a) Define namespace in python . Give example. **2**

(b) Define a class **Book** with the following specification. **5**

class instance variable

- Total_issued a float to store the no of books issued

object instance variables

- book_title a string
- author a string
- price a float
- noOfcopies a integer

methods

- create_book() – A method to input values for book_title, author, noOfcopies and price.
- display_book() – A method to display all the book details.

Also define another class **Transaction** that is derived from the class book.

It should have the following methods.

- Issue_book()- this function should take N as parameter with default value 1 and do the following.

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if $N \leq \text{noOfcopies}$ then it should subtract N from the `noOfcopies` and add N to the class instance `Total_issued`. Otherwise print the message 'not enough copies'

- `Return_book()` - this function should take N as parameter with default value 1 and do the following.
It should add N to the `noOfcopies`. It should subtract N from the class instance `Total_issued`.

(c) Answer the questions (i) to (ii) based on the following code :

4

```
class Employee:
```

```
    L=[]
```

```
    def __init__(self, idn, name):
```

```
        self.__idn=idn
```

```
        self.name=name
```

```
        Employee.L.append(self)
```

```
    def __show(self):
```

```
        print(self.idn,self.name)
```

```
class Daily_wager(Employee):
```

```
    def __init__(self, idn, name, w_phour, nofhworked):
```

```
        self.w_phour=w_phour
```

```
        self.nofhworked=nofhworked
```

```
        Employee.__init__(self, idn, name)
```

```
        Daily_wager.L.append(self)
```

```
    def output(self):
```

```
        print(self.name, self.w_phour*self.nofhworked)
```

```
class Teacher(Employee):
```

```
    def __init__(self, idn, name, dept):
```

```
        Employee.__init__(self, idn, name)
```

```
        self.dept=dept
```

```
    def out(self):
```

```
        print(self.name, self.dept)
```

```
def main():
```

```
    e1=Teacher(100,'John','physics')
```

```
    w1=Daily_wager(101,'Mathew',20,40)
```

- Name the Oops property and its type.
- Name the data properties that can be accessed by `w1` defined in the function `main()`.
- Name the methods that can be accessed by `w1` defined in the function `main()`
- Is the function output accessible to the object `e1` defined in `main()`

4.(a) Write a user defined function Upper_half() which takes a one dimensional list A, as arguments and return a two dimensional list B such that the following pattern is followed.

3
 If A is 2 3 1 5 4 then B should be 2 3 1
 5 4 0 3 1
 5 4 0 0 1
 5 4 0 0 0
 5 4 0 0 0
 0 4

(b) Write a function in Python which accepts a list of numbers as parameter and exchanges the values of first half side elements with the second half side elements of the list.

3
 For example:
 If the list is containing:
 8, 10, 1, 3, 17, 90, 13, 60
 Then rearrange the list as
 17, 90, 13, 60, 8, 10, 1, 3

(c) Write a function swar2best(M) in Python to modify the content of the list in such a way that the elements which are multiples of 10 swap with the values present in the very next position in the list.

For example:
 3
 If the content of list M is
 90, 56, 45, 20, 34, 54
 The content of the list M should become
 56, 90, 45, 34, 20, 54

(d) Write a function colsum() in Python to find sum of each column of a matrix (2 dimensional list) passed as parameter to this function.

3

5. (a) Differentiate between a List and a dictionary.

2

(b) Write a function in Python that takes a dictionary D, with age also as parameter. It should print the details of all employees whose age is same as that given in parameter. You need not create the dictionary. For example if the dictionary D has the following data with empno as the key, name, age and salary as values stored in the list.

```
D={ 109:['John',45,9000],101:['Ashok',25,8000],104:['Khan',45,5000],103:['Ram',35,6000
]}
```

Then the output of your function should be

```
(104, ['Khan', 45, 5000])
```

```
(109, ['John', 45, 9000])
```

3

- (c) Write a function that takes a dictionary B that contains the book details as its parameter. It should print all its details in the ascending order of the key. You need not create the dictionary. For example if the dictionary B has the following data with Bookno as the key, title, author and price as values stored in the list.

```
B={ 104:['Pride and Prejudice and Zombies','Seth Grahame Smith',150],100:['Something
Wicked This Way Comes','Ray Bradbury',100],102:['Midnight in the Garden of Good and
Evil','John Berendt',100],103:['I am America','Stephen Colbert',125]}
```

Then the output of your function should be

```
100:['Something Wicked This Way Comes', 'Ray Bradbury', 100]
```

```
102:['Midnight in the Garden if Good and Evil', 'John Berendt', 100]
```

```
103:['I am America', 'Stephen Colbert', 125]
```

```
104:['Pride and Prejudice and Zombies', 'Seth Grahame Smith', 150]
```

3

- 6.(a) Rewrite the following program after removing syntactical error(s) if any. Underline each correction **2**

```
def main9()
    x= input('enter the number')
    print('the square root of the number is ', sqrt(x))
    print('the factors are ')
    for i in range(1,x+1):
        if x%i=0:
            print(i)
    if __name__=='__main__':
        main9()
```

- (b) Consider the following class *pay*:

4

```
class pay:
    def __init__(self, basic, deptid):
        self.basic =basic
        self.deptid=deptid
    def inc_basic(self, b):
        self.basic+=b
```



```
def get_basic(self):
    return self.basic
```

Write code in Python to publically derive another class employee from class pay. Class employee should have the following.

data properties

name of type string

Methods:

- I. A constructor to initialize the value of name as “not assigned” and invoke its base class `__init__()` method with values of basic as 0 and deptid as 100.
- II. A function `inc_sal()` to increment the basic by 10% .
- III. A function `display_all()` to display the value of data members name, basic and deptid.
- IV. A function `input_all()` to input new values for name, basic and deptid.

(c) What do you understand by Data Encapsulation and Data Hiding? Also give an example in Python to illustrate both

2

(d) Find the output of the following program:

3

```
x=5
def findall2(a,b=5,c=10):
    if a>b:
        return x+a+b
    elif a>c:
        return x-a-b
    else:
        return a-b-c
def main6():
    global x
    y,z=15,20
    x=findall2(y,c=z)
    print(x,y,z)
    y=findall2(x,b=y,c=z)
    print(x,y,z)
    z=findall2(z,b=y)
    print(x,y,z)
if __name__=="__main__":
    main6()
```

(e) Differentiate between local and global variables giving suitable example.

2

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