केंद्रीय विद्यालय संगठन

KENDRIYA VIDYALAYA SANGATHAN

अध्ययन सामग्री

STUDY MATERIAL

कक्षा बाहरवीं

CLASS XII

कंप्यूटर विज्ञान

COMPUTER SCIENCE (083)

2019-20

चंडीगढ़ संभाग

CHANDIGARH REGION

STUDY MATERIAL FOR HIGH ACHIEVERS OF CLASS XII
(COMPUTER SCIENCE)

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Salient features of this Study Material

➢ This study material is in the form of Question Bank comprising of solved questions from each chapter of the syllabus.

➢ It is a collection of a number of challenging questions based on High Order Thinking Skill of students.

➢ It aims at providing help to very high scorer students who may miss 100 out of 100 because of not being exposed to new type of questions, being used to only conventional types of questions and not paying attention towards the topics which are given in the reference books and syllabus of Computer Science as per CBSE guidelines.

➢ It contains guidelines, hints and solutions for really challenging questions and topics.

➢ It contains a number of fresh/new questions (solved), which shall increase the confidence level of the students when they will solve them as per CBSE guidelines.

➢ Such kind of questions shall draw the attention of both the students and the teachers, and will help all of us in achieving the aim of 100% result with healthy PI.

"Things work out best for those who make the best of how things work out."

ALL THE BEST TO OUR DEAR STUDENTS…..

COMPUTER SCIENCE (Theory)

Class XII - Code: 083 (2019-20)

Blue Print

(Weightage to different topics/content units)

S. No	UNIT	VSA/OTQ 1 Mark	SA I 2 Marks	SA II 3 Marks	LA 4 Marks	Total
1	UNIT 1-Programming and Computational Thinking-2					
	a. Python Revision Tour	6	1	--	--	**08**
	b. Function/Libraires/Recursion	2	2	2	--	**12**
	c. File Handling	--	1	--	--	**02**
	d. Idea of Algorithm Efficiency		2	--	--	**02**
	e. Data Visualization	--	1	--	--	**02**
	f. Data Structure	--	--	--	1	**04**
2	UNIT 2- Computer Networks	4	2	1	1	**15**
3	UNIT 3 – Data Management - 2	4	2	1	1	**15**
2	UNIT 4 – Society, Law and Ethics - 2	2	4	-	-	**10**
	TOTAL	**18(18)**	**28(14)**	**12(4)**	**12(3)**	**70 (39)**

Note : This blue print is designed on the basis of Sample Question Paper provided by CBSE in Sept. 2019.

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Q 1. Find error in the following code(if any) and correct code by rewriting code and underline the correction;-

```
x= int("Enter value of x:")
for in range [0,10]:
    if x=y
       print( x+y)
    else:
      Print( x-y)
```

Q 2. Rewrite the following program after finding and correcting syntactical errors and underlining it.

```
a,b = 0
if (a = b)
a +b = c
print( z)
```

Q 3. Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.

```
250 = Number
WHILE Number<=1000:
    if Number=>750
        print (Number)
    Number=Number+100
else
print( Number*2)
  Number=Number+50
```

Q 4. Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.

```
Val = int(rawinput("Value:"))
Adder = 0
for C in range(1,Val,3)
      Adder+=C
      if C%2=0:
         Print (C*10)
      Else:
         print (C*)
print (Adder)
```

Q5. Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.

```
25=Val
for I in the range(0,Val)
      if I%2==0:
            print( I+1)
      Else:
         print (I-1
```

Q6. Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.

```
STRING=""WELCOME
```

```
NOTE""
for S in range[0,8]:
        print (STRING(S))
```

Q 7. Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.

```
a=int{input("ENTER FIRST NUMBER")}
b=int(input("ENTER SECOND NUMBER"))
c=int(input("ENTER THIRD NUMBER"))
if a>b and a>c
    print("A IS GREATER")
if b>a and b>c:
    Print(" B IS GREATER")
if c>a  and c>b:
    print(C IS GREATER)
```

Q 8.   Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.

```
i==1
a=int(input("ENTER FIRST NUMBER"))
FOR i in range[1,11];
   print(a,"*=",i,"=",a*i)
```

Q. 9 Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.

```
a="1"
while a>=10:
   print("Value of  a=",a)
   a=+1
```

Q 10. Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.

```
Num=int(rawinput("Number:"))
sum=0
for i in range(10,Num,3)
   Sum+=1
   if i%2=0:
     print(i*2)
   Else:
     print(i*3 print Sum)
```

Q 11. Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.

```
weather='raining'
if weather='sunny':
   print("wear sunblock")
elif weather='snow':
   print("going skiing")
else:
   print(weather)
```

Q 12. Write the modules that will be required to be imported to execute the following code in Python.

```
def main( ):
     for i in range (len(string)) ):
         if string [i] = = " "
                 print
         else:
                 c=string[i].upper()
                 print( "string is:",c)
print ("String length=",len(math.floor()))
```
Q.13. Observe the following Python code very carefully and rewrite it after removing all syntactical errors with each correction underlined.
```
DEF execmain():
x = input("Enter a number:")
if (abs(x)=x):
    print ("You entered a positive number")
else:
x=*-1
   print "Number made positive:"x
execmain()
```
Q 14.- Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code
```
x=integer(input('Enter 1 or 10'))
if x==1:
for x in range(1,11)
    Print(x)
Else:
    for x in range(10,0,-1):
    print(x)
```
15.Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.
```
30=To
for K in range(0,To) IF k%4==0:
print (K*4) Else:
print (K+3)
```

OUTPUT FINDING QUESTIONS

Q1 Find output generated by the following code:
```
p=10
q=20
p*=q//3
q+=p=q**2
print(p,q)
```
Q2 Find output generated by the following code:
```
String Str="Computer"
Str[-4:]
Str*2
```
Q3 Find out the output of the Following –
```
x=20
x=x+5
```

```
  x=x-10
print (x)
x,y=x-1,50
print (x,y)
```

Q4 Find out the output of the Following –
```
  for a in range(3,10,3):
          for b in range(1,a,2):
                  print(b, end=' ')
  print ()
```
Q5 FIND OUTPUT OF FOLLOWING
```
x=10
y=5
for i in range(x-y*2):
   print("%",i)
```
Q6. Find output
```
x="one"
y="two"
c=0
while c<len(x):
   print(x[c],y[c])
   c=c+1
```
Q 7:
```
for i in range(-1,7,2):
   for  j in range(3):
      print(i,j)
```
Q.8
```
string="aabbcc"
count=3
while True:
   if string[0]=='a':
      string=string[2:]
   elif string[-1]=='b':
      string=string[:2]
   else:
      count+=1
      break
print(string)
print(count)
```
Q9:
```
x="hello world"
print(x[:2],x[:-2],x[-2:])
print(x[6],x[2:4])
print(x[2:-3],x[-4:-2])
```
Q 10. Find and write the output of the following python code :
```
Msg1="WeLcOME"
Msg2="GUeSTs"
Msg3=""
```

```python
for I in range(0,len(Msg2)+1):
if Msg1[I]>="A" and Msg1[I]<="M":
Msg3=Msg3+Msg1[I]
elif Msg1[I]>="N" and Msg1[I]<="Z":
Msg3=Msg3+Msg2[I]
else:
Msg3=Msg3+"*"
print Msg3
```

Q 11. Find and write the output of the following python code :
```python
def Changer(P,Q=10):
  P=P/Q
 Q=P%Q
  print P,"#",Q
  return P
A=200
B=20
A=Changer(A,B)
print A,"$",B
B=Changer(B)
print A,"$",B
A=Changer(A)
print A,"$",B
```

Q 12. Find and write the output of the following python code: 2
```python
Data = ["P",20,"R",10,"S",30]
Times = 0
Alpha = ""
Add = 0
for C in range(1,6,2):
   Times= Times + C
   Alpha= Alpha + Data[C-1]+"$"
   Add = Add + Data[C]
print Times,Add,Alpha
```

Q13 Find and write the output of the following python code:
```python
Text1="AISSCE 2018"
Text2=""
I=0
while I<len(Text1):
   if Text1[I]>="0" and Text1[I]<="9":
        Val = int(Text1[I])
        Val = Val + 1
        Text2=Text2 + str(Val)
elif  Text1[I]>="A" and Text1[I] <="Z":
        Text2=Text2 + (Text1[I+1])
else:
        Text2=Text2 + "*"
```

```
    I=I+1
print Text2
```

Q14 Find and write the output of the following python code:
```
TXT = ["20","50","30","40"]
CNT = 3
TOTAL = 0
for C in [7,5,4,6]:
    T = TXT[CNT]
    TOTAL = float (T) + C
    print TOTAL
    CNT-=1
```

Q 15
```
line = "I'll come by then."
eline = ""
for i in line:
    eline += chr(ord(i)+3)
print(eline)
```

Q 16
```
line =  "What will have so will"
L = line.split('a')
for i in L:
    print(i, end=' ')
```

Q 17   Find output
```
 p=5/2
 q=p*4
 r=p+q
 p+=p+q+r
 q-=p+q*r
print(p,q,r)
```

Q 18 find output
```
a=(2+3)**3-6/2
 b=(2+3)*5//4+(4+6)/2
 c=12+(3*4-6)/3
d=12%5*3+(2*6)//4
print(a,b,c,d)
```

Q 19. Find the output of the following:
```
def main ( ) :
    Moves=[11, 22, 33, 44]
    Queen=Moves
    Moves[2]+=22
    L=Len(Moves)
    for i in range (L)
    print "Now@", Queen[L-i-1], "#", Moves [i]
```

Q 20. Find the output of the following
```
L1 = [100,900,300,400,500]
START = 1
```

```
SUM = 0
for C in range(START,4):
    SUM = SUM + L1[C]
    print(C, ":", SUM)
    SUM = SUM + L1[0]*10
print(SUM)
```

Q. 21.Find and write the output of the following python code:

```
def fun(s):
        k=len(s) m=" "
        for i in range(0,k): if(s[i].isupper()):
                m=m+s[i].lower()
            elif s[i].isalpha():
                m=m+s[i].upper()
          else:
              m=m+'bb' print(m)
fun('school2@com')
```

Q. 22. Find the output of the given program :

```
def Change(P ,Q=30):
        P=P+Q
        Q=P-Q
        print( P,"#",Q)
        return (P)
R=150
S=100
R=Change(R,S)
print(R,"#",S)
S=Change(S)
```

23.

```
x = "abcdef"
i = "a"
while i in x:
    print(i, end = " ")
```

Questions Based on Tuple

Q: Find the output of following codes

1. t1=("sun","mon","tue","wed")
       a.   print(t1[-1])

2. t2=("sun","mon","tue","wed","thru","fri")
        for i in range (-6,2):
                print(t2[i])

3. t3=("sun","mon","tue","wed","thru","fri")
        if "sun" in t3:
            for i in range (0,3):
                    print(t2[i])
        else:
            for i in range (3,6):
                    print(t2[i])
```

4. 
```
t4=("sun","mon","tue","wed","thru","fri")
if "sun" not in t4:
    for i in range (0,3):
        print(t4[i])
else:
    for i in range (3,6):
        print(t4[i])
```

5. 
```
t5=("sun",2,"tue",4,"thru",5)
if "sun" not in t4:
    for i in range (0,3):
        print(t5[i])
else:
    for i in range (3,6):
        print(t5[i])
```

6. 
```
t6=('a','b')
t7=('p','q')
t8=t6+t7
print(t8*2)
```

7. 
```
t9=('a','b')
t10=('p','q')
t11=t9+t10
print(len(t11*2))
```

8. 
```
t12=('a','e','i','o','u')
p,q,r,s,t=t12
print("p= ",p)
print("s= ",s)
print("s + p", s + p)
```

9. 
```
t13=(10,20,30,40,50,60,70,80)
t14=(90,100,110,120)
t15=t13+t14
print(t15[0:12:3])
```

Q. Find the errors

1. 
```
t1=(10,20,30,40,50,60,70,80)
t2=(90,100,110,120)
t3=t1*t2
Print(t5[0:12:3])
```

2. 
```
t1=(10,20,30,40,50,60,70,80)
i=t1.len()
Print(T1,i)
```

3. 
```
t1=(10,20,30,40,50,60,70,80)
t1[5]=55
```

```
        t1.append(90)
        print(t1,i)
    4.  t1=(10,20,30,40,50,60,70,80)
        t2=t1*2
        t3=t2+4
        print t2,t3
```

5.
```
        t1=(10,20,30,40,50,60,70,80)
        str=""
        str=index(t1(40))
        print("index of tuple is ", str)
        str=t1.max()
        print("max item is ", str)
```

List Based Question
Q.1. Give the output of the following code:-
```
list=['p','r','o','b','l','e','m']
list[1:3]=[]
print(list)
list[2:5]=[]
print(list)
```
Q 2. Give the output of the following code:-
```
l1=[13,18,11,16,13,18,13]
print(l1.index(18))
print(l1.count(18))
l1.append(l1.count(13))
print(l1)
```
Q 3 Find the error in following code. State the reason of the error.
```
aLst = { 'a':1 ,' b':2, 'c':3 }
print (aLst['a','b'])
```
Q 4. list1 =[1998, 2002, 1997, 2000]
list2 =[2014, 2016, 1996, 2009]

print"list1 + list 2 = : ", list1 +list2   #statement 1

print"list1 * 2 = : ", list1 *2 #statement 2

Q5. list1 = [1, 2, 3, 4, 5]
```
 list2 =list1
 list2[0] =0;
 print("list1= : ", list1)
```

Q6. What is the output of the following:
```
data =[2, 3, 9]
temp =[[x forx in[data]] forx inrange(3)]
```

```
print(temp)
```
a) [[[2, 3, 9]], [[2, 3, 9]], [[2, 3, 9]]]
b) [[2, 3, 9], [2, 3, 9], [2, 3, 9]]
c) [[[2, 3, 9]], [[2, 3, 9]]]
d) None of these

Q7.
```
temp =['Geeks', 'for', 'Geeks']
arr =[i[0].upper() fori intemp]
print(arr)
```
a) ['G', 'F', 'G']
b) ['GEEKS']
c) ['GEEKS', 'FOR', 'GEEKS']
d) Compilation error

Q8.What will be the output?
1. d1 ={"john":40, "peter":45}
2. d2 ={"john":466, "peter":45}
3. d1 > d2

a) TRUE
b) FALSE
c) ERROR
d) NONE

Q9. What will be the error of the following code Snippet?
```
Lst =[1,2,3,4,5,6,7,8,9]
Lst[::2]=10,20,30,40,50,60
Print[Lst]
```
Q10. Find the error in following code. State the reason of the error
```
aLst={'a':1,'b':2,'c':3}
print(aLst['a','b'])
```
Q11. What Will Be The Output Of The Following Code Snippet?
```
a =[1,2,3,4,5]
print(a[3:0:-1])
```
A. Syntax error
B. [4, 3, 2]
C. [4, 3]
D. [4, 3, 2, 1]

Q 12.What Will Be The Output Of The Following Code Snippet?
```
fruit_list1 = ['Apple', 'Berry', 'Cherry', 'Papaya']
fruit_list2 = fruit_list1
fruit_list3 = fruit_list1[:]
fruit_list2[0] = 'Guava'
fruit_list3[1] = 'Kiwi'
sum = 0
for ls in (fruit_list1, fruit_list2, fruit_list3):
    if ls[0] == 'Guava':
        sum += 1
    if ls[1] == 'Kiwi':
        sum += 20
```

print (sum)

A. 22

B. 21

C. 0

D. 43

Q13. What Will Be The Output Of The Following Code Snippet?

```
a = {(1,2):1,(2,3):2}
print(a[1,2])
```

A. Key Error

B. 1

C. {(2,3):2}

D. {(1,2):1}

Q14. What Will Be The Output Of The Following Code Snippet?

```
my_dict = {}
my_dict[1] = 1
my_dict['1'] = 2
my_dict[1.0] = 4
sum = 0
for k in my_dict:
    sum += my_dict[k]
print (sum)
```

A. 7

B. Syntax error

C. 3

D. 6

Q15.What Will Be The Output Of The Following Code Snippet?

```
my_dict = {}
my_dict[(1,2,4)] = 8
my_dict[(4,2,1)] = 10
my_dict[(1,2)] = 12
sum = 0
for k in my_dict:
    sum += my_dict[k]
print (sum)
print(my_dict)
```

A. Syntax error

B. 30

   {(1, 2): 12, (4, 2, 1): 10, (1, 2, 4): 8}

C. 47

   {(1, 2): 12, (4, 2, 1): 10, (1, 2, 4): 8}

D. 30

   {[1, 2]: 12, [4, 2, 1]: 10, [1, 2, 4]: 8}

QUESTION BANK ON OUTPUT AND ERROR BASED QUESTIONS ON FUNCTIONS IN PYTHON

Q. Identify the errors, underline it and correct the errors

a)Def Sum(a=1,b)

```
        return a+b
        print ("The sum =" Sum(7,-1)
```

b) def main ( )
   print ("hello")

(c) def func2() :
    print (2 + 3)

    func2(5)

Q1. Find the output of the following numbers:
Num = 20
Sum = 0
for I in range (10, Num, 3)
        Sum+=i
        if i%2==0:
                print i*2
else:
        print i*3
Q2.Find the output of the following
 Text="gmail@com"
 L=len(Text)
        ntext=" "
        For i in range (0,L):
            If   text[i].isupper():
                    ntext=ntext+text[i].lower()
            elif text[i].isalpha():
 ntext=ntext+text[i].upper()
        else:
          ntext=ntext+'bb'
Q3. def power (b , p):
        r = b ** P
        return r

   def calcSquare(a):
      a = power (a, 2)
      return a

   n = 5
   result = calcSquare(n)
   print (result)

Q 4. Find the output of the following-

```
Import math
print (math. Floor(5.5))
 Q 5. Find the output
 def gfg(x,l=[]):
      for I in range(x):
          l.append(i*i)
      print(l)
gfg(2)
gfg(3,[3,2,1])
gfg(3)
Q 6.  count =1
    def  dothis():
          global count
          for I in (1,2,3)
              count+=1
     dothis()
     print count
 Q 7. def addem(x,y,z):
          Print(x+y+z)
     def prod(x,y,z):
          return x*y*z
   A=addem(6,16,26)
   B=prod(2,3,6)
   Print(a,b)
 Q 8.   def Func(message,num=1):
           print(message*num)
      Func('python')
      Func('easy',3)

Q 9.def Check(n1=1,n2=2)
     n1=n1+n2
     n2+=1
     print(n1,n2)

  Check()
  Check(2,1)
  Check(3)
Q. 10. a=10
   def call():
    global a
    a=15
    b=20
     print(a)
   call()
```

11.Write a user defined function GenNum(a, b) to generate odd numbers between a and b (including b)

12.. Write definition of a method/function **AddOdd(VALUES)** to display sum of odd   values   from the list of VALUES.

13..Write definition of a Method MSEARCH(STATES) to display all the state names
from a list of STATES, which are starting with alphabet M.
For example:
If the list STATES contains
["MP',"UP","MH","DL","MZ","WB"]
The following should get displayed

MP

MH

MZ

14...Write a python function generatefibo(n) where n is the limit, using a generator function
Fibonacci (max)(where max is the limit n) that produces Fibonacci series.

15. Write a definition of a method COUNTNOW(PLACES) to find and display those place names, in which
There are more than 7 characters.For example :If the list PLACES contains.

      3

["MELBORN","TOKYO","PINKCITY","BEIZING","SUNCITY"

      The following should get displayed :**PINKCITY**

General Theory questions

1.Differentiate between the round() and floor() functions with the help of suitable example.
2.Which string method is used to implement the following:

    a. To count the number of characters in the string
    b. To change the first character of the string in capital letter
    c. To change lowercase to uppercase letter
    d. To check whether the given character is letter or a number

3.What are default arguments ?
4.What is the difference between actual and formal parameters ?
5.What is a recursive function ?
6.What is the difference between built-in functions and modules?
7.what is the difference between local variable and global variable?
8.What are the advantages of writing functions with keyword arguments ?
9. What do you mean by scope of variables **?**
10. Which of the following is valid arithmetic operator in Python:
 (i) // (ii) **?** (iii) < (iv) and
11. Write the type of tokens from the following:
   (i) if (ii) roll_no
 12**.** Which of the following are valid operators in Python:
 (i) ** (ii) */ (iii) like (iv) ||
 (v) is (vi) ^ (vii) between (viii) in
13. Which of the following can be used as valid variable identifier(s) in Python?
(i) 4thSum
(ii) Total
(iii) Number#
(iv) _Data

Answers

Error Finding Answers

1.ANS Correct code:-
x= int(input("Enter value of x:"))
for in range (0,10):
if x==y:
     print(x+y)
   else:
print (x-y)

2.ANS:- CORRECTED CODE
a,b = 0,0
if (a = =b) :
c=a +b
    print(c)

ANS 3 CORRECTED CODE
Number = 250
while Number<=1000:
     if Number >= 750:
         print (Number)
         Number = Number+100
else:
         print (Number*2)
         Number = Number+50

ANS4. CORRECTED CODE:-
```
Val = int(raw_input("Value:"))    # Error 1
Adder = 0
        for C in range(1,Val,3) :               # Error 2
            Adder+=C
            if C%2==0:                     # Error 3
                print( C*10  )             # Error 4
            else:                          # Error 5
                print (C )                  # Error 6
         print Adder
```


ANS 5. CORRECTED CODE
```
Val = 25                               #Error 1
for I in range(0,Val):             #Error 2 and Error 3
        if I%2==0:
            print (I+1)
        else:                                  #Error 4
            print (I-1)
```
ANS 6 :- CORRECTED CODE:-
STRING= "WELCOME"
NOTE=" "

```
for S in range (0,8) :
    print (STRING [S])
```

Also range(0,8) will give a runtime error as the index is out of range. It should be range(0,7)

Ans 7.CORRECTED CODE
```
a=int(input("ENTER FIRST NUMBER"))
b=int(input("ENTER SECOND NUMBER"))
c=int(input("ENTER THIRD NUMBER"))
if a>b and a>c:
    print("A IS GREATER")
if b>a and b>c:
print(" B IS GREATER")
if c>a  and c>b:
    print(" C IS GREATER ")
```

Ans 8. CORRECTED CODE
```
i=1
a=int(input("ENTER FIRST NUMBER"))
for i in range(1,11):
    print(a,"*=",i,"=",a*i)
```

Ans 9.CORRECTED CODE
```
a=1
while a<=10:
    print("Value of  a=",a)
a+=1
```

Ans.10 CORRECTED CODE
```
Num=int(input("Number:"))
sum=0
for i in range(10,Num,3):
sum+=1
    if i%2==0:
        print(i*2)
else:
        print(i*3)
print(sum)
```

Ans. 11 Corrected Code
```
weather='raining'
if weather=='sunny':
    print("wear sunblock")
elif weather=='snow':
    print("going skiing")
else:
    print(weather)
```

Ans.12.
Math module and String module

Ans 13..Corrected code:
```
def execmain():
____ x= input("Enter a number:") (indentation)
```

```
        if(abs(x)== x):
             print("You entered a positive number")
        else:
        ___x *= -1(indentaion)
            print("Number made positive:" ͺ x)
execmain()
```
ANS:-14
```
x=int(input('Enter 1 or 10'))
if x==1:
for x in range(1,11):
   print(x)
else:
  for x in range(10,0,-1):
      print(x)(indentation)
```
Ans 15..
To=30
```
for K in range(0,To) :
      if k%4==0:
         print (K*4)
      else:
         print (K+3)
```

Output

1.Output:-
        60, 480
2. ANS:- output:
uter
'ComputerComputer'
3. ANS:
       15
        14,50
ANS 4:
      1
       1   4
       1   4   7
ANS 5:- NO OUTPUT
Ans 6.:
o t
n w
e o
ANS 7:
-1 0
-1 1
-1 2
1 0
1 1
1 2

3 0
3 1
3 2
5 0
5 1
5 2
Ans. 8   bbcc
             4
Ans 9:
        he hello wor ld
        w ll
        llo wo or
ANS 10.
G*L*TME
Ans 11.
10 # 10
10 $ 20
2 # 2
10 $ 2
1 # 1
1 $ 2

Ans 12-
1 20 P$
4 30 PR
9 60 PRS$
Ans 13.-
ISSCE*3129
ANS 14.
47.0
35.0
54.0
26.0
ANS 15.
L*oo#frph#e|#wkhq1
ANS 16.
Wh t will h ve so will
Ans 17. (27.5 - 142.5 12.5)
Ans 18. (122.0 11.0 14.0 9)
Ans 19.
Now @ 44 # 11
Now @ 55 # 22
Now @ 22 # 55
Now @ 11 # 44
Ans 20.
1:900
1900
3200

3:3600
4600
Ans 21.
SCHOOLbbbbCOM
Ans 22.
250 # 150
250 # 100
130 # 100
Ans 23. aaaaaa   **OR**   infinite loop

<u>Outputs(Tuples)</u>

1. wed

2. sun
   mon
   tue
   wed
   thru
   fri
   sun
   mon

3. sun
   mon
   tue

4. wed
   thru
   fri

5. 4
   thru
   5

6. ('a', 'b', 'p', 'q', 'a', 'b', 'p', 'q')

7. 8

8. p= a
   s= o
   s + p oa

9. 10,40,70,100

<u>Error Tuples</u>

Ans 1   a. ti*t2 cant multiply
         b. P is in uppercase in print command

       c. t5 is not defined

Ans 2

       a. len() is used wrongly
       b. P is in uppercase in print command
       c. T1 is not defined

Ans 3

       a. 'tuple' object does not support item assignment in line 2
       b. Append() Method is not with tuple

Ans. 4

       a) line 3 cannot concatenate with int
       b) Parenthesis is missing in line 4

Ans 5

       a. Syntax error in index function
       b. Syntax error in max function

Answers based on LIST

Ans.1 ['p','b','l','e','m']
    ['p','b']

Ans. 2

 1
 2
[13,18,11,16,13,18,13,3]

Ans 3: The above code will produce KeyError, the reason being that there is no key same as the list ['a','b']

Ans 4.
list1 + list 2 = : [1998, 2002, 1997, 2000, 2014, 2016, 1996, 2009]
list1 * 2 = : [1998, 2002, 1997, 2000, 1998, 2002, 1997, 2000]

Ans 5.   List1:[0,2,3,4,5]

Ans 6. (a)

Explanation: [x for x in[data] returns a new list copying the values in the list data and the outer for statement prints the newly created list 3 times.

Ans7. a

Ans 8. Type Error

Ans 9.ValueError: attempt to assign sequence of size 6 to extended slice of size 5

Ans 10. The above code produce KeyError, the reason being that there is no key same as the list['a','b'] in dictionary aLst

Ans 11. B

Ans 12. A

Ans 13. B

Ans 14.D

Ans 15 B

FUNCTIONS(Error)

    Ans 1: def sum(a=1,b) :__

___ return a+b (indentation)
      print ("The sum =", Sum(7,-1))

Ans 2: def main ( ):
          print ("hello")

Ans 3: def func2() :
          print (2 + 3)

          func2() no parameter is to be passed

1. output:
       20
       39
       32
       57
2.Output: GMAILbbCOM
3.output: 25
4.output: 6
5.output:
[0,1]
[3,2,1,0,1,4]
[0,1,0,1,4]
6. output: 4
7. output: 36
8.output: python
          easyeasyaesy
9.Output:
       3 3
       3 2
       5 3
10   15

11. def getNum(a,b):
   for i in range(a,b+1):
      if i%2==1:
         print(i)
12. Ans def AddOdd(Values):
       n=len(NUMBERS)
       s=0
      for i in range(n):
         if (i%2!=0):
           s=s+NUMBERS[i]
      print(s)
13. Ans def MSEARCH(STATES):
       for i in STATES:
          if i[0]=='M':
             print i

```
14. def Fibonacci (max):
        a, b = 0, 1
        while a <=max:
                yield a,
                a,b = b,a+b
    def generatefibo(n):
            for i in Fibonacci (n): print( i)
```
15. Ans.l=["MELBORN","TOKYO","PINKCITY","BEIZING","SUNCITY"]
```
def countno(m):
    length=len(m)
    for i in range(0,length):
        if len(m[i])>7:
            print(m[i])

 countno(l)
```

General Questions

Ans1.. The round() function is used to convert a fractional number into whole as the nearest next whereas the floor() is used to convert to the nearest lower whole number. E.g. round(5.8) = 6 and floor(5.8)= 5

Ans2.. a. len(str)   b. str.capitalize()   c. str.upper()   d. ch.isalnum()

Ans3.. Default arguments are used in function definition, if the function is called without the argument, the default argument gets its default value.

Ans 4.Actual parameters are those parameters which are used in function call statement and formal parameters are those parameters which are used in function header (definition).

e.g.   def sum(a,b):   # a and b are formal parameters
                 returna+b
        x,y=5,10
        res=sum(x,y)   # x and y are actual parameters

Ans 5. Recursion is a way of programming or coding a problem, in which a function calls itself one or more times in its body. Usually, it is returning the return value of this function call. If a function definition fulfils the condition of recursion, we call this function a recursive function.

Example:

4! = 4 * 3!

3! = 3 * 2!

2! = 2 * 1

Def factorial(n):
    If n ==1:
            return 1
    else:
            return n*factorial(n-1)

Ans 6: Built in functions can be used directly in a program in python, but in order to use modules, we have to use import statement to use them.

Ans 7.

SR.NO.	LOCAL VARIABLE	GLOBAL VARIABLE

| 1 | It is a variable which is declared within a function or within a block. | It is a variable which is declared outside all the functions. |
| 2 | It is accessible only within a function/ block in which it is declared. | It is accessible throughtout the program. |

For example,

def change():

       n=10   # n is a local variable

x=5   # x is a global variable

print(x)

Ans 8.: i) using the function is easier as we do not need to remember the order of the arguments.

ii) we can specify values of only those parameters which we want to give, as other parameters have default argument values

Ans9. Scope of variables refers to the part of the program where it is visible, i.e, the area where you can use it

Ans10. (i)

Ans 11. i) Keyword ii)identifier

Ans 12. i) iv) vi) viii)

Ans 13.ii) and iv)

CHAPTER 4: USING PYTHON LIBRARIES

A python program consist of three main components

1)Library or package

2)Module

3)Function/Sub Modules

RELATIONSHIP BETWEEN A MODULE, PACKAGE AND LIBRARY IN PYTHON

A **module** is a file containing python definitions,variables and classes and statement with .py extension

A Python package is simply a directory of python modules

A library in python is collection of various packages. Conceptually there is no difference between package and python Library.

Advantages of Python Modules

1)Putting code into modules is useful because of the ability to import the module functionality.

2)Reusability:A module can be used in some other python code. Hence it provide facility of code reusability

3)A module allows us to logically organize our python code.

4)Grouping related code into a module makes the code easier to understand and use.

5)Categorisation: Similar types of attributes can be placed in a single module.

Creation of Module : the following point must be noted before creating a module

- A module name should always end with .py extension
- We will not able to import module if it does not end with .py
- A module name must not be a Python keyword

A module is simply a python file which contains functions,classes and variables

Let us consider the following example of a module name area.py which contains three functions name area_circle(r),area_square(s),area_rect(l,b)

```
import math
def area_circle(r):
    return math.pi*r*r
def area_square(s):
    return s*s
def area_rect(l,b):
    return l*b
```

importing Modules: There are two ways to import a modules

1) Using import statement: we can import single as well as multiple modules

    1.1 For importing Single module

        Syntax:
        import modulename

    1.2 For importing Multiple modules

        Syntax:
        import modulename1,modulename2,modulename3

To Use function inside module

Syntax

modulename.function name

2)Using from Statement :To import some particular Function(s) from module we will use import statement

2.1 To import Particular Function
   Syntax:
   From <module name> import <write name of Function(s)>

                        Or
   From <module name> import *
(This statement will import all the functions from modules)
To use a function inside a module you have to directly call function if your are importing the modules using from statement
Example : Let us consider the following code.In this program we import the module with the help of from statement and directly use the function instead of specifying Module name
from area.py import area_rect
area_rect(5,4)
Alias name of Module :providing another name to module is known as alias name.When we provide an alias name ,then alias name is used for calling function
Syntax:import modulename as <alias name>
example import area as A now we will call function area_circle using alias name A of module area like as A.area_circle(5)
Note :we can also provide alias name to function of modules whenever we are using it with python from statement and whenever we have to call any statement then we have to provide function alias name instead of function original name 'Example:
From area import area_Circle as C
C(6)   # C is the alias name of function area_circle of module area
<center>**CREATION OF LIBRARY/PACKAGE**</center>
Steps to create and import the package
1)Create a directory named XYZ and add all the modules in the directory XYZ
Import os.mkdir("XYZ"
2)Create a file _init_.py in the directory XYZ. _init_.py file is used to make a directory as package.This file is used to initialse the package
3)Import the package named XYZ and use the attributes in some other program
Locating Modules
Python interpreter searches for module in the following sequences

Current directory	not found →	Each directory in shells variable PYTHONPATH	not found →	Checks default path where python is installed

(1 marks question)
Q1 Which of these definitions correctly describe a module?
   a) Denoted by triple quotes for providing the specifications of certain program elements.
   b) Design and implementation of specific functionality to be incorporated into a program
   c) Defines the specifications of how it is to be used.
   d) Any program that reuses code.
Q2 Which of the following is not true about main modules?
   a) When a python file is directly executed ,it is considered main module of a program
   b) Main modules may import any number of modules
   c) Special name given to main modules is: _main_
   d) Other main modules can import main modules
Q3Which of the following is not a valid namespace?
   a) global namespace

b) public namespace

c) built in namespace

d) local namespace

Q4 Which of the following is false about "import module name" form of import?

a) The namespace of imported module becomes part of importing module

b) This form of input prevents name clash

c) The namespace of imported module becomes available to importing module

d) The identifiers in module are accessed as: modulename.identifier

Q5 what is the order of namespaces in which python looks for an identifier?

a) python first searches the global namespace, then the local namespace and finally the built in namespace

b) python first searches the local namespace, then the global namespace and finally the built in namespace

c) python first searches the built in namespace, then the global namespace and finally the local namespace

d) python first searches the built in namespace , then the local namespace and finally the global namespace

Q6 which of these is not an advantage of using the modules?

a) Provides a means of reusing program code

b) Provides a means of dividing up tasks

c) Provides a means of reducing the size of the program

d) Provides a means of testing individual parts of the program

Q7 Which operator is used in the python to import all modules from packages?

(a) . operator

(b) * operator

(c) -> symbol

(d) , operator

Q8 Which file must be part of the folder containing python module file to make it importable python package?

(a) init.py

(b) ____steup__.py

(c) __init ___.py

(d) setup.py

Q9 In python which is the correct method to load a module math?

(a) Include math

(b) Import math

(c) #include<math.h>

(d) using math

Q10 Which is the correct command to load just the tempc method from a module called usable?

(a) Import usable,tempc

(b) Import tempc from usable

(c) From usable import tempc

(d) Import tempc

Q11 What is the extension of the python library module?

(a) .mod

(b) .lib

(c) .code

(d) .py

(2 marks questions)

Q1 How can you locate environment variable for python to locate the module files imported into a program?

Q2 what is the output of the following piece of code?

```
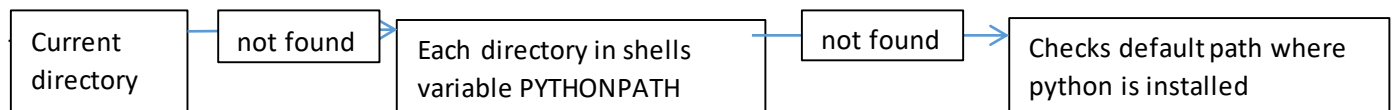#mod1
def change (a):
        b=[x*2 for x in a]
        print (b)
#mod2
def change (a) :
        b =[x*x for x in a]
        print (b)
from mode 1 import change
from mode 2 import change
#main
S= [1,2,3]
Change  (s)
```

Note: Both the modules mod1 and mod 2 are placed in the same program.

(a) [2,4,6]
(b) [1,4,9]
(c) [2,4,6][1,4,9]
(d) There is a name clash

Q3 What happens when python encounters an import statement in a program? What would happen,if there is one more important statement for the same module ,already imported in the same program?

Q4 What is the problem in the following piece of code?

```
        from math import factorial
        print (math.factorial (5))
```

Q5 What is the output of the following piece of code?

```
        #mod1
        def change (a):
                b=[x*2 for x in a]
                print (b)
        #mod 2
        def change (a):
                b=[x*x for x in a]
                print (b)
        from mod 1 import change
        from mod 2 imoprt change
        #main
        S=[1,2,3]
        Changes(s)
```

Q6 What would be the output produced by the following code :

```
        Import math
        Import random
        print ( math.ceil (random.random()))
        Justify your answer.
```

(3 marks questions)

Q1 Observe the following code and answer the question based on it.

```
# the math_operation module
deff add (a,b):
        return a+b
def subtract(a,b):
        return a-b
```

Fill in the blanks for the following code:

1. Math _operation
   #get the name of the module.
2. print (_____)
   #output:math_operation
   # Add 1and 2
   3.print(_____(1,2))
   # output 3

Q2 Consinder the code given in above and on the basis of it ,complete the code given below:
import the subtract function
#from the math_operation module
1._____
#subtract 1from 2
2.print(_____(2,1))
# output : 1
# Import everything from math____operations
3._____
print (subtract (2,1))
output:1
Print (add (1,1))
output:2

Q3 Consider a module 'simple' given below:
   #module simple.py
   " " "Greets or scold on call" " "
   def greet():
      " " " Greet anyone you like :-)" " "
       Print ("Helloz")
   def scold ():
   " " " Use me for scolding ,but scolding is not good:-(" " "
        Print ("Get lost")
   Count =10
   Print ("greeting or scolding- is it simple?")
   Another program 'test.py' imports this module.The code inside test.py is :
   #test.py
   import simple
   print(simple.count)
   What would be the output produced ,if we run the program test.py? justify your answer.

Q4 Consider the following code:
   Import math
   Import random
   print(str(int(math.pow(random.randint (2,4),2))), end = '')
   print(str(int (math.pow(random.randint(2,4), 2))) , end= '')
   print (str (int (math.pow(random .randint (2,4),2))))

   What would be possible outputs out of the given four choices?
   (i)   2 3 4
   (ii)   9 4 4
   (iii)   16 16 16
   (iv)   2 4 9
   (v)   4 9 4
   (vi)   4 4 4

Answers
(1 marks question)

Ans1 b) Design and implementation of specific functionality to be incorporated into a program

Ans 2 d)

Ans3 :b)

Ans 4 a)

Ans5 b)

Ans6:c)

Ans 7 (b)

Ans 8 (c)

Ans 9(b)

ANS 10 (C)

Ans 11 (d)

 (2 marks questions)

Ans1. Python path command is used for the same. It has a role similar to path.This variable tells the python interpreter where to locate the module files imported into a program.It should include the python source library ,directory containing python source code.

Ans2 (d)

Ans 3 When python encounters an important statement,it does the following:

- The code of imported module is interpreted and executed.
- Defined functions and variables created in the module are now available to the program that imported module.
- For imported module, a new namespace is set up with the same name as that of the module.

Any duplicate import statement for the same module in the same program is ignored by python

Ans 4 In the "from –import" from of import ,the imported identifiers (in this case factorial()) become part of the current local namespace and hence their module's name aren't specified along with the module name. Thus ,the statement should be:

print(factorial (5))

Ans 5 There is a name clash. A name clash is a situation when two different entities with the same name become part of the same scope. Since both the modules have the same function name ,there is a name clash, which is an error..

Ans6 The output Produced would be 1.0

(3 marks questions)

Ans1 . 1. input

2.math_operation_name_

3.math.operation.add

Ans 2. 1.from__operation import subtract

2.subtract

3.from math___ operation import*

Ans 3 The output produced would be:

Greeting or scolding – is it simple ?

10

The reason being ,import module's main block is executed upon import, so its important statement cause it to print:

Greting or scolding- is it simple?

And print (simple.count) statement causes output's next line ,i.e., 10

Ans 4.

The possible outputs could be (ii), (iii) (v) and (vi).

The reason being that randint () would generate an integer between range 2…4, which is then raised to power 2.

CHAPTER 5 : FILE HANDLING

A file in itself is a bunch of bytes stored on some storage device like hard disk, thumb drive etc.

TYPES OF FILE

TEXT FILE

1) A text file stores information in ASCII or unicode characters
2) each line of text is terminated, (delimited) with a special character known as EOL

BINARY FILES

1) A binary file is just a file that contains information in the same format in which the information is held in memory i.e the file content that is returned to you is raw.
2) There is no delimiter for a line
3) No translation occurs in binary file
4) Binary files are faster and easier for a program to read and write than are text files.
5) Binary files are the best way to store program information.

Steps to process a FILE

1)Determine the type of file usage :

in this section we determine whether file need to be open or not

2)open the file and assign its references to a file object or file handle

3)Process as required

4)close the file

OPENING AND CLOSING FILES

1) **open()** function is used to open a file

    ### Syntax:

    file variable/file handle=open(file_name,access mode)

    Example

    a) F= open('abc.txt,'w')

        this statement opens abc.txt in write mode

Note : if file mode is not mentioned in open function then default file mode i.e 'r' is used

   2) **close()** : the close() method of a file object flushes any unwritten information and close the file object after which no more writing can be done

SYNTAX: fileobject.close()

FILES MODE

it defines how the file will be accessed

Text File Mode	Binary File Mode	Description	Notes
'r'	'rb'	Read only	File must exist already ,otherwise python raises I/O error
'w'	'wb'	Write only	*If the file does not exist ,file is created. *If the file exists, python will truncate existing data and overwrite in tne file. So this mode must be used with caution.
'a'	'ab'	append	*File is in write only mode. *if the file exists, the data in the file is retained and new data being written will be appended to the end. *if the file does not exist ,python will create a new file.
'r+'	'r+b' or 'rb+'	Read and write	*File must exist otherwise error is raised. *Both reading and writing operations can take place.
'w+'	'w+b' or 'wb+'	Write and read	*File is created if doesn't exist. *If the file exists, file is truncated(past data is lost). *Both reading and writing operations can take place.
'a+'	'a+b' or 'ab+'	Write and read	*File is created if does not exist. *If file exists, files existing data is retained ; new data is appended. *Both reading and writing operations can take place.

TEXT FILE HANDLING

Methods to read data from files

S.NO.	Method	Syntax	Description
1	Read()	<filehandle>.read([n])	Reads at most n bytes ;If no n is specified, reads the entire file. Returns the read bytes in the form of a string . In [11]:file 1=open("E:\\mydata\\info.txt") In [12]:readInfo=file1.read(15) In [13]:print(readInfo)#prints firt 15 #characters of file In [14]:type(readInfo) Out[14]:str
2	Readline( )	<filehandle>.readline([n])	Reads a line of input ;if in is specified reads at most n bytes. Returns the read bytes in the form string ending with in(line)character or returns a blank string if no more bytes are left for reading in the file. In [20]:file1 = open("E:\\mydata\\info.txt") In [20]: readInfo =file1.readline() In [22]:print (readInfo)
3	readlines()	<filehandle>.readlines()	Read all lines and returns them in a list In [23]:file1 =open("E:\\mydata\\info text") In [24]:readInfo =file1.readlines() In [25]:print (readInfo) In [26]:type (readInfo) Out[26]:list

Writing data into files

S. NO	Name	Syntax	Description
1	Write()	<filehandle>.write(str1)	Write string str1 to file referenced by<filehandle>
2	Writelines()	<filehandle>.writelines (L)	Writes all strings in list L as lines to file referenced by <filehandle>

BINARY FILE HANDLING:
1) in binary file data is in unreadable format and to work on binary file we have to convert the data into readable form for read as well as write operation
2) pickling refers to the process of converting the structure to a byte stream before writing to a file.while reading the content of the file a reverse process called unpickling is used to convert the byte stream back to the original strstrstructure
3) we have to import **pickle** module for binary file handling
4) two main method of pickle modules are- dump() and load()
5) Syntax of dump():- dump(object,fileobject)
6) syntax of load():-load(fileobject)

Ques wrire a program in python to write and read structure, dictionary to the binary file
Ans import pickle
d1={'jan':31,'feb':28,'march':31,'april':30}
f=open('binfile.dat','wb+')
pickle.dump(d1,f)
d2=pickle.load(f)
print(d2)
f.close()
the above program saves a dictionary in binfile.dat and prints it on console after reading it from the file binfile.dat

RELATIVE AND ABSOLUTE PATH
1) the os module provides functions for working with files and directories ('os' stands for operating system). os.getcwd returns the name of the current directory
import os
cwd=os.getcwd()
print(cwd)#cwd is current working directory
2) A string like cwd that identifies a file is called path. A relative path starts from the current directory whereas an absolute path starts from the topmost directory in file system.
3)Example of Absolute path:E:\project\myfolder\data.txt

STANDARD FILE STREAM
we have to import module sys for standard I/O stream
the standard stream available in python are :
1)standard input stream(sys.stdin)
2)standard output stream(sys.stdout)
3)standard error stream(sys.stderr)

Questions

(1 mark questions)

Q1 what is the difference between 'w' and 'a' modes?

Q2 BINARY file is unreadable and open and close through a function only so what are the advantages of using binary file

Q3 write a statement to open a binary file name sample.dat in read mode and the file sample.dat is placed in a folder (name school) existing in c drive

Q4 which of the following function returns a list datatype
- A) d=f.read()
- B) d=f.read(10)
- C) d=f.readline()
- D) d=f.readlines()

Q5 how many file objects would you need to manage the following situations :
- (a) to process four files sequentially
- (b) To process two sorted files into third file

Q6 when do you think text files should be preferred over binary files?

(2 mark questions)

Q1 write a single loop to display all the contens of a text file file1.txt after removing leading and trailing WHITESPACES

Q2 what is the output of the following code fragment? explain

```
out=open('output.txt','w')
out.write('hello,world!\n')
out.write('how are you')
out.close()
open('output.txt').read()
```

Q3 read the code given below and answer the questions

```
f1=open('main.txt','w')
f1.write('bye')
f1.close()
```

if the file contains 'GOOD' before execution, what will be the content of the file after execution of the code

Q4 observe the following code and answer the follow

```
f1=open("mydata","a")
_____#blank1
f1.close()
```

(i) what type of file is mydata

(ii) Fill in the blank1 with statement to write "abc" in the file "mydata"

Q5 A given text file data.txt contains :

```
Line1\n
\n
 line3
Line 4
\n
 line6
```

What would be the output of following code?

```
f1=open('data.txt')
L=f1.readlines()
```

```
print(L[0])
print(L[2])
print(L[5])
print(L[1])
print(L[4])
print(L[3])
```
Q6 In which of the following file modes the existing data of the file will not be lost?

i) rb

ii) w

iii) a+b

iv) wb+

v)r+

vi)ab

vii) w+b

viii)wb

ix)w+

Q7 what would be the data types of variables data in following statements?

i) Data=f.read( )

ii) Data=f.read(10)

iii) Data=f.readline()

iv)Data=f.readlines()

Q8suppose a file name test1.txt store alphabets in it then what is the output of the following code
```
f1=open("test1.txt")
size=len(f1.read())
print(f1.read(5))
```
(3 marks questions)

Q 1Write a user defined function in python that displays the number of lines starting with 'H'in the file para.txt

Q2 write a function countmy() in python to read the text file "DATA.TXT" and count the number of times "my" occurs in the file. For example if the file DATA.TXT contains-"This is my website.I have diaplayed my preference in the CHOICE section ".-the countmy() function should display the output as:"my occurs 2 times".

Q3 write a method in python to read lines from a text file DIARY.TXT and display those lines which start with the alphabets P.

Q4write a method in python to read lines from a text file MYNOTES.TXT and display those lines which start with alphabets 'K'

Q5write a program to display all the records in a file along with line/record number.

Q6 consider a binary file employee.dat containing details such as empno:ename:salary(seperator ':') write a python function to display details of those employees who are earning between 20000 and 30000(both values inclusive)

Q7write a program that copies a text file "source.txt" onto "target.txt" barring the lines starting with @ sign.

Answers
(1 mark questions)
Ans 1 w mode opens a file for writing only. it overwrites if file already exist but 'a mode appends the existing file from end. It does not overwrites the file

Ans 2 binary file are easier and faster than text file.binary files are also used to store binary data such as images, video files, audio files.

Ans 3 f1=open("c:\school\sample.dat','r')

Ans4 d) f.readlines()

Ans 5 a)4   b)3

Ans 6 Text file should be preferred when we have to save data in text format and security of file is not important

(2 marks questions)

Ans 1 for line in open("file1.txt"):
        print(line.strip())

Ans 2 The output will be

Hello,world!

How are you?

The first line of code is opening the file in write mode,the next two line writes text t file .the last line opens the file and from that reference reads the file content.file() performs the same functions as open().Thus,the file("output.txt")will give the references to open the file on which read() is applied.

Ans 3 The file would now contains "Bye"only because when an existing file is openend in write mode .it truncates the existing data in file .

Ans 4 i)Text file

ii)f1.write("abc")

Ans5 Line1
     Line3

Line 6

Line 4

Ans6 ab and a+b mode

Ans 7 a)string b)string   c)stringd)list

Ans 8 No Output

      Explanation:the f1.read() of line 2 will read entire content of file and place the file pointer at the end of file. for f1.read(5) it will return nothing as there are no bytes to be read from EOF and,thus,print statement prints nothing.

3 marks question

Ans.1

```
def count H ():
        f = open ("para.txt" , "r" )
        lines =0
        l=f. readlines ()
        for i in L:
                if i [0]== 'H':
                        lines +=1
        print ("No. of lines are: " , lines)
```

Ans.2

```
def countmy ():
        f=open ("DATA.txt" ,"r")
        count=0
        x= f.read()
        word =x.split ()
```

```
        for i in word:
                if (i == "my"):
                        count =count + 1
        print ("my occurs" ,count, "times")
```

Ans.3
```
def display ():
        file=open('DIARY.txt ' , 'r')
        lines= file.readline()
        while line:
                if line[0]== 'p' :
                        print(line)
                line=file.readline ()
        file.close()
```

Ans.4
```
def display ():
        file=open(MYNOTES.TXT' , 'r')
        lines=file.readlines()
        while line:
                if line[0]=='K' :
                print(line)
                line=file.readline()
                file.close()
```

Ans 5.
```
f=open("result.dat" , "r")
count=0
rec=""
while True:
        rec=f.readline (0)
        if rec == " " :
                break
        count=count+1
        print (count,rec)
f.close()
```

Ans.6
```
def Readfile():
        i=open( "Employee.dat" , "rb+")
        x=i .readline()
        while(x):
                l= x.split(':')
                if ( (float (I[2]) >=20000) and (float I[2])<=40000):
                        print(x)
                x= i.readline()
```

Ans.7
```
def filter (oldfile, newfile):
        fin =open (oldfile, "r")
        fout= open (newfile, "w")
        while True:
                text =fin.readline ()
                if len(text)==0:
                        break
                if text[0]== "@":
                        continue
                fout.write(text)
        fin.close()
        fout.close()
filter("source.txt" , "target.txt")
```

Chapter 6 :- Recursion

HOTS Based Questions

Q1. Which among the following function will be recursive function?

(a)   def A() {
           B()

(b)   def A():
           A()

(c)   def A():
           B()

       def B():
           A()

(d)   def recure():
            resure()

Q2 . Why the following function stops after some time.

   def func1():

       print(" Hello func2")

       func2()

   def func2():

       print(" yes func1")

       func1()

Q3. Recursion and Iteration are both similar things i.e. anything that we can do with a loop can be done by recursion. If you, are a programmer which one will be used by you while making a program.

Q4. program to calculate pow(x,n).

Q 5. Print multiplication table of 12 using recursion.

Q6: Recursive function to return the sum of the given series.

Q7. Recursive function to find the sum of even elements from the array

Q8.Program to Calculate e^x by Recursion
        $e^x = 1 + x/1! + x^2/2! + x^3/3! + ...$
Q9. Python program to calculate length of a string using recursion

Q. 10 Write a function "perfect()" that determines if parameter number is a perfect number. Use this function in a program that determines and prints all the perfect numbers between 1 and 1000. [An integer number is said to be "perfect number" if its factors, including 1(but not the number itself), sum to the number. E.g., 6 is a perfect number because 6=1+2+3].

Q.11: What is tail recursion?

Q.12: What is the complexity of Binary search?

Q.13: What is the space complexity of the above recursive implementation to find the nth fibonacci number?

a) O(1)

b) O(2*n)

c) O(n2)

d) O(2n)

Q.14: Which of the following recursive formula can be used to find the factorial of a number?

a) fact(n) = n * fact(n)

b) fact(n) = n * fact(n+1)

c) fact(n) = n * fact(n-1)

d) fact(n) = n * fact(1)

Q.15: What is the time complexity of the above recursive implementation to find the factorial of a number?

a) O(1)

b) O(n)

c) O(n2)

d) O(n3)

Q.16: Why is <__init__.py> module used in Python?

Q:17: Write a Python program of recursion list sum.

RECURSION ANSWERS

1. Ans:- (a) not a recursive function , as after def colon (:) is not present

(b) Yes, it is a recursive function.

(c) Yes, it a recursive function.

(d) No, it is not a recursive function, as they are two different function.

2. Ans:- As the given output is:-

Hello func2

yes func1

Hello func2

Yes func1

………… and so on .

Reason :- as the function will go on all the memory will be used up, and the system will eventually show Run time error.

3. Ans:- As a programmer I will prefer to use both recursion and iteration depending on the need,

As, iteration is used by a programmer

- for most recursive events
- iteration does not involves the use of additional cost of RAM as compared to using recursion

Recursion is important as it makes the program shorter, and more simplified.

4. **Solution:**

def power(x, y):

   if (y == 0): return 1
   elif (int(y % 2) == 0):
      return (power(x, int(y / 2)) * power(x, int(y / 2)))
   else:
      return (x * power(x, int(y / 2)) * power(x, int(y / 2)))

x = 2; y = 3
print(power(x, y))

5. **Solution**
```
def table(n,i):
  print n*i
  i=i+1
  if i<=10:
    table(n,i)
table(12,1)
```

6. **Solution**
def sum(n):
  if n == 1:
    return 1
  else:

    # Recursive call
    return pow(n, n) + sum(n - 1)

n = 2
print(sum(n))

7. **Solution**
def SumOfEven(arr, i, sum):
  if (i < 0):
    print(sum);
    return;

```python
    if ((arr[i]) % 2 == 0):
        sum += (arr[i]);
        SumOfEven(arr, i - 1, sum);

if __name__ == '__main__':
    arr = [ 1, 2, 3, 4, 5, 6, 7, 8 ];
    n = len(arr);
    sum = 0;
    SumOfEven(arr, n - 1, sum);
```

8. **Solution:**

```python
p = 1.0
f = 1.0
def e(x, n) :
    global p, f
    if (n == 0) :
        return 1
    r = e(x, n - 1)
    p = p * x
    f = f * n
    return (r + p / f)


x = 4
n = 15
print(e(x, n))
```

9. **Solution:**

```python
str = "GeeksforGeeks"

def recLen(i) :

    global str
    if (i == len(str)) :
        return 0
    else :
        return 1 + recLen(i + 1)

print (recLen(0))
```

10. **Solution:**

```python
def perfect(n):
    sum = 0
    for i in range(1,n):
        if n%i == 0:
            sum = sum + i
    if sum == n:
        return True
    else:
```

```
    return False
for i in range(1,1001):
  if perfect(i):
    print i
```

11: A function where the recursive call is the last thing executed by the function.

12: log(n)

13. a

14. c

15. b

16: The <__init__.py> module can help in fulfilling following objectives.

It makes Python interpret directories as containing packages by excluding the ones with a common name such as string.

It grants a programmer with the control to decide which directory is a package and which is not.

However, the <__init__.py> can also be an empty file. It can then help in executing the initialization code for a package or setting the <__all__> variable.

17. def recursive_list_sum(data_list):

  total = 0

  for element in data_list:

   if type(element) == type([]):

    total = total + recursive_list_sum(element)

   else:

    total = total + element

  return total

print(recursive_list_sum([1, 2, [3,4],[5,6]]))

CHAPTER 7 : Idea of Algorithmic Efficiency

1. What is Algorithim?
2. What are the factors on which performance of a program depends?
3. What are the Internal and External factors?
4. What is Computational Complexity?
5. Write a program to Calculate sum of n natural numbers with time taken.
6. What is the time complexity of following algorithims?

    i)Binary Search   ii) linear Search

ANSWERS : IDEA OF ALGORITHMIC EFFICIENCY

Answers

Answer 1 :

An algorithm is a step-by-step method of solving a problem.

Answer 2:

Performance of an algorithm depends on many internal and external factors

Answer3:

Internal factors

 (a) Time required to run

(b) Space required to run

External factors:

(a) Size of the input to the program

(b) Speed of the computer

(c) Quality of the compiler

Answer4:

Computation means to solve problemsusing an algorithm and Complexity involves the study of factors to determine how much resource is sufficiently necessary for this algorithm to

run efficiently .

Answer5:

```
import time

def natural_sum(n):

start=time.time()

sum=0
```

```python
for x in range(1,n+1):

        sum=sum+x

        end=time.time()

        time_taken=end-start

print("Sum is",sum)

print("Time Taken:",time_taken)

natural_sum(100000)

import time

start=time.time()

def natural_sum(n):

        return(n*(n+1)/2)

end=time.time()

print(natural_sum(100000))

time_taken=end-start

print("Time Taken:",time_taken)
```

Answer6:

```python
def LSearch(List,x):

for i in List:

    if i==x:

    return True

return False

List=[10,20,30,40,50,60]

print(LSearch(List,30))

print(LSearch(List,35))

print(LSearch(List,40))
```

Binary Search

```python
def binsearch(ar,key,low,high):

        if low>high:

                return -999 #Base Case

        mid=int((low+high)/2)
```

```
        if key==ar[mid]:

                return mid #Base Case

        elif key<ar[mid]:

                high=mid-1

                return binsearch(ar,key,low,high)

        else:

                low=mid+1

                return binsearch(ar,key,low,high)

ary=[13,15,17,19,21,23,34,36,45]

item=int(input("Enter no. to search:"))

res=binsearch(ary,item,0,len(ary)-1)

if res>=0:

        print(item,"Found at index",res)

else:

        print("Number not found")
```

If we see both algorithms then we come to know that binary search is better because the number of operations in this algorithm are very less. It searches item very fast and in very less operations.

Chapter 8 : Data Visualization Using Pyplot

1. What is Data Visualization?
2. Write the syntax to import Pyplot library?
3. Name some commonly used chart types?
4. Name the functions that are used to create line chart
5. Name the functions that are used to create Bar chart
6. Name the functions that are used to create Pi chart
7. Write a Python program to draw a line with suitable label in the x axis, y axis and a title.
8. Write a Python program to draw a line using given axis values with suitable label in the x axis , y axis and a title.
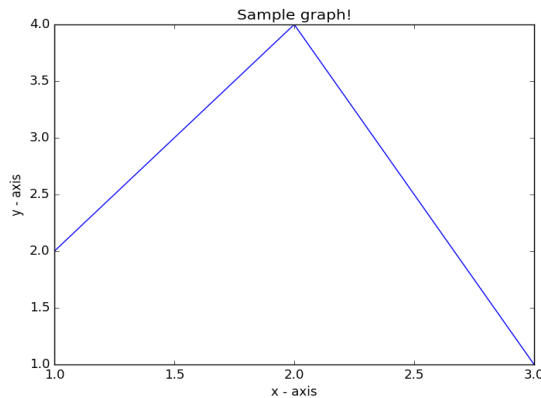
9. Write a   Python program to plot two or
   more lines   and set the line markers.
10. Write a Python Program to plot line chart for values x=[1,2,3,4,5]y=[65,45,76,26,80]

11. Write a Python Program to Plot a line chart for equation Y=2X+5 where x=[-5,-4,………4,5]

12. Write a Python Program to Plot a line chart for a particular colour for equation Y=sin(X) where x=[0,0.1,0.2…….5,5.1,…………10]

13 To add legends, titles and labels to a line plot with multiple lines.

14 Write a Python Program to Plot a bar chart for values cities and population.

15 Write a Python Program to plot a bar chart with width.

16 Write a Python Program to plot a bar chart horizontally

17. Write a Python Program to plot a pie chart for the popular languages among students.

   ('Python', 'C++', 'Java', 'Perl', 'Scala', 'Lisp')

Answer 1:
General term that describe any effort to help people understand significance of data by placing it in visual context

2: import matplotlib.pyplot

3: Line chart,Bar chart ,Pi chart
4: matplotlib.pyplot.plot()
5: matplotlib.pyplot.bar()
6: matplotlib.pyplot.pie()
7:

```
import matplotlib.pyplot as plt
X =range(1,50)
Y =[value *3for value in X]
print("Values of X:")
print(*range(1,50))
print("Values of Y (thrice of X):")
print(Y)
plt.plot(X, Y)
plt.xlabel('x - axis')
plt.ylabel('y - axis')
plt.title('Draw a line.')
plt.show()
```

8:

```
import matplotlib.pyplot as plt
x =[1,2,3]
y =[2,4,1]
plt.plot(x, y)
plt.xlabel('x - axis')
plt.ylabel('y - axis')
plt.title('Sample graph!')
plt.show()
```

9.

```
import matplotlib.pyplot as plt
x =[1,4,5,6,7]
y =[2,6,3,6,3]
plt.plot(x, y, color='red', linestyle='dashdot', linewidth =3,
marker='o', markerfacecolor='blue', markersize=12)
plt.ylim(1,8)
plt.xlim(1,8)
plt.xlabel('x - axis')
plt.ylabel('y - axis')
plt.title('Display marker')
plt.show()
```

```
10:
import matplotlib.pyplot as plt
 import numpy as np x=[1,2,3,4,5] y=[65,45,76,26,80]
plt.plot(x,y) plt.xlabel("X axis")
plt.ylabel("Y axis ")
plt.title("Graph for x=[1,2,3,4,5] y=[65,45,76,26,80]")
plt.show()
11:
import matplotlib.pyplot as plt
import numpy as np
 x=np.arange(-5,6,1) y=2*x+5
plt.plot(x,y)
 plt.xlabel("X axis")
 plt.ylabel("Y axis ")
 plt.title("Graph for an Algebraic Y=2*X+5")
 plt.show()
12:
import matplotlib.pyplot as plt
import numpy as np
 x=np.arange(0,10,0.1)
 y=np.sin(x)
plt.plot(x,y)
plt.xlabel("X")
plt.ylabel("Y")
 plt.title("Graph for Y=sin(X)")
plt.show()
13:
import matplotlib.pyplot as plt
 x=[1,2,3] y=[5,7,4]
 plt.plot(x,y,label='First Line',color='red')
 x2=[1,2,3]
y2=[10,11,14]
plt.plot(x2,y2,label='Second Line',color='black')
plt.xlabel('Plot Number')
 plt.ylabel('Variables')
 plt.title('New Graph')
plt.legend()
plt.show()

14:
import matplotlib.pyplot as plt
 import numpy as np
city=['Delhi','Mumbai','Chennai','Hyderabad']
p=[1500,2000,1800,1200]
 plt.bar(city,p)
plt.xlabel("City")
 plt.ylabel("Population in Lacs ")
```

```python
plt.title("Population of different cities")
plt.show()
15:
import matplotlib.pyplot as plt
import numpy as np
 y_axis=[20,50,30]
 x_axis=range(len(y_axis))
plt.bar(x_axis,y_axis,width=.5,color='orange')
plt.show()
16:
import matplotlib.pyplot as plt
import numpy as np
 ob=('Python','C++','Java','Perl','Scala','Lisp')
y_pos=np.arange(len(ob))
performance=[10,8,6,4,2,1]
plt.barh(y_pos,performance,align='center',color='r')
 plt.yticks(y_pos,ob)
 plt.xlabel("Usage")
plt.title('P.L.Usage')
plt.show()
17:
import matplotlib.pyplot as plt
 labels='Python','C++','Ruby','java'
sizes=[215,130,245,210]
colors=['gold', 'yellowgreen','lightcoral','lightskyblue']
 explode=(0.1,0,0,0)
plt.pie(sizes,explode=explode,labels=labels,colors=colo rs, shadow=True,startangle=140)
 plt.axis('equal')
 plt.show()
```

CHAPTER 9 : DATA STRUCTURE-I (LINEAR LIST)

Definition: The logical or mathematical model of a particular organization of data is called data structure. It is a way of storing, accessing, manipulating data.

TYPES OF DATA STRUCTURE:

There are two types of data structure:

1.   Linear data structure: It is simple data structure. The elements in this data structure creates a sequence. Example: Array, linked list, stack, queue.

2.   Non-Linear data structure: The data is not in sequential form. These are multilevel data structures. Example: Tree, graph.

OPERATION ON DATA STRUCTURE:

There are various types of operations can be performed with data structure:

1.   Traversing: Accessing each record exactly once.
2.   Insertion: Adding a new element to the structure.
3.   Deletion: Removing element from the structure.
4.   Searching: Search the element in a structure.
5.   Sorting: Arrange the elements in ascending and descending order.
6.   Merging: Joining two data structures of same type. (not covered in syllabus)

LISTS IN DATA STRUCTURE:

a.   Traversing 1-D array (List):

```
L=[10,20,30,40,50]
n=len(L)
for i in range(n): print(L[i])
```

Output:
```
10
20
30
40
50
```

b.   Inserting Element in a list: In this case, enter the element at any position using insert( ) function or add the element in the last of the array using append( ) function.

Example:
```
L=[15,8,25,45,13,19]
L.insert(3, 88) # insert element at the index 3
print(L)
```
Output:
```
[15, 8, 25, 88, 45, 13, 19]
```

c.   Deletion of an element from a List: To delete an element from a list we can use remove( ) or pop( ) method.

Example:
```
L=[10,15,35,12,38,74,12]
print("List Before deletion of element: ", L)
val=int(input("Enter the element that you want to delete: "))
 L.remove(val)
```

print("After deletion the element", val,"the list is: ", L)

OUTPUT:
List Before deletion of element: [10, 15, 35, 12, 38, 74, 12] Enter the element that you want to delete: 12
After deletion the element 12 the list is: [10, 15, 35, 38, 74, 12]

d.   Searching in a List:
There are two types of searching techniques we can use to search an element in a list. These are:
(i)   Linear Search
(ii)   Binary Search

(i)   Linear Search: It is a simple searching technique.
Program:

```
L=eval(input("Enter the elements: ")) n=len(L)
item=eval(input("Enter the element that you want to search : ")) for i in range(n):
if L[i]==item:
print("Element found at the position :", i+1)
break
else:
print("Element not Found")
```

Output:
Enter the elements: 56,78,98,23,11,77,44,23,65 Enter the element that you want to search : 23
Element found at the position : 4

(ii)   Binary Search:
Program:

```
def BinarySearch(LIST,n,item): LB=0
UB=n-1
while LB<=UB:
        mid=int((LB+UB)/2)
        if item<LIST[mid]:
                UB=mid-1
        elif  item>LIST[mid]:
                LB=mid+1 else:
                return mid
        else:
                return -1
L=eval(input("Enter the elements in sorted order: "))
size=len(L)
element=int(input("Enter the element that you want to search :"))
found=BinarySearch(L,size,element)
if found>=0:
        print(element, "Found at the position : ",found+1)
```

else:
        print("Element not present in the list")

OUTPUT:
Enter the elements in sorted order: [12,23,31,48,51,61,74,85] Enter the element that you want to search : 61
61 Found at the position : 6

Linear Search Vs Binary Search:

Linear Search   Binary Search
Access of elements sequentially.   Access of elements randomly.
Elements may or may not be in sorted order.   Elements must be in sorted order i.e.
ascending or descending order
Takes more time to search an element.   Takes less time to search an element.
easy   tricky
Efficient for small array.   Efficient for larger array

e.   Sorting: To arrange the elements in ascending or descending order. There are many sorting techniques. Here we shall discuss two sorting techniques:
(i)   Bubble sort
(ii)   Insertion sort

(i)   BUBBLE SORT: Bubble sort is a simple sorting algorithm. It is based on comparisons, in which each element is compared to its adjacent element and the elements are swapped if they are not in proper order.

PROGRAM:
```
L=eval(input("Enter the elements:"))
n=len(L)
for p in range(0,n-1):
        for i in range(0,n-1):
                if L[i]>L[i+1]:
                        L[i], L[i+1] = L[i+1],L[i]
print("The sorted list is : ", L)
```

OUTPUT:
Enter the elements:[60, 24, 8, 90, 45, 87, 12, 77]
The sorted list is : [8, 12, 24, 45, 60, 77, 87, 90]
(ii)   INSERTION SORT: Sorts the elements by shifting them one by one and inserting the element at right position.
PROGRAM:
```
L=eval(input("Enter the elements: "))
 n=len(L)
for j in range(1,n):
        temp=L[j]
```

```
        prev=j-1
        while prev>=0 and L[prev]>temp:      # comparison the elements L[prev+1]=L[prev]
                                             # shift the element forward prev=prev-1
            L[prev+1]=temp                   #inserting the element at proper position

print("The sorted list is :",L)
```

OUTPUT:

Enter the elements: [45, 11, 78, 2, 56, 34, 90, 19]

The sorted list is : [2, 11, 19, 34, 45, 56, 78, 90]

CHAPTER 10 : DATA STRUCTURE-II (STACK AND QUEUE)

STACK IN PYTHON:

INTRODUCTION:

- Stack is a linear data structure.
- Stack is a list of elements in which an element may be inserted or deleted only at one end, called the TOP of the stack.
- It follows the principle Last In First Out (LIFO).
- There are two basic operations associated with stack:
o Push : Insert the element in stack
o Pop : Delete the element from stack

QUESTIONS ON DATA STRUCTURE

1. Write a program for linear search in a list.
2. Write a program for bubble sort.
3. Write InsertQ(Customer) and DeleteQ(Customer) methods/functions in Python to add a new Customer and delete a Customer from a list of Customer names, considering them to act as insert and delete operations of the Queue
4. 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.

Answer

1. Write a program for linear search in a list.

```
L=eval(input("Enter the elements: "))
n=len(L)
item=eval(input("Enter the element that you want to search : "))
for i in range(n):
        if L[i]==item:
                print("Element found at the position :", i+1)
        break
else:
print("Element not Found")
```

2. Write a program for bubble sort.

```
L=eval(input("Enter the elements:"))
 n=len(L)
for p in range(0,n-1):
        for i in range(0,n-1):
                        if L[i]>L[i+1]:
                                t=L[i]
                                L[i]=L[i+1]
                                L[i+1]=t
 print("The sorted list is : ", L)
```

3.

```
def InsertQ(queue):
        a=input("Enter customer name :")
        queue.append(a)
def DeleteQ(queue):
```

```
            if (queue==[]):
                    print ("Queue is empty…..")
            else:
                    print("Deleted element is", queue[0])
                    del queue[0]


4.   Def PushOn(Book):
            a=input("enter book title :")
            Book.append(a)
     Def Pop(Book):
            If (Book==[]):
                    print("Stack empty")
            Else:
                    print("Deleted element :")
                    Book.pop()
     OR
class Stack:
     Book=[]
     Def PushOn(self):
            a=input("enter book title:")
            Stack.Book.append(a)
     Def Pop(self):
            If (Stack.Book==[]):
                    Print("Stack empty")
            Else:
                    Print("Deleted element :",Stack.Book.pop())
```

CHAPTER 11 - Computer Network-I

Q 1.What are the components required for networking ?

2. What is spyware?

3. What is Ethernet?

4.Write two advantage and disadvantage of networks.

5.What is ARPAnet ?

6.What is NSFnet ?

7.What is communication channel?

8.Define baud, bps and Bps. How are these interlinked?

9.What do you understand by InterSpace?

10.Name two switching circuits and explain any one

11.What is communication channel? Name the basic types of communication channels available

12. What are the factors that must be considered before making a choice for the topology?

13. What are the similarities and differences between bus and tree topologies?

14. What are the limitations of star topology?

15. When do you think, ring topology becomes the best choice for a network?

16. Write the two advantages and two disadvantages of Bus Topology in network.

17. What is modem?

18. Define the following:

   (i)RJ-45 (ii)Ethernet (iii) Ethernet card (iv)hub (v)Switch

Answers for Computer Network-1

Ans 1. Routers. Routers are devices on the network which is responsible for forwarding data from one device to another. ...
Switches.
Network hubs.
Wireless access points.
Network Cables.
Network Server.
Network Interface Cards (NIC)

Ans 2. Spyware is software that is installed on a computing device without the end user's knowledge. Any software can be classified as spyware if it is downloaded without the user's authorization. Spyware is controversial because even when it is installed for relatively innocuous reasons, it can violate the end user's privacy and has the potential to be abused.

Ans 3. Ethernet is the traditional technology for connecting wired local area networks (LANs), enabling devices to communicate with each other via a protocol -- a set of rules or common network language.
As a data-link layer protocol in the TCP/IP stack, Ethernet describes how network devices can format and transmit data packets so other devices on the same local or campus area network segment can recognize, receive and process them. An Ethernet cable is the physical, encased wiring over which the data travels

Ans 4. Advantage: • We can share resources such as printers and scanners. • Can share data and access file from any computer.
Disadvantage: • Server faults stop applications from being available. • Network faults can cause loss of data.

Ans 5. ARPAnet (Advanced Research Project Agency Network is a project sponsored by U. S. Department of Defense.

Ans 6. NSFnet was developed by the National Science Foundation which was high capacity network and strictly used for academic and engineering research.

Ans 7. Name the basic types of communication channels available. Communication channel mean the connecting cables that link various workstations. Following are three basic types of communication channels available: a) Twisted-Pair Cables b) Coaxial Cables c) Fiber-optic Cables

Ans 8. Baud is a unit of measurement for the information carrying capacity of a communication channel. bps- bits per second. It refers to a thousand bits transmitted per second. Bps- Bytes per second. It refers to a thousand bytes transmitted per second. All these terms are measurement

Ans 9. Interspace is a client/server software program that allows multiple users to communicate online with real-time audio, video and text chat I dynamic 3D environments.

Ans10. The two switching circuits are • Circuit Switching • Message Switching Circuit Switching - In this technique, first the complete physical connection between two computers is established and then data are transmitted from the source computer to the destination computer.

Ans 11. Communication channel mean the connecting cables that link various workstations. Following are three basic types of communication channels available: a) Twisted-Pair Cables b) Coaxial Cables c) Fiber-optic Cables.

Ans 12. There are number of factors to consider in before making a choice for the topology, the most important of which are as following : (a) Cost. (b) Flexibility (c) Reliability .

Ans.13. Similarities : In both Bus and Tree topologies transmission can be done in both the directions, and can be received by all other stations. In both cases, there is no need to remove packets from the medium. Differences : Bus topology is slower as compared to tree topology of network. Tree topology is expensive as compared to Bus Topology

Ans 14.. Requires more cable length than a linear topology. If the hub, switch, or concentrator fails, nodes attached are disabled. More expensive than linear bus topologies because of the cost of the hubs, etc.

Ans 15. Ring topology becomes the best choice for a network when, short amount of cable is required. No wiring closet space requires.

Ans 16. Advantage: Easy to connect a computer or peripheral to a linear bus. Requires less cable length than a star topology.
Disadvantage : Slower as compared to tree and star topologies of network. Breakage of wire at any point disturbs the entire

Ans 17. Name two categories of modems. Modem is a device that converts digital communication signals to analog communication digital signals and vice versa. Following are the two categories of modems. 1) Internal Modem (Fixed with computer) 2) External Modem (Connect externally to computer).

Ans 18. (i) RJ-45: RJ45 is a standard type of connector for network cables and networks. It is an 8-pin connector usually used with Ethernet cables. (ii)Ethernet: Ethernet is a LAN architecture developed by Xerox Corp along with DEC and Intel. It uses a Bus or Star topology and supports data transfer rates of up to 10 Mbps. (iii)Ethernet card: The computers parts of Ethernet are connected through a special card called Ethernet card. It contains connections for either coaxial or twisted pair cables. (iv)Hub: In computer networking, a hub is a small, simple, low cost device that joins multiple computers together. (v)Switch: A Switch is a small hardware device that joins multiple computers together within one local area network (LAN).

1.What is protocol? Name some commonly used protocols.

2.What is TCP/IP? What is HTTP?

3. Define GSM, CDMA, and WLL

4..Define the following: (i)3G (ii)EDGE (iii)SMS (iv)TDMA

5. Define web browser and web server.

6.INDIAN PUBLIC SCHOOL in Darjeeling is setting up the network between its different wings.   There are 4 wings named as SENIOR(S), JUNIOR (J), ADMIN (A) and HOSTEL (H).

Distance between various Wings

Wing A to Wing S	100 m
Wing A to Wing J	200 m
Wing A to Wing H	400 m
Wing S to Wing J	300 m
Wing S to Wing H	100 m
Wing J to Wing H	450 m

Number of Computers

Wing A	10
Wing S	200
Wing J	100
Wing H	50

(i)   Suggest a suitable Topology for networking the computer of all wings.

(ii)   Name the wing where the server is to be installed. Justify your answer

(iii)   Suggest the placement of Hub/Switch in the network.

(iv)   Mention the economic technology to provide internet accessibility to all wings.

7.Expand the following abbreviations: (i) HTTP (ii) ARPANET

8.What is CSMA/CA?

9.How does CSMA/CA technique works?

10.What are basic methods of checking errors in the data being transmitted over networks?

11.What types of errors may occur in the data transmitted over networks.

12.What do you understand by parity checking?

13.What are the steps followed in checksum generator?

14.What are checksums?

15.What is ACK(Acknowledgement) signal?

16. What is routing?

Answers for Computer Network- II

1.A protocol means the rules that are applicable for a network or we can say that the common set of rules used for communication in network. Different types of protocols are : (i) HTTP : Hyper Text Transfer Protocol (ii) FTP : File Transfer Protocol (iii) SLIP : Serial Line Internet Protocol (iv) PPP : Point to Point Protocol (v) TCP/IP : Transmission Control Protocol/ Internet Protocol (vi) NTP : Network Time Protocol (vii) SMTP : Simple Mail Transfer Protocol (viii) POP : Post Office Protocol (ix) IMAP : Internet Mail Access Protocol

2. TCP/IP (Transmission Control Protocol / Internet Protocol): A protocol for communication between computers used as a standard for transmitting data over networks and is the basis for standard Internet protocols. HTTP(Hyper Text Transfer Protocol) : An application level protocol with the lightness and speed necessary for distributed, shared, hypermedia information systems

3.GSM: GSM (Global system for mobile communication) is a wide area wireless communications System that uses digital radio transmission to provide voice data and multimedia communication services. A GSM system coordinates the communication between mobile telephones, base stations, and switching systems. CDMA: CDMA (Code Division Multiple Access) is a digital wireless telephony transmission technique, which allows multiple frequencies to be used simultaneously – Spread Spectrum. WLL: WLL (Wireless in Local Loop) is a system that connects subscriber to the public switched telephone network (PSTN) using radio signal as alternate for other connecting media.

4. (i) 3G: 3G (Third Generation) mobile communication technology is a broadband, packet-based transmission of text, digitized voice, video and multimedia at data rates up to 2 mbps, offering a consistent set of services to mobile computer and phone users no matter where they are located in the world. (ii)EDGE: EDGE (Enhanced Data rates for Global Evolution) is radio based high-speed of mobile data standard, developed specifically to meet the bandwidth needs of 3G. (iii)SMS: SMS (Short Message Service) is the transmission of short text messages to and from a mobile phone, fax machine and IP address. (iv)TDMA: TDMA (Time Division Multiple Access) is a technology for delivering digital wireless service using time- division multiplexing (TDM).

5. Web Browser: A Web Browser is software which used for displaying the content on web page(s). It is used by client to view web sites. Example of Web browser – Google Chrome, Fire Fox, Internet Explorer, Safari, Opera, etc. Web Server: A Web Server is software which fulfills the request(s) done by web browser. Web server have different ports to handle different request from web browser like generally FTP request is handle at Port 110 and HTTP request is handle at Port 80. Example of Web server are – Apache, IIS

6. (i) Star or Bus or any other valid topology or diagram.
(ii) Wing S, because maximum number of computer are located at Wing S.
(iii) Hub/Switch in all the wings.
 (iv)Coaxial cable/Modem/LAN/TCP-IP/Dialup/DSL/Leased Lines or any other valid technology.

7. (i) HTTP - Hyper Text Transfer Protocol (ii) ARPANET - Advanced Research Project Agency Network

8. Carrier Sense Multiple Access/Collision Avoidance (CSMA/CA) is a media access protocol that is related to CSMA/CD and is also used on multiple access networks

9. Carrier Sense Multiple Access/Collision Avoidance (CSMA/CA) is a media access protocol that is used on multiple access wireless networks. With CSMA/CA, a device listens for an opportunity to transmit its data, i.e, CARRIER SENSE If the carrier is free,the sending device does not immediately transmit data. Rather, it first transmits a signal notifying other devices (i.e., a warning packet) that it is transmitting for so much time before actually sending the data. The other device refrains from transmitting data for the specified time limit. This means data packets will never collide.

10. There are many methods of checking or detecting simplest ones are: (i) Single dimensional parity checking (ii) Two dimensional parity checking (ii) Checksums

11. The errors that may occur in the data transmitted over networks, can be one or more of following types: (i) Single-bit error. This type of error occurs if only one bit of the transmitted data got changed from 1 to 0 or from 0 to 1.
(ii) Multiple-bit error. This type of error occurs if two or more nonconsecutive bits in data got changed from 0 to 1 or from 1 to 0.
(iii) Burst Error. This type of error occurs if two or more consecutive bits in data got changed from 0 to 1 or from 1 to 0

12. Parity checking is a method of error detection that can checkk1 or 2 bit errors (but not all dr these) In parity checks, a parity bit is added to the end of a string of binary code to indicate whether the number of bits in the string with the value 1 is even or odd.

13. The sender, which is the checksum generator, follows these steps:
(a) The units are divided into k sections each of n bits , taking 1's complement to get the sum.
(b) All sections are added together
(c) The sum is complemented and become the checksum.
(d) The checksum is sent with the data.

14. Checksum is an error detection technique used for checking errors in the received data In this technique, at the transmitter's end, as the device transmits data, it takes the sum of all of the data elements it is transmitting to create an aggregate sum. This sum is called the datasum. The overflow carries generated by the additions are added back into the datasum. The transmitting device then sends a form of this datasum appended to the end of the block. This new form of the datasum is called the check sum. At the receiver end, as the data elements are received, they are added a second time in order to recreate the datasum. Once all of the data elements have been received, the receiving device compares its calculated datasum with the checksum sent by the transmitting device. If both these match, the data is considered error-free and accepted otherwise rejected.

15. The acknowledgement signal or the ACK signal is a control code, which is sent by the receiving computer to indicate that the data has been received without error and that the next part of the transmission may be sent.

16.Routing is the process of selecting paths to move information across networks When a data packet reaches a router, the router selects the best route to the destination network from js routing table and forwards the data packet to the neighbouring router as per the selected best path. This way each router keeps passing the data packet(s) to its neighbouring router on best route the destination and finally the data packet reaches its destination.

CHAPTER 13 & 14 : MYSQL REVISION TOUR AND MORE ON SQL

Q1. Define the terms:
   (i)   Database Abstraction
   (ii)   Data inconsistency
   (iii)   Conceptual level of database implementation/abstraction
   (iv)   Primary Key
   (v)   Candidate Key
   (vi)   Relational Algebra
   (vii)   Domain

Q2. Answer the following questions :
   1.   Differentiate between DDL and DML?
   2.   What is a constraint?
   3.   What are single row functions ?
   4.   Compare CHAR and VARCHAR data types.
   5.   What are the differences between DELETE and DROP commands of SQL?
   6.   What do you understand by MySQL Client?
   7.   Differentiate between WHERE and HAVING clause.
   8.   The Pincode column of table 'Post' is given below-

100001
1200012
1300013
1600017
1800018

9. Find the output
 SELECT Pincode from Post where Pincode LIKE " %1" ;
SELECT Pincode from Post where Pincode LIKE " 0%" ;

10. A table "Animals" in a database has 3 columns and 10 records. What is the degree and cardinality of this table?

11. What is the difference between commit and rollback command.

12. Which keyword is used to remove redundant data from a relation.

13. What is difference between curdate() and date() functions?

14. Write SQL query to create a table 'Inventory' with the following structure:

Field	Type	Constraint
MaterialId	Integer	Primary key

Material	Varchar(50)	NOT NULL
Category	Char	DEFAULT E
DatePurchase	Date	

Q3. Consider the following tables GAMES and PLAYER. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii). Table:

GAMES

GCode	GameName	Number	PrizeMoney	ScheduleDate
101	Carom Board	2	5000	23-Jan-2004
102	Badminton	2	12000	12-Dec-2003
103	Table Tennis	4	8000	14-Feb-2004
105	Chess	2	9000	01-Jan-2004
108	Lawn Tennis	4	25000	19-Mar-2004

Table: PLAYER

PCode	Name	Gcode
1	Nabi Ahmad	101
2	Ravi Sahai	108
3	Jatin	101
4	Nazneen	103

(i) To display the name of all Games with their Gcodes.

    (ii) To display details of those games which are having PrizeMoney more than 7000.

    (iii) To display the content of the GAMES table in ascending order of ScheduleDate.

(iv) To display sum of PrizeMoney for each of the Number of participation groupings (as shown in column <u>Number</u> 2 or 4)

    (v) SELECT COUNT(DISTINCT Number) FROM GAMES;

    (vi) SELECT MAX(ScheduleDate),MIN(ScheduleDate) FROM GAMES;

    (vii) SELECT SUM(PrizeMoney) FROM GAMES;

    (viii) SELECT DISTINCT Gcode FROM PLAYER;

Q4. Consider the following tables FACULTY and COURSES. Write SQL commands for the statements
    (i) to (iv) and give outputs for SQL queries (v) to (vi).

FACULTY

F_ID	Fname	Lname	Hire_date	Salary
102	Amit	Mishra	12-10-1998	12000
103	Nitin	Vyas	24-12-1994	8000
104	Rakshit	Soni	18-5-2001	14000
105	Rashmi	Malhotra	11-9-2004	11000
106	Sulekha	Srivastava	5-6-2006	10000

COURSES

C_ID	F_ID	Cname	Fees
C21	102	Grid Computing	40000
C22	106	System Design	16000
C23	104	Computer Security	8000
C24	106	Human Biology	15000
C25	102	Computer Network	20000

| C26 | 105 | Visual Basic | 6000 |

i) To display details of those Faculties whose salary is greater than 12000.
ii) To display the details of courses whose fees is in the range of 15000 to 50000 (both values included).
iii) To increase the fees of all courses by 500 of "System Design" Course.
iv) To display details of those courses which are taught by 'Sulekha' in descending order of courses?
v) Select COUNT(DISTINCT F_ID) from COURSES;
vi) Select Fname,Cname from FACULTY,COURSE where COURSE.F_ID=FACULTY.F.ID;

Q-5 Write SQL Command for (a) to (e) and output of (f)

TABLE : GRADUATE

S.NO	NAME	STIPEND	SUBJECT	AVERAGE	DIV
1	KARAN	400	PHYSICS	68	I
2	DIWAKAR	450	COMP Sc	68	I
3	DIVYA	300	CHEMISTRY	62	I
4	REKHA	350	PHYSICS	63	I
5	ARJUN	500	MATHS	70	I
6	SABINA	400	CHEMISTRY	55	II
7	JOHN	250	PHYSICS	64	I
8	ROBERT	450	MATHS	68	I
9	RUBINA	500	COMP Sc	62	I
10	VIKAS	400	MATHS	57	II

a. List the names of those students who have obtained DIV I sorted by NAME.
b. Display a report, listing NAME, STIPEND, SUBJECT and amount of stipend received in a year assuming that the STIPEND is paid every month.
c. To count the number of students who are either PHYSICS or COMPUTER SC graduates.
d. To insert a new row in the GRADUATE table: 11,"KAJOL", 300, "computer sc", 75, 1
e. Add a new column GRADE of character type.
f. Give the output of following sql statement based on table GRADUATE:
   (i) Select MIN(AVERAGE) from GRADUATE where SUBJECT="PHYSICS";
   (ii) Select SUM(STIPEND) from GRADUATE WHERE div=2;
   (iii) Select AVG(STIPEND) from GRADUATE where AVERAGE>=65;
   (iv) Select COUNT(distinct SUBJECT) from GRADUATE;

Q-6 Consider the following tables Sender and Recipient. Write SQL commands for the statements (i) to (iv) and give the outputs for SQL queries (v) to (viii).

Sender

SenderID	SenderName	SenderAddress	Sendercity
ND01	R Jain	2, ABC Appls	New Delhi
MU02	H Sinha	12 Newtown	Mumbai
MU15	S Jha	27/A, Park Street	Mumbai
ND50	T Prasad	122-K,SDA	New Delhi

Recipients

RecID	SenderID	RecName	RecAddress	recCity
KO05	ND01	R Bajpayee	5, Central Avenue	Kolkata
ND08	MU02	S Mahajan	116, A-Vihar	New Delhi
MU19	ND01	H Singh	2A, Andheri East	Mumbai
MU32	MU15	P K Swamy	B5, C S Terminals	Mumbai
ND48	ND50	S Tripathi	13, BI D Mayur Vihar	New delhi

a. To display the names of all Senders from Mumbai
b. To display the RecIC, Sendername, SenderAddress, RecName, RecAddress for every Recipient
c. To display Recipient details in ascending order of RecName
d. To display number of Recipients from each city
e. SELECT DISTINCT SenderCity from Sender;
f. SELECT A.SenderName, B.RecName From Sender A, Recipient B
   Where A.SenderID = B.SenderID AND B.RecCity ='Mumbai';
g. SELECT RecName, RecAddress From Recipient
   Where RecCity NOT IN ('Mumbai', 'Kolkata') ;
h. SELECT RecID, RecName FROM Recipent
   Where SenderID='MU02' or SenderID='ND50';

Q-7 Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii), which are based on the tables.   6

Table : VEHICLE

CODE	VTYPE	PERKM
101	VOLVO BUS	160
102	AC DELUXE BUS	150
103	ORDINARY BUS	90
105	SUV	40
104	CAR	20

Note : PERKM is Freight Charges per kilometer , VTYPE is Vehicle Type

Table : TRAVEL

NO	NAME	TDATE	KM	CODE	NOP
101	Janish Kin	2015-11-13	200	101	32
103	Vedika Sahai	2016-04-21	100	103	45
105	Tarun Ram	2016-03-23	350	102	42

102	John Fen	2016-02-13	90	102	40
107	Ahmed Khan	2015-01-10	75	104	2
104	Raveena	2016-05-28	80	105	4

- NO is Traveller Number
- KM is Kilometer travelled
- NOP is number of travellers travelled in vehicle
- TDATE is Travel Date

(i) To display NO, NAME, TDATE from the table TRAVEL in descending order of NO.

(ii) To display the NAME of all the travellers from the table TRAVEL who are travelling by vehicle with code 101 or 102.

(iii) To display the NO and NAME of those travellers from the table TRAVEL who travelled between
‘2015-12-31’ and ‘2015-04-01’.

(iv) To display all the details from table TRAVEL for the travellers, who have travelled distance more than 100 KM in ascending order of NOP.

(v) Modify the definition of column VTYPE.Increase its size to 20.

(vi) SELECT COUNT (*), CODE FROM TRAVEL GROUP BY CODE HAVING COUNT(*)>1;

(vii)   SELECT DISTINCT CODE FROM TRAVEL;

(viii)   S
ELECT A.CODE,NAME,VTYPE FROM TRAVEL A,VEHICLE B WHERE A.CODE=B.CODE AND KM<90;

Q-8 Consider the following relations MobileMaster & MobileStock:-

MobileMaster

M_Id	M_Company	M_Name	M_Price	M_Mf_Date
MB001	Samsung	Galaxy	4500	2013-02-12
MB003	Nokia	N1100	2250	2011-04-15
MB004	Micromax	Unite3	4500	2016-10-17
MB005	Sony	XperiaM	7500	2017-11-20
MB006	Oppo	SelfieEx	8500	2010-08-21

MobileStock

S_Id	M_Id	M_Qty	M_Supplier
S001	MB004	450	New Vision
S002	MB003	250	Praveen Gallery
S003	MB001	300	Classic Mobile Store
S004	MB006	150	A-one Mobiles
S005	MB003	150	The Mobile
S006	MB006	50	Mobile Centre

Write the SQL query for questions from (i) to (iv) & write the output of SQL command for questions from (v) to (viii) given below:-

(i) Display the Mobile company, Mobile name & price in descending order of their manufacturing date.

(ii) List the details of mobile whose name starts with „S".

(iii) Display the Mobile supplier & quantity of all mobiles except „MB003".
(iv) To display the name of mobile company having price between 3000 & 5000.
(v) SELECT M_Id, SUM(M_Qty) FROM MobileStock GROUP BY M_Id;
(vi) SELECT MAX(M_Mf_Date), MIN(M_Mf_Date) FROM MobileMaster;
(vii)   SELECT M1.M_Id, M1.M_Name, M2.M_Qty, M2.M_Supplier FROM MobileMaster M1, MobileStock M2 WHERE M1.M_Id=M2.M_Id AND M2.M_Qty>=300;
(viii)   SELECT AVG(M_Price) FROM MobileMaster;

Q-9   **Observe the following table and answer the parts(i) and(ii) accordingly**
         Table:Product

Pno	Name	Qty	Purchase Date
101	Pen	102	12-12-2011
102	Pencil	201	21-02-2013
103	Eraser	90	09-08-2010
109	Sharpener	90	31-08-2012
113	Clips	900	12-12-2011

(i) Write the names of most appropriate columns, which can be considered as candidate keys.

(ii) What is the degree and cardinality of the above table?

Q-10 Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to(viii), which are based on the tables.

TRAINER

TID	TNAME	CITY	HIREDATE	SALARY
101	SUNAINA	MUMBAI	1998-10-15	90000
102	ANAMIKA	DELHI	1994-12-24	80000
103	DEEPTI	CHANDIGARG	2001-12-21	82000
104	MEENAKSHI	DELHI	2002-12-25	78000
105	RICHA	MUMBAI	1996-01-12	95000
106	MANIPRABHA	CHENNAI	2001-12-12	69000

COURSE

CID	CNAME	FEES	STARTDATE	TID
C201	AGDCA	12000	2018-07-02	101
C202	ADCA	15000	2018-07-15	103
C203	DCA	10000	2018-10-01	102
C204	DDTP	9000	2018-09-15	104
C205	DHN	20000	2018-08-01	101
C206	O LEVEL	18000	2018-07-25	105

(i)   Display the Trainer Name, City & Salary in descending order of their Hiredate.
(ii)   To display the TNAME and CITY of Trainer who joined the Institute in the month of December 2001.

     (iii)   To display TNAME, HIREDATE, CNAME, STARTDATE from tables TRAINER and
                 COURSE of all those courses whose FEES is less than or equal to 10000.
     (iv)   To display number of Trainers from each city.
     (v)   SELECT TID, TNAME, FROM TRAINER WHERE CITY NOT
                 IN('DELHI', 'MUMBAI');
     (vi)   SELECT DISTINCT TID FROM COURSE;
     (vii)   SELECT TID, COUNT(*), MIN(FEES) FROM COURSE GROUP BY
                 TID HAVING COUNT(*)>1;
     (viii)   SELECT COUNT(*), SUM(FEES) FROM COURSE WHERE
                 STARTDATE< '2018-09-15';

Answers

Answer-1

Define the terms:

i. Database Abstraction

Ans: Database system provides the users only that much information that is required by them, and hides certain details like, how the data is stored and maintained in database at hardware level. This concept/process is Database abstraction.

ii. Data inconsistency

Ans: When two or more entries about the same data do not agree i.e. when one of them stores the updated information and the other does not, it results in data inconsistency in the database.

iii. Conceptual level of database implementation/abstraction

Ans: It describes what data are actually stored in the database. It also describes the relationships existing among data. At this level the database is described logically in terms of simple data-structures.

iv. Primary Key

Ans : It is a key/attribute or a set of attributes that can uniquely identify tuples within the relation.

v. Candidate Key

Ans : All attributes combinations inside a relation that can serve as primary key are candidate key as they are candidates for being as a primary key or a part of it.

vi. Relational Algebra

Ans : It is the collections of rules and operations on relations(tables). The various operations are selection, projection, Cartesian product, union, set difference and intersection, and joining of relations.

vii. Domain

Ans : it is the pool or collection of data from which the actual values appearing in a given column are drawn.

Answer-2

Ans1.**Data Definition Language (DDL): This is a category of SQL commands. All the commands** which are used to create, destroy, or restructure databases and tables come under this category. Examples of DDL commands are - CREATE, DROP, ALTER.

Data Manipulation Language (DML): This is a category of SQL commands. All the commands which are used to manipulate data within tables come under this category. Examples of DML commands are - INSERT, UPDATE, DELETE.

Ans 2: A constraints is a condition or check application on a field or set of fields.

Example: NOT NULL (ensure that column con not have null value), CHECK (make sure that all value satisfy certain criteria), UNIQUE (ensure that all values in a column are different) etc.

Ans 3: Single Row Function work with a single row at a time. A single row function returns a result for every row of a quired table

Examples of Single row functions are Sqrt(), Concat(), Lcase(), Upper(), Day(), etc.

Ans 4. The CHAR data-type stores fixed length strings such that strings having length smaller than the field size are padded on the right with spaces before being stored.

The VARCHAR on the other hand supports variable length strings and therefore stores strings smaller than the field size without modification.

Ans 5: DELETE is DML command while DROP is a DDL command. Delete is used to delete rows from a table while DROP is used to remove the entire table from the database.

Ans 6: MySQL Clients are programs that connect to MySQL Server and issue queries in predefined format.

Ans 7: WHERE clause is used to select particular rows that satisfy the condition where having clause is used in connection with the aggregate function GROUP BY clause. FOR EXAMPLE-
select * from student where marks >80;
Select * from student group by stream having marks>90;

Ans 8:   i) 100001   ii)No output
Ans 10: Degree 3 and Cardinality=10
Ans 11.COMMIT command permanently saves the changes made during the transacation execution.RROLLBACK command undoes the changes made during transaction execution.
Ans12: DISTINCT
Ans 13: curdate() returns the current date whereas date() extracts the date part of a date.
Ans 14: CREATE TABLE Inventory
     (MaterialId INTEGER PRIMARY KEY,
      Material Varchar(50)NOT NULL,
     Category Char(2) DEFAULT='E',
     DatePurchase Date);

Answer-3
     (i) SELECT GameName,Gcode FROM GAMES;
     (ii) SELECT * FROM GAMES WHERE PrizeMoney>7000;
     (iii) SELECT * FROM GAMES ORDER BY ScheduleDate;
          (iv) SELECT SUM(PrizeMoney),Number FROM GAMES GROUP BY Number;
          (v) 2
          (vi) 19-Mar-2004   12-Dec-2003
          (vii)   59000
          (viii)   101
          103
          108
Answer-4
      (i) Select * from faculty where salary > 12000;
          (ii) Select * from Courses.where fees between 15000 and 50000;
          (iii) Update courses set fees = fees + 500 where Cname = "System Design";
          (iv) Select * from faculty fac,courses cour where fac.f_id = cour.f_id and fac.fname =
              'Sulekha' order by cname desc;

(v) 4

(vi)

Amit	Grid Computing
Rakshit	Computer Security
Rashmi	Visual Basic
Sulekha	Human Biology

Answer-5.
a. SELECT NAME from GRADUATE where DIV = 'I' order by NAME;
b. SELECT NAME,STIPEND,SUBJECT, STIPEND*12 from GRADUATE;
c. SELECT SUBJECT,COUNT(*) from GRADUATE group by SUBJECT having SUBJECT='PHYISCS' or SUBJECT='COMPUTER SC';
d. INSERT INTO GRADUATE values(11,'KAJOL',300,'COMPUTER SC',75,1);
e. ALTER TABLE GRADUATE ADD(GRADE CHAR(2));
f. (i)   63
   (ii)   800
   (iii)   475
   (iv)   4

Answer-6
a. SELECT sendername from Sender where sendercity='Mumbai';
b. Select R.RecIC, S.Sendername, S.SenderAddress, R.RecName, R.RecAddress from Sender S, Recepient R where S.SenderID=R.SenderID ;
c. SELECT * from Recipent ORDER By RecName;
d. SELECT COUNT(*) from Recipient Group By RecCity;

Ans. e)

SenderCity
Mumbai
New Delhi

f)

A.SenderName	B.RecName
R Jain	H Singh
S Jha	P K Swamy

g)

RecName	RecAddress
S Mahajan	116, A Vihar
S Tripathi	13, BID, Mayur Vihar

h)

RecID	RecName
ND08	S Mahajan
ND48	STripathi

Answer-7

(i)   SELECT NO, NAME, TDATE FROM TRAVEL ORDER BY NO DESC;

(ii)   SELECT NAME FROM TRAVEL WHERE CODE='101' OR CODE='102';
          OR
       SELECT NAME FROM TRAVEL WHERE CODE IN (101,102);

(iii) SELECT NO, NAME from TRAVEL

WHERE TDATE >= '2015-04-01' AND TDATE <= '2015-12-31';
    OR
SELECT NO, NAME from TRAVEL WHERE TDATE BETWEEN '2015-04-01' AND '2015-12-31';
(iv) SELECT * FROM TRAVEL WHERE KM > 100 ORDER BY NOP;
 (v)   ALTER TABLE VEHICLE MODIFY VTYPE VARCHAR(20);

(vi)

COUNT(*)	CODE
2	101
2	102

(vii) DISTINCT CODE

    101
    102
    103
    104
    105

(viii)

COD E	NAME	VTYPE
104	Ahmed Khan	CAR
105	Raveena	SUV

Answer-8

Ans (i)   SELECT M_Compnay, M_Name, M_Price FROM MobileMaster ORDER BY M_Mf_Date DESC;

(ii)   SELECT * FROM MobileMaster WHERE M_Name LIKE "S%";

(iii)   SELECT M_Supplier, M_Qty FROM MobileStock WHERE M_Id <> 'MB003';

(iv)   SELECT M_Company FROM MobileMaster WHERE M_Price BETWEEN 3000 AND 5000;

(v)

M_Id	SUM(M_Qty)
MB004	450
MB003	400
MB001	300
MB006	200

(vi)

MAX(M_Mf_Date)	MIN(M_Mf_Date)
2017-11-20	2010-08-21

(vii)

M_Id	M_Name	M_Qty	M_Supplier
MB004	Unite3	450	New_Vision
MB001	Galaxy	300	Classic Mobile Store

(viii)   5450

Answer-9
    i)   Candidate Key: Pno, Name
    ii)   Degree:4   Cardinality:5

Answer-10
    (i)SELECT TNAME, CITY, SALARY FROM TRAINER ORDER BY   HIREDATE;
  (ii)SELECT TNAME, CITY FROM TRAINER WHERE HIREDATE BETWEEN '2001-12-01'
        AND '2001-12-31';
  (iii)SELECT TNAME,HIREDATE,CNAME,STARTDATE FROM TRAINER, COURSE WHERE
        TRAINER.TID=COURSE.TID AND FEES<=10000;
  (iv) SELECT CITY, COUNT(*) FROM TRAINER GROUP BY CITY;
  (v) SELECT TID, TNAME, FROM TRAINER WHERE CITY NOT IN('DELHI','MUMBAI');
  vi) TIDTNAME
  103   DEEPTI
  106   MANIPRABHA
  vii) DISTINCT TID
     101

  103

  102

  104

  105
  viii) TID   COUNT(*)   MIN(FEES)
     101   2   12000
  ix)   COUNT(*)   SUM(FEES)
       4   65000

CHAPTER 15 : Creation of Django based Web application

1. What is Django?

2. What is the default URL of your Django project when you run it on builtin server?

3 What is the default port used by built in web server of Django?

4 What is the Django shortcut method to render an html response?

5. Differentiate between Django GET and POST method.

6. What are the features of Django?

7. What is the history of Django framework?

8. what is MVC?

9. What is MTV pattern of Django Architecture?

10. Write a program to perform read and write operation with .csv file.

11 Explain the importance of settings.py file and what data/ settings it contains.

12 Write the following commands for Django Project
i)To create a project name XYZ company
ii)to run the server of Django for XYZ companyen
iii) to create an app name **employee**
iv)write command to set the virtual environment

13 Mr Rajesh create a project name ABC in Django framework and an app in this project name friendchat but he forgot to register the app .Help Mr rajesh to register the app Friendchat with the project name ABC

14 Mr Karan created a project name "PQR" in Django. Name the file which is automatically created on creation of project PQR

15 Mrs Neelam create an app Friendbook inside the Django project folder name Messenger .Name the files which is created inside app friendbook automatically

Answers : Creation of Django based Web application

1 Django s a free and open source web application framework, written in Python. A web framework is a set of components that helps you to develop websites faster and easier.

2 http://127.0.0.1:8000

3 8000

4 Render_to_response

5 GET and POST. GET and POST are the only HTTP methods to use when dealing with forms. Django's login form is returned using the POST method, in which the browser bundles up the form data, encodes it for transmission, sends it to the server, and then receives back its response.

Both of these are dictionary-like objects that give you access to GET and POST data. POST data generally is submitted from an HTML <form> , while GET data can come from a <form>Top of Form
Top of Formor the query string in the page's URL.

6 1. Excellent Documentation
2. Python Web-framework
3. SEO optimized
4. High scalability
5. versatile in nature
6. offers high security
7. Thorougly tested
8. provides rapid development

7 . Django was created by two web developers Adrian Holovaty and Simon Willison working at the Lawrence Journal-World Newspaper in 2003. It was released publicly as a BSD license in July 2005. The framework was named after guitarist Django Reinhardt.
The main reason behind Django's existence is that Django inherited Python's "batteries-included" approach and includes pre-made modules and applications for common tasks in web development like user authentication, templates, routes, and views, admin interface, robust security and support for multiple database backends.

8 . It is an acronym for Model View Controller. MVC pattern is a Product Development Architecture. It solves the traditional approach's drawback of code in one file, i.e., that MVC architecture has different files for different aspects of our web application/ website.
The MVC pattern has three components, namely Model, View, and Controller.
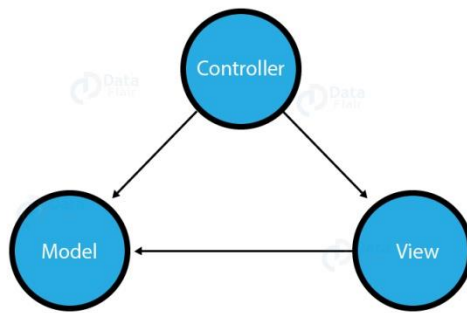
1. Model

The Model is the part of the web-app which acts as a mediator between the website interface and the database. In technical terms, it is the object which implements the logic for the application's data domain. There are times when the application may only take data in a particular dataset, and directly send it to the view (UI component) without needing any database then the dataset is considered as a model.

Although today if we want any kind of website we need to have some sort of database as we must be requiring some user input even if we are creating a simple blog site.
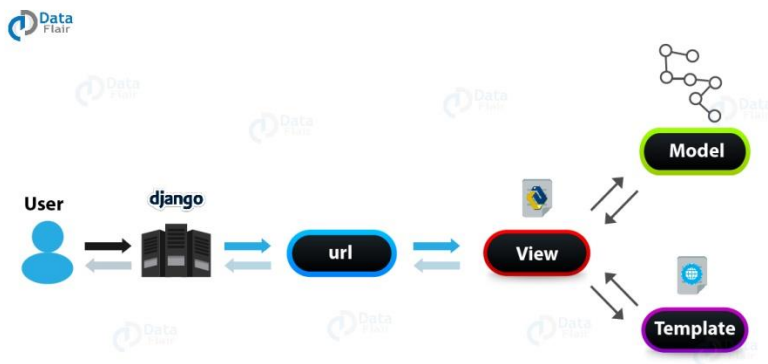
2. View

This component contains the UI logic in the Django architecture.

View is actually the User Interface of the web-application and contains the parts like HTML, CSS and other frontend technologies. Generally, this UI creates from the Models component, i.e., the content comes from the Models component.

3. Controller

The controller as the name suggests is the main control component. What that means is, the controller handles the user interaction and selects a view according to the model.

The main task of the controller is to select a view component according to the user interaction and also applying the model component.

This architecture has lots of advantages and that's why Django is also based on this architecture. It takes the same model to an advanced level.

9 Django is mainly an MTV (Model-Template-View) framework. It uses the terminology Templates for Views and Views for Controller.

Template relates to the View in the MVC pattern as it refers to the presentation layer that manages the presentation logic in the framework and essentially controls the content to display and how to display it for the user.

Thus our **Python code** will be in views and models and HTML code will be in templates.

MTV instead of MVC in django

Model	Data description
View	Handles the display of users
Template	Controls the user interaction
Controller	Presentation layer for users
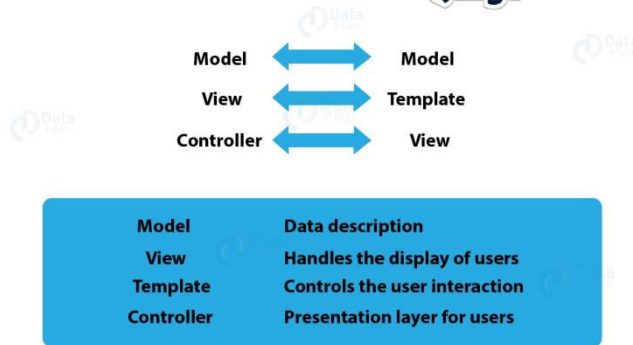
In MTV, the definitions of Model still remain the same that is, the Model contains the logical file structure of the project and is the middleware & data handler between database and view. The Model provides a definition of how the data formats as coming from the view so, it stores in the database and vice-versa, i.e., the retrieving information from the database transfers to the view in the displayable format.

The View in MTV architecture can look like the controller, but it's not. The View in this MTV architecture is formatting the data via the model. In turn, it communicates to the database and that data which transfer to the template for viewing.

The template is making the life of a frontend developer easy that's for sure. It also provides more development speed then the traditional MVC architecture would.

Template's main goal is to keep everything that browser renders. The model's data that's coming from the server in different parts while integrating the same when the user interacts with the website. Here, the template layer in Django is more similar to the views layer in MVC pattern. This layer is more focused and with Django framework, it provides much more extendibility to the frontend developers than what MVC architecture was giving.
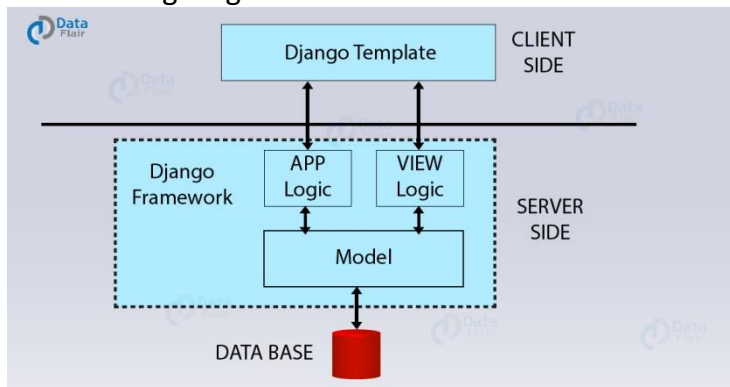

```
10 import csv
def readcsv():
        with open('C:\\Users\\ViNi\\Downloads\\data.csv','rt')as f:
                data = csv.reader(f)   #reader function to generate a reader object
                for row in data:
                        print(row)
def writecsv( ):
        with open('C:\\Users\\ViNi\\Downloads\\data.csv', mode='a', newline='') as file:
                writer = csv.writer(file, delimiter=',', quotechar='"') #write new record in file
                writer.writerow(['4', 'Devansh', 'Arts', '404'])
print("Press-1 to Read Data and Press-2 to Write data: ")
a=int(input())
```

```
if a==1:
        readcsv()
elif a==2:
        writecsv()
 else:
        print("Invalid value")
```

11When Django server starts, it first looks for settings.py. As the name settings, it is the main settings file of your web application. Everything inside your Django project like databases, backend engines, middlewares, installed applications, main URL configurations, static file addresses, templating engines, allowed hosts and servers and security key stores in this file as a list or dictionary.
So, when your Django server starts it executes settings.py file and then loads particular engines and databases so that when a request is given it can serve the same quickly.
12 Ans i)django-admin start project XYZ
ii)python manage.py runserver
iii)python manage.py startapp employee
iv)virtualenv <projectname>
13 we add the name of app Friendchat with the INSTALLED_APPS sections of the file name settings.py
14 init_.py,settings.py,urls.py,wsgi.py
15 init_.py,admin.py,apps.py,models.py,test.py,views.py

Q1. What is MySQLdb?

Q2. What is resultset?

Q3. What is database cursor?

Q4. What is database connectivity?

Q5.Which function do use for executing a SQL query?

Q6. Which package must be imported to create a database connectivity application?

Q7. Differentiate between fetchone() and fetchall()

Q8. How we can import MYSQL database in python?

Q9. Write a query to rename the name of the artist from Towang to Tauwang.

Q10. Write a query to delete an entity from the table Artists whose id is 1

Q. 11 Write a small python program to insert a record in the table books with attributes (title ,isbn).

Q. 12 Write a small python program to retrieve all record from the table books with attributes (title ,isbn).

A1. MySQLdb is an open-source freely available relational database management system that uses Structured Query Language. Now one of the most important question here is "What is SQL?"

SQL (Structured Query Language) is a standard language for relational databases that allow users to do various operations on data like, Manipulating, Creating, Dropping, etc. In a nutshell, SQL allows you to do anything with the data.

A2. Result set refers to a logical set of records that are fetched from the database by executing a query.

A3. Database cursor is a special control structure that facilitates the row by row processing of records in the result set

A4. Database connectivity refers to connection and communication between an application and a database system.

A5. Cursor. execute(sql query)

A6. Mysql.connector

A7. fetchone() – It fetches the next row of a query result set. A result set is an object that is returned when a cursor object is used to query a table.

fetchall() – It fetches all the rows in a result set. If some rows have already been extracted from the result set, then it retrieves the remaining rows from the result set.

A8. Use the mysql.connector.connect() method of MySQL Connector Python with required parameters to connect MySQL. Use the connection object returned by a connect() method to create a cursor object to perform Database Operations. The cursor.execute() to execute SQL queries from Python.

A9. updateSql = "UPDATE Artists SET NAME= 'Tauwang' WHERE ID = '1' ;"

    cursor.execute(updateSql)

A10. deleteSql = "DELETE FROM Artists WHERE ID = '1'; "

    cursor.execute(deleteSql)

A 11 import mysql.connector as Sqlator
conn =sqlator.connect(host="localhost",user="root",passwd="",database="test")
cursor=con.cursor()
query="INSERT into books(title,isbn) values('{}'{})".format('Neelesh','5143')
cursor.execute(query)
con.close()

A 12 import mysql.connector as Sqlator
conn =sqlator.connect(host="localhost",user="root",passwd="",database="test")
cursor=con.cursor()
query="select * from query"
cursor.execute(query)
data=cursor.fetchall()
for row in data:
    print(row)
conn.close()

CHAPTER 17 : SOCITY LAW AND ETHICS

Cyber crimes is one of the most threatening terms that is an evolving phase. It is said that major percentage of the World War III will be based on cyber-attacks by cyber armies of different countries.

Cyber crime can be categorized into 2 types. These are peer-to-peer attack and computer as weapon. In peer-to-peer attack, attackers target the victim users; and in computer as weapon attack technique, computers are used by attackers for a mass attack such as illegal and banned photo leak, IPR violation, pornography, cyber terrorism etc.

Cyber-criminals are involved in activities like accessing online accounts in unauthorized manner; use Trojans to attack large systems, sending spoofed emails. But cyber-criminals do not report any bug is found in a system, rather they exploit the bug for their profit.

Cyber-laws were incorporated in our law book not only to punish cyber criminals but to reduce cyber crimes and tie the hands of citizens from doing illicit digital acts that harm or damage other's digital property or identity.

The Indian legislature thought of adding a chapter that is dedicated to cyber law. This finally brought India's Information Technology (IT) Act, 2000 which deals with the different cyber-crimes and their associated laws.

Under section 66 of IT Act, 2000 which later came up with a much broader and precise law says that cracking or illegally hacking into any victim's computer is a crime. It covers a wide range of cyber-crimes under this section of the IT Act.

DDoS (Distributed Denial of Service), IPR violation, pornography are mass attacks done using a computer. Spying someone using keylogger is an example of peer-to-peer attack.

HOTS BASED QUESTIONS :
1.	What are intellectual propery rights ?
2.	What is Plagiarism?
3.	What is open source softwares ?
4.	What are the privacy laws in IT ?
5.	What is Cyber Crime and cyber security ?
6.	What is the difference between Phishing and Vishing ?
7.	What is illegal download ? What are the method to avoid it ?
8.	What is child pornography?
9.	What do you mean by cyber scam and how to avoid it ?

10. What is W-waste management ?

11. What are the biometrics devices? What do you mean by internet as an echo chamber ?

1. **Intellectual property rights** are the **rights** given to persons over the creations of their minds. They usually give the creator an exclusive **right** over the use of his/her creation for a certain period of time12.

2. **Plagiarism** is the "wrongful appropriation" and "stealing and publication" of another author's "language, thoughts, ideas, or expressions" and the representation of them as one's own original work. **Plagiarism** is considered academic dishonesty and a breach of journalistic ethics.

3. Open-source software is a type of computer software in which source code is released under a license in which the copyright holder grants users the rights to study, change, and distribute the software to anyone and for any purpose. Open-source software may be developed in a collaborative public manner.

4. **Privacy law** refers to the laws that deal with the regulation, storing, and using of personally identifiable information of individuals, which can be collected by governments, public or private organisations, or other individuals.

Privacy laws are considered within the context of an individual's privacy rights or within reasonable expectation of privacy.

5. The **crime** that involves and uses computer devices and Internet, is known as **cybercrime**. **Cybercrime** can be committed against an individual or a group; it can also be committed against government and private organizations. It may be intended to harm someone's reputation, physical harm, or even mental harm.

6. Voice **phishing**, or "**vishing**", works the same way as a spear **phishing** attack (by using personalized information to leverage trust), but uses a different channel: the telephone. The scammer calls an individual, pretending to be calling for a trusted organization (like the bank or your credit card company).

7. *Illegal downloading* places your computer at high risk of receiving viruses. Most *illegal downloading* is done through Peer-to-Peer (P2P) software, which allows people to share their files with others.

1. Remove the Incentive

> One of the most-effective ways of dealing with piracy is by removing the incentive for the consumers to look for pirated content. Effectively this can be characterised by offering a good product and a good user experience at a fair price. Price is not the only differentiator. The importance of the user experience cannot be understated; viewers want sympathetic interfaces that contain the usual sophisticated bells and whistles such as personal recommendations, and they want excellent picture quality with no buffering and/or latency. The more the industry can provide that at realistic cost, the less people will be driven towards pirate arms.

> You are not going to stop everyone from watching pirated content, but this can definitely remove some of the more casual illegal consumers.

2. PR & Education

There are several strands to this, but effectively the goal is to highlight to the consumer that piracy is a crime and it is illegal. To those within the industry this is obvious; to those outside it, it is anything but.

We've written recently of the problem of password sharing and how up to 42% of GenZ viewers are sharing log-in credentials. This has become a normative crime — one that 'everyone' does and so the activity no longer appears as illegal because the behaviour is normal. The usual example given is speeding, but video piracy is prevalent enough that maybe it should replace speeding in the textbooks. Efforts made to remind viewers that piracy is both morally wrong and a crime can prove successful in driving down numbers, as have been campaigns that have highlighted the role of organised crime in pirate activities, exposure to malware and inappropriate material, and the danger to advertisers of negative brand association with pirate sites.

3. Barriers to Entry

In the same way that you want to make it easy for consumers to choose legal alternatives, you want to make it hard for the pirates. The era of unprotected content is long gone. Content owners look to protect their investment and Intellectual Property, and will only strike licensing deals with operators that can demonstrate that they take such threats to the revenue stream seriously in turn.

What that means in practice, is changing all the time. Where once card-based Conditional Access Systems were as sophisticated as operators could get, the move towards IP and OTT delivery has necessitated a transition to software-based Digital Rights Management in turn. Even so, there is no single technology that can guarantee security. The best practice now involves a multi-disciplinary approach that encompasses both prophylactic anti-piracy measures and the following two criteria governing detection and enforcement as well.

4. Technology & Operations

You can't fight ghosts; you need to know what content is being pirated and where. That means being able to identify content, a live pirate stream as having come from your own video ecosystem. That requires technical intervention at the pre-transmission stage. Monitoring is the key to success here, whether automated — and there are some interesting developments in AI monitoring of video streams, both deployed and under development — or human-led. In an ideal world, at least for now, a hybrid solution is typically deployed.

Once a breach has been detected, swift action is necessary to deal with it. This has become ever-more important in recent years as piracy has pivoted towards realtime streaming and the lucrative illegal revenue streams associated with live sport in particular (the premium prices paid for accessing sports content making it a particular target).

Here, high-level agreements with the search engines and social networks consumers use to locate pirated content are key to rapid and realtime action.

5. Legal & Enforcement

There are a variety of countermeasures that TV Service Providers can use to interrupt and remove pirated content, from the traditional take-down notices to increasingly sophisticated realtime messages. With the correct anti-piracy services, operators can identify consumers who are watching illegal streams and incentivize them switch to legitimate services. These actions scale from soft to hard, with the harder countermeasures involving the introduction of law enforcement authorities.

The key is speed. While prosecution will always be a much slower process that happens after the event, removing the content from the internet as swiftly as possible is the best way to deter pirates and drive consumers towards legal alternatives.

6. Cooperation

While companies at all levels of the broadcast chain are used to competition, the losses to content piracy are too great for there not to be concerted efforts at cooperation. These need to take place at all levels of the industry and at all steps of the process, from production and on-set content security through to transmission.

The concept of herd immunity that is such a crucial aspect of global vaccination programs is important here. The more companies and organisations that are involved, the more effective the overall solution. Unfortunately the converse can also be true, and if there is any weak spot in the chain at any point, even in a place far removed from what was considered to be the primary route to the consumer's television or device, that weakness is there to be exploited.

8. *child pornography means*

- (a) a photographic, film, video or other visual representation, whether or not it was made by electronic or mechanical means,
  - o (i) that shows a person who is or is depicted as being under the age of eighteen years and is engaged in or is depicted as engaged in explicit sexual activity, or
  - o (ii) the dominant characteristic of which is the depiction, for a sexual purpose, of a sexual organ or the anal region of a person under the age of eighteen years;
- (b) any written material, visual representation or audio recording that advocates or counsels sexual activity with a person under the age of eighteen years that would be an offence under this Act;
- (c) any written material whose dominant characteristic is the description, for a sexual purpose, of sexual activity with a person under the age of eighteen years that would be an offence under this Act; or
- (d) any audio recording that has as its dominant characteristic the description, presentation or representation, for a sexual purpose, of sexual activity with a person under the age of eighteen years that would be an offence under this Act.

9. Cybercriminals are constantly looking for ways to make money at your expense. Individuals and organisations often fall prey to frauds that involve various forms of social engineering techniques, where the information required is garnered from a person rather than breaking into a system.

These scams are typical examples of how cyber attackers can easily play on people's psychology and perceptions. The tips provided here are aimed to help you protect yourself. Awareness is your best defence!

General tips:

- Check your online accounts regularly.
- Check your bank account regularly and report any suspicious activity to your bank.
- Perform online payments only on secure websites (check the URL bar for the padlock and https) and using secure connections (choose a mobile network instead of public Wi-Fi).
- Your bank will never ask you for sensitive information such as your online account credentials over the phone or email.
- If an offer sounds too good to be true, it's almost always a scam.
- Keep your personal information safe and secure.
- Be very careful about how much personal information you share on social network sites. Fraudsters can use your information and pictures to create a fake identity or to target you with a scam.
- If you think that you have provided your account details to a scammer, contact your bank immediately.
- Always report any suspected fraud attempt to the police, even if you did not fall victim to the scam.

10. *Waste management* (or *waste disposal*) are the activities and actions required to *manage waste* from its inception to its final *disposal*. This includes the *collection*, transport, *treatment* and *disposal* of *waste*, together *with* monitoring and regulation of the *waste management* process.

11. A **biometric device** is a security identification and authentication **device**. Such **devices** use automated methods of verifying or recognising the identity of a living person based on a physiological or behavioral characteristic. These characteristics include fingerprints, facial images, iris and voice recognition.

echo chamber refers to the overall phenomenon by which individuals are exposed only to information from like-minded individuals, while filter bubbles are a result of algorithms that choose content based on previous **online** behavior, as with search histories or **online** shopping activity.

COMPUTER SCIENCE – NEW (083) SAMPLE
QUESTION PAPER I (2019-20) CLASS- XII
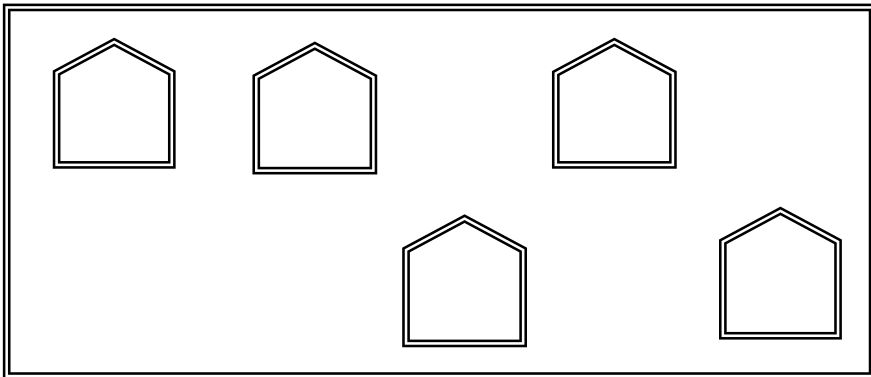
Max. Marks: 70   **Time: 3 hrs**

General Instructions:

- All questions are compulsory.

- Question paper is divided into 4 sections A, B, C and D.
    - Section A : Unit-1
    - Section B : Unit-2
    - Section C: Unit-3
    - Section D: Unit-4

		SECTION A	
Q1	A)	Which of the following is valid arithmetic operator in Python: (i) % (ii) ! (iii) > (iv) or	1
	B)	Identify the valid identifier name from the following (i) 9if (ii) roll_no	1
	C)	Name the Python Library modules which need to be imported to invoke the following functions: (i) cos() (ii) dump ()	1

	D)	Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.
		5=k
		for m in range(0,k)
		     if m%4=0:
		       print(m*4)
		    else:
		       print "m+3"
			2

	E)	Find the output of the following
		def textchanger(text):
		    L = len(text)
		    ntext=""
		    for i in range(0,L) :
		       if text [i].isupper() :
		          ntext = ntext + text[i].lower()
		       elif text [i].isalpha() :
		          ntext = ntext + text[i].upper()
		       else:
		          ntext = ntext + 'bb'
		    print(ntext)
		textchanger(gmail@com)
			2

	F)	Study the following program and select the possible output(s) from the options (i) to (iv) following it. Also, write the maximum and the minimum values that can be assigned to the variable Y. import random X= random.random() Y= random.randint(0,4)	2

		print(int(X),":",Y+int(X))	
		(i)0 : 0	
		(ii) 1 : 6	
		(iii)2 : 4	
		(iv) 0 : 3	
	G)	Find and write the output of the following python code:	3
		def Change(X ,Y=10):	
		X=X+Y	
		X=x-Y	
		print(X,"#",Y)	
		return (X)	
		X=5	
		Y=20	
		X=Change(X,Y)	
		print(X,"#",Y)	
		Y=Change(Y)	
		print(X,"#",Y)	
Q2	A)	Define comment in python	1
	B)	Identify the correct option for declaration of a tuple with single element	1
		i)('kv',)	
		ii)(5,)	
		iii(5)	
		iv)i) and ii) are correct way to declare tuple	
	C)	Declare a dictionary of toppers of your class with their name as keys and marks obtained as there value	1
	D)	Find the output of the following	1
		X="Iamaprogrammer"	
		print(X[2:])	
		print(X[3:8]	
	E)	What will the following function return?	1
		def add(a,b,c):	
		print(a+b+c)	
	F)	What do you understand by actual and formal argument Differentiate between them with a python example.	
		Or	
		Write a recursive function rec_sum(n) where n is any natural number and function returns sum of n natural number	
	G)	Write a function in python to count the number of lines in a text file 'SAMPLE.TXT' which is starting with an alphabet 'H' .	2
		OR	
		Write a method/function DISPLAY() in python to count number of lines from a text file SAMPLE.TEXT.	
	H)	What will be the output of the following code :	2
		Import matplotlib. pyplot as plt	
		#Plotting to our canvas	
		plt.plot([1,2,3],[4,5,1])	
		#Showing what we plotted	
		plt.show()	
		OR	
		Write a program to create a horizontal bar graph of following data. Add suitable labels.	

		City Population Delhi 23456123 Mumbai 20083104 Bangalore 18456123 Hyderabad 13411093	
	I)	Compare the algorithm efficiency of linear and binary search algorithm	2
	J)	Write a function in Python, INS_QU(A,da) and DEL_QU(A) for performing insertion and deletion operations in a Queue. A is the list used for implementing queue and d is the value to be inserted. OR Write a function in python, Push(employee) and Pop(employee) to add and delete An employee where employee is a tuple which contains name of employee and empno considering them to act as push and pop operation of the stack data structure	4

<div align="center">SECTION B</div>

Q3	A)	----------- is a set of rules used for communication	1
	B)	-------------protocol is used for sending email	1
	C)	Define modulation and write name of two modulation techniques	1
	D)	Define IOT	1
	E)	Explain the working of Email	2
	F)	Differentiate between IPv4 and IPv6	2
	G)	Expand the following terms i)NFC ii)IMAP iii)CDMA iv)MAC v)VoIP vi)URL	3
	H)	Standard Bank has set up its new center in India for its office and web based activities. It has five buildings as shown in the diagram below:	4

Distance between various buildings

Distance between various buildings	
A to B	50 Mts
B to C	30 Mts
C to D	30 Mts
D to E	35 Mts
E to C	40 Mts
D to A	120 Mts
D to B	45 Mts
E to B	65 Mts

No of computers

No of computers	
A	55
B	180
C	60
D	55
E	70

		(a) Suggest a possible cable layout for connecting the buildings.
		(b) Suggest the most suitable place to install the server of this organization.
		(c) Suggest the placement of the following devices with justification.
		
		   (i.) Hub/Switch
		  (ii.) Repeater
		(d) The company wants to link its head office in 'A' building to its Office in Sydney
		     (i) Which type of transmission medium is appropriate for such a link?
		     (ii) What type of network this connection result into?	

		SECTION C	
Q4	A)	Which command is used to create a django project i)django-admin startproject <projectname> ii)django_admin startproject <projectname> iii)django-admin start project <projectname> iv)All of these	1
	B)	Which of the following is not a DDL command i)Create ii)Alter iii)Delete iv)All are DDL Command	1
	C)	What is menat by NULL values in MYSQL	1
	D)	Differentiate between Char and Varchar DataTYpe	1
	C)	Differentiate between Primary Key and Foregin key Or Differentiate between Alter and Update Command	2
	D)	Explain teo types of HTTP request	2
	E)	**Consider the following tables HOSPITAL. Give outputs for SQL queries (i) to (iii)** | No	Name	Age	Department	Dateofadmin	Charge	Sex
---	---	---	---	---	---	---
1	Arpit	62	Surgery	21/01/06	300	M
2	Zayana	18	ENT	12/12/05	250	F
3	Kareem	68	Orthopedic	19/02/06	450	M
4	Abhilash	26	Surgery	24/11/06	300	M
5	Dhanya	24	ENT	20/10/06	350	F
6	Siju	23	Cardiology	10/10/06	800	M
7	Ankita	16	ENT	13/04/06	100	F
8	Divya	20	Cardiology	10/11/06	500	F
9	Nidhin	25	Orthopedic	12/05/06	700	M
10	Hari	28	Surgery	19/03/06	450	M	 **i)** Select SUM(Charge) from HOSPITAL where Sex='F'; (ii) Select COUNT(DISTINCT Department) from HOSPITAL; (iii) Select SUM(Charge) from HOSPITAL group by Department;	3
	F)	Consider the tables ITEMS & COMPANY. Write SQL commands for the statements (i) to (iv) and give the outputs for SQL queries (v) to (viii).	4

Table : ITEMS

ID	PNAME	PRICE	MDATE	QTY
T001	Soap	12.00	11/03/2007	200
T002	Paste	39.50	23/12/2006	55
T003	Deodorant	125.00	12/06/2007	46
T004	Hair Oil	28.75	25/09/2007	325
T005	Cold Cream	66.00	09/10/2007	144
T006	Tooth Brush	25.00	17/02/2006	455

Table : COMPANY

ID	COMP	City
T001	HLL	Mumbai
T008	Colgate	Delhi
T003	HLL	Mumbai
T004	Paras	Haryana
T009	Ponds	Noida
T006	Wipro	Ahmedabad
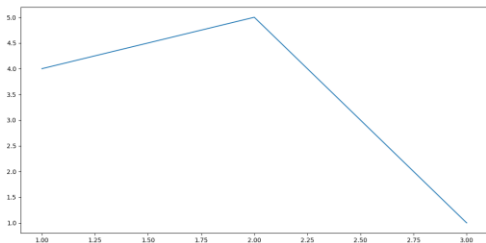
i)To display PNAME, PRICE * QTY only for the where price is greater than 100
ii)To display company name & city for ID= T001 and T008
iii)To delete the items produced before 2007.
iv)To increase the quantity by 20 for soap and paste.

		SECTION D	
Q5	A)	What are the different ways in which authentincation of a person can be performed?	2
	B)	Define the term open data	1
	C)	Write any two categories of cyber crime	2
	D)	Explain Phishing.	2
	E)	How can we recycle e-waste safely?	2
	F)	if someone attacks your web site, who would you complain to ?	1
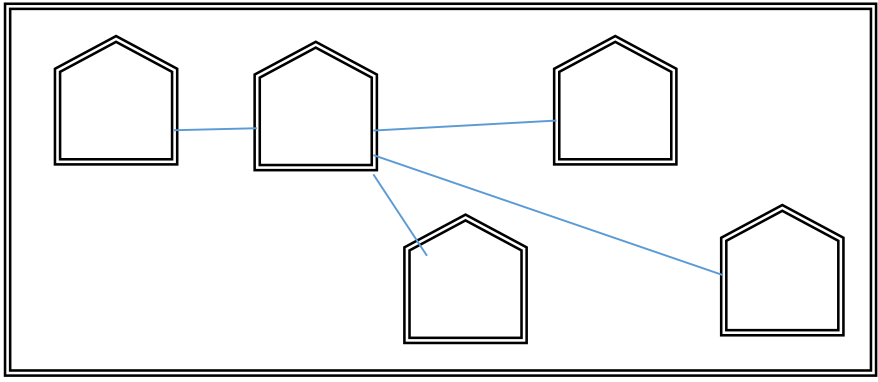
SECTION A			
Q1	A)	(i) %	1
	B)	(ii) roll_no	1
	C)	(i) cos() :-Math (ii) dump ():-pickle	1

	D)	Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.
		k=5
		for m in range(0,k):
		        if m%4==0:
		             print(m*4)
		        else:
		             print (m+3)
			2

	E)	GMAILbbCOM	2
	F)	Mimimum value of Y=0 Maximum value of Y=4 (i)0 : 0 ((iv) 0 : 3	2
	G)	5 # 20 5 # 20 20 # 10 5 # 20	3
Q2	A)	Comments are the code lines which are not executed by python interprerer It is used to make program more readable and easy to understand	1
	B)	iv)i) and ii) are correct way to declare tuple	1
	C)	Top={'A':97,"B:98,'C':99}	1
	D)	Find the output of the following X="Iamaprogrammer" print(X[2:]) :maprogrammer print(X[3:8]maprog	1
	E)	None	1

	F)	Actual argument is the argument defined at the time of function calling .formal argument is used at the time of function definition.Actual argument can be a variable,or expression or literal
		
		Or
		def rec_sum(n):
		  if n =1:
		      return(1)
		  else:
			2

		return((a+rec_sum(n-1))	

	G)	def count():
		    f1=open('sample.txt','r')
		c=0
		. l1=f1.readlines()
		 for k in l1:
		    If k[0]=='H'
		        C=C+1
		
		OR
		def count():
		    c=0
		    f1=open('sample.txt','r')
		. l1=f1.readlines()
		 For k in l1:
		        C=C+1
			2

	H)	 **OR** **½ marks for import matplotlib.puplot** **½ marks for creation of list** **½ marks for barhfunction** **½ marks for use of xticks**	2
	I)	1 marks for linear search and 1 foe binary search	2

	J)	def IN_QU(A):
		 data=int(input("enter data to be inserted: "))
		 A.append(data)
		
		def DEL_QU(A):
		    if (Arr==[]):
		        print("Queue empty")
		    else:
		        print ("Deleted element is: ",A[0])
		 del(A[0])
		(½ mark insert header)
		(½ mark for accepting a value from user)
		(½ mark for adding value in list)
		(½ mark for delete header)
		(½ mark for checking empty list condition)
		(½ mark for displaying "Queue empty")
		(½ mark for displaying the value to be deleted)
			4

		(½ mark for deleting value from list)
		 OR
		def Push(employee):
		    a=int(input("enter package title : "))
		   employee.append(a)
		def Pop(employee):
		 if (employee==[]):
		 print("Stack empty")
		 else:
		 print ("Deleted element:",employee.pop())
		(½ mark for Push() header)
		(½ mark for accepting a value from user)
		(½ mark for adding value in list)
		(½ mark for Pop() header)
		(½ mark for checking empty list condition)
		(½ mark for displaying "Stack empty")
		(½ mark for displaying the value to be deleted)(½ mark for deleting the value)	

		SECTION B	
Q3	A)	PROTOCOL	1
	B)	SMTP	1
	C)	Modulation is the process of modulating message signal .Two Types of modulation are :Amplitude modulation and Frequency Modulation	1
	D)	It is the network of physical objects or things embedded with electronics,software,sensors and network connectivity which enables these objects to collect and exchange data	1
	E)	Email System comprises of following components • Mailer • Mail Server • Mailbox Mailer:It is also called mail program,mail application or mail client .It allows us to manage ,read and compose email Mail Server:The function of mail Server is to receive ,store and deliever the email.It is a must for mail server to be running all the time because if it crashes or is down,email can be lost Mailboxes :Mailboxes is generally a folder that contains emails and information about them.	2
	F)	IPV4 Internet is protocol version 4 and IP6 is Internet protocol version 6 IPv4 is 32 bit and IPv6 is 128 bit IPv6 is still in transition phase and it will expected to replace IPV4	2
	G)	Expand the following terms i)NFC (Near Field Communication) ii)IMAP (Internet Message Access Protocol) iii)CDMA(code division multiple access) iv)MAC(Media Access Control) v)VoIP (Voice Over Internet Protocol)	1/2×6=3

		vi)URL(Uniform resourse locator)	
	H)	a) b)Building B c) i)Hub/Switch is placed in each building ii)Repeater is placed between D TO A d)i)Satellite Communication ii)WAN	1+1+1+1
		SECTION C	
Q4	A)	I)django-admin startproject <projectname>	1
	B)	iii)Delete	1
	C)	NULL value means empty value	1
	D)	Char is fixed length width but varchar is variable length width	1
	C)	i)Primary key is the key which uniquely identifies a tuple but foreign key is the key which takes reference from primary key ii)There is only one primary key in a table but there can be multiple foreign key on a table iii)Primary key is not NULL but Null can be allowed in foreign key iv)primary key must be unique but duplicate values are not allowed in primary key Or Alter command in DDL command but update command is DML Command Alter command is used to add,modify and delete a column from the table and update command is used to make changes in the record of the table	1+1
	D)	1)HTTP Get Request 2)HTTP Post Request 1 marks for each type of correct explanation	1+1
	E)	i)1200 ii)4 iii)1050 700 1150 1300	1+1+1
	F)	i)Select PNAME, PRICE * QTY from ITEMS where Price>100 ii)Select comp,city from company where ID IN('T001' AND 'T008' iii)DELETE * from ITEMS where year(MDATE)<2007.	1+1+1+1

		iv)Update ITEMS Set QTY=QTY+20 where Items in ('soap','paste)	
		SECTION D	
Q5	A)	Passwods, Token, Biometrics, OTP	2
	B)	Open Data: Data that can be freely available and republished	1
	C)	Cyber crime encompasses a wide range of activities, but these can generally be broken into two categories: •Crimes that target computer networks or devices: Such types of crimes include viruses and denial-of-service (DoS) attacks. •Crimes that use computer networks to advance other criminal activities: These types of crimes include cyberstalking, phishing and fraud or identity theft.	2
	D)	Fraudulent attempt to obtain sensitive information such as User name,Password and Credit card detail as trust worthy entity through electronic communication	2
	E)	(i) Use a certified e-waste recycler. (ii) Visit civic institutions. Check with your local government, schools and universities for additional responsible recycling options. (iii) Explore retail options. (iv) Donate your electronics	2
	F)	Complaint has to be lodged under IT Act.	1

Time allowed : 3 hours   Maximum Marks : 70

		SECTION A	
1	a	Differentiate between List and Tuple.	1
	b	What would be the Output? STRING="WELCOME NOTE" for S in range(0,7): print (STRING[S]) print (S,STRING)	1

	c	Find error in the following code and correct code by rewriting it and underlining the corrections.
		X=int("Enter value for x:"))
		for in range[0,11]:
		  if x=y
		    print (x+y)
		  else :
		    Print (x-y)
			2

	d	Which of the following are valid keywords in Python: (i) Elif (ii) for (iii) While (iv) if	1
	e	Convert the following for loop into while loop: for k in range(10,20,5): print (k)	1
	f	Name the Python Library modules which need to be imported to invoke the following functions : (i) sqrt() (ii) randint()	1

	g	Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.
		if n==0
		 print("zero")
		elif n==1:
		 print("one")
		elif n==2:
			2

```
     print("two")
   else n==3:
     print("three")
```

| | h | Write the output of the following python code:<br><br>```python
def ChangeList():
    L=[]
    L1=[]
    L2=[]
for i in range(1,10):
L.append(i)

for i in range(10,1,2):
L1.append(i)

for i in range(len(L1)):
L2.append(L1[i]+L[i])
L2.append(len(L)-len(L1))
print(L2) ChangeList()
``` | 3 |
|---|---|---|---|
| 2 | a | Write a function to find factorial of a number using recursion. | 2 |
| | b | What possible output(s) are expected to be displayed on screen at the time of execution of the program from the following code ? Also specify the maximum values that can be assigned to each of the variables BEGIN and LAST.<br><br>```python
import random
POINTS=[20,40,10,30,15];
POINTS=[30,50,20,40,45];
BEGIN=random.randint(1,3)
LAST=random.randint(2,4)
for C in range(BEGIN,LAST+1):
print( POINTS[C],"#")
```<br><br>(i) 20#50#30#   (ii)   20#40#45# (iii)   50#20#40#45#  (iv)      30#50#20# | 2 |
| | c | Find and write the output of the following Python code:<br><br>```python
Data = ["P",20,"R",10,"S",30]
Times = 0
Alpha = ""
Add = 0
for C in range(1,6,2):
``` | 2 |

```
        Times = Times + C
        Alpha = Alpha + Data[C-1]+"$"
        Add = Add + Data[C]
    print( Times,Add,Alpha)
```

	d	Suppose L=["abc",[6,7,8],3,"mouse"] then L[: :2] is i) ["abc",[6,7,8]] ii) ["abc " , 3] iii) [3,] iv) ["abc",[6,7,8],3,"mouse"]	1
	e	Write a method add, delete and display records using list implementation through stack	3
	f	Differentiate Local variable with Global variable.	1
	g	Write a Python Program to plot line chart for values x=[1,2,3,4,5]y=[65,45,76,26,80]	2
	h	Write a function in python to count number of lines starting with letter 'K' from text file 'record.txt'	2
	i	Define a function display ( ) in python to print those records from binary file 'db.dat' of employees whose salary is >20000. [Each Record has fields Name & Salary separated by [:]]	3
		SECTION B	
3	a	Expand the following (i)PPP (ii) TDMA (iii)TCP/IP (iv) VOIP	2
	b	What is MAC address ? Give example.	2
	c	What is Cloud Computing? Write two advantages of Cloud Services.	2

	d	Name the network tools used in the given situation
		     (i) to troubleshoot internet connection problem
		     (ii) to see the IP address associated with a domain name
		     (iii) to look up registration record associated with a domain name
		     (iv) to test the speed of internet connection
			2

	e	Define the terms i) Cladding ii) attenuation iii) Telnet	3
	g	ABC company is planning to set up their new offices in India with its hub at Hyderabad . As a Network advisor ,understand their requirements and suggest to them best solution.	4

Block to Block distance (in Meters):

Block From	Block	Distance
Human Resource	Conference	60
Human Resource	Finance	60
Conference	Finance	

Expected Number of Computer installed in each building block:

Block	Computer
Human Resource	125
Finace	25
Confrence	60

i) What is the most suitable block to install server?

ii) What will be the best possible connectivity out of the following to connect its new office in Bengaluru

With its London-based office ?

i)Infrared   ii)Satellite iii) Ethernet Cable

iii) Which of the following devices will you suggest to connect each computer in each of the above blocks?

i) Gateway   ii) Switch   iii) Modem

iv) Write the name of any two popular Open Source Software which are used as Operating Systems.

		SECTION C	
4	a	What is the command to install Django?	1
	b	What is the difference between between GET and POST method?	2
	c	What is NULL Value ?	1
	d	Write python-mysql connectivity to retrieve all the data of table student	2
	e	Differentiate between Degree and Cardinality.	2

	f	In a Bank's database, there are two tables 'Customer' and 'Transaction' as shown below.	6

Table : Customer

Acc_No	Cust_Name	Cust_City	Cust_Phone	Open_Bal
2101001	Sunita	Ambala	9710557614	10000
2201002	Sandhya	Patna	8223545233	15000
2301003	Vivek	New Delhi	9972136576	13000
2401004	Meena	New Delhi	9321305453	10000

Table :Transaction

Trans_Id	Acc_No	Transaction_Type	Amount
Tr001	2301003	Credit	15000
Tr002	2201002	Credit	20000
Tr003	2101001	Debit	3500
Tr004	2301003	Credit	26000
Tr005	2301003	Credit	24000

	1	Write a query to display customer's name who has withdrawn the money.	
	2	Write a query to display customer's name along with their transaction details.	
	3	Write a query to display customer's name who have not done any transaction yet.	
	4	How many rows and column will be there in the Cartesian product of the above given tables. Also mention the degree and cardinality of the Cartesian product of the above given tables.	
	5	Select Acc_No, sum(Amount) from Customer c, Transaction t where c.Acc_No=t.Acc_No group by c.Acc_No having Transaction_Type="Credit";	
	6	Discuss the significance of having clause with group by statement with suitable example.	

SECTION D

5	a	What are Intellectual Property Rights (IPR)?	1

	b	Differentiate between open source software and free software	2
	c	What is online fraud?	2
	d	What do you understand by plagiarism?	2
	e	How does phishing happen?	2
	f	if someone attacks your web site, who would you complain to ?	1

		SECTION A	
1	a	List in python represents a group of comma separated values of any datatype between square brackets. eg ["neha",42,12.56] Tuples are represents a group of comma separated values of any datatype within parentheses. eg (1,2,3,4,5)	1
	b	W E L C O M E 6 WELCOMENOTE 1 mark for correct output	1

	c	**x**=int(**input(**"Enter value for x:"))
		
		for **y** in range**(**0,11**)**:
		
		  if x==y **:**
		
		    print (x+y)
		
		  else :
		
		    print (x-y)
		
		2 Marks for removal of all errors (1/2 Marks for each corrected line)
			2

	d	valid keywords in Python: (i) for (iv) if 1/2 Marks for each corrected	1
	e	1 mark for complete correct while conversion (1/2 for partial corrected loop)	1
	f	(i) math (ii) random 1/2 mark for each option	1
	g	n=0 if n==0:	2

```
    print("zero")
elif  n==1:
  print("one")
elif  n==2:
  print("two")
else :
   print("three")
```

2 Marks for removal of all errors (1/2 Marks for each corrected line)

	h	[11, 10, 9, 8, 7, 4] (3 marks for correct output. Partial marking can also be given)	3
2	a	1 mark for correct logic ½ mark for correct if statement and ½ mark for writing recursive call	2
	b	(ii) 20#40#45# (iii) 50#20#40#45# Minimum value for BEGIN:1 Minimum value for LAST:2 (1 Mark for writing the correct options) (½ Mark for writing each correct Minimum value of BEGIN AND LAST)	2
	c	1 20 P$ 4 30 PR 9 60 PRS$ (2 marks for correct output.)	2
	d	['abc', 3] (1 mark for correct answer)	1
	e	(see code below)	3

```
s=[]
        c='y'
        while( c=='y'):
            print(" 1 for Push")
            print(" 2 for Pop")
            print(" 3 for display")
            choice=int(input("Enter your choice"))
            if(choice==1):
                a=int(input("Enter a number"))
                s.append(a)
```

```
            elif (choice==2):
                if s==[ ] :
                    print("Stack is empty")
                else:
                    print("Deleted element is :" s.pop())
            elif (choice==3):
                l=len(s)
                for i in range(l-1,-1,-1):
                    print(s[i])
            else:
                print ("Wrong input")
            c=input("do you want to continue y or  n ")
```

	f	1/2 mark for each correct definition	1
	g	import matplotlib.pyplot as plt import numpy as np x=[1,2,3,4,5] y=[65,45,76,26,80] plt.plot(x,y) plt.xlabel("X axis") plt.ylabel("Y axis ") plt.title("Graph for x=[1,2,3,4,5] y=[65,45,76,26,80]") plt.show() 2 mark for correct answer	2

	h	f=open("record.txt","r") (1+1=2)
		    lines=0
		    l=f.readlines()
		    for i in l:
		        if i[0]=='K'
		        lines=lines+1
		    print("No of Lines:",lines)
		
		2 mark for correct answer
			2

	i	def display():
		        i=open("db.dat" , rb+")
		        x=i.readlines()
		        while (x):
		            l=x.split(':')
		            if l[2]>20000:
		                print(x)
		            x=i.readlines()
		        i.close()
		
		3 mark for correct answer, partial marks can be given.
			3

		SECTION B	
3	a	PPP: Point to Point Protocol TDMA:Time division multiple Access TCP/IP: Transmission Control Protocol/Internet Protocol	2
		VOIP:Voice Over Internet Protocol ½ marks for each correct expansion	
	b	Medium access control Physical Address of NIC Card assigned by manufacturer stored on ROM. (1+1=2) 　　　e.g 00:0d:83:b1:c0:8e 1 mark for correct definition and 1 mark for example	2
	c	Cloud computing is an internet based new age computer technology. It is the next stage technology that uses the cloud to provide the services whenever and wherever the user needs it. It provides a method to access several servers worldwide Two advantages of Cloud Computing: 　　i) Data backup and storage ii) Powerful server capability 2 marks for correct explanation.	2
	d	(i)　　ping (ii)　　nslookup (iii)　　whois (iv)　　speedtest.net ½ mark for each correct answer	2
	e	Cladding: Layer of glass surrounded the Centre fibre of glass in fibre optics cable. Attenuation: Degeneration of signal over a distance on network cable. Telnet: Service to log in remotely on any computer over network. ½ mark for each correct line (Max 2 marks for correct answer)	3
	g	i)Human Resource Block ii) Ethernet Cable iii) Switch iv) Linux and Open Solaris 1 mark for each correct answer	4
		SECTION C	
4	a	pip install django (1 mark for correct answer)	1
	b	1 mark for each correct answer	2

	c	NULL value is value in table with blank field	1
	d	import mysql.connector mydb=mysql.connector.connect(user="root",host="localhost",passw d="123",database="inservice") mycursor=mydb.cursor() mycursor.execute("select * from student") for x in mycursor: print(x) 2 marks for correct statements	2
	e	2 marks for correct difference	2
	f 1	Select cust_name from customer c,transaction t where c.Acc_No=t.Acc_No and Transaction_Type= "Debit";	1
	2	Select cust_name, t.* from customer c, transaction t where c.Acc_No = t.Acc_No;	1
	3	Select cust_name from customer c,transaction t where c.Acc_No!=t.Acc_No;	1

	4	Cartesian Product
		
		  Number of Rows: 20
		  Number of Columns: 9
		  Degree: 9
		  Cardinality: 20
			1

	5	2301003 65000 2201002 20000	1
	6	select Acc_No, sum(Amount) from Customer c, Transaction t where c.Acc_No=t.Acc_No group by c.Acc_No having Transaction_Type="Credit";	1
		SECTION D	
5	a	IPR is a general term covering patents, copyright, trademark, industrial designs, geographical indications, layout design of integrated circuits, undisclosed information (trade secrets) and new plant varieties. 1 mark for correct definition	1
	b	1 mark for each correct definition	2
	c	Fraud committed using the internet call online fraud. Online fraud my occur in many forms such as non-delivered goods, non-existent companies, stealing information, fraudulent payments etc.	2
	d	2 marks for correct answer	2

	e	Phishing is typically carried out by email spoofing or instant messaging and it often directs users to enter personal information at a fake website, the look and feel of which is identical to the legitimate one and the only difference is the URL of the website in question	2
	f	Complaint has to be lodged under IT Act	1

Time 3hrs   M.M. 70

1	a)	Which of the following is valid operator in python : I) % 2) **= 3) < 4) not	1
	b)	Write the type of tokens from the following : 1) for 2)_fn	1
	c)	Nam the python library modules which need to be imported to invoke the following functions: 1) sin() 2) randint()	1
	d)	Rewrite the following code in python after removing all syntax error(s).underline each correction done in code. O,P= 10=20 for j n range[O,P]: print(p*4) T= p+5 Print(T)	2

	e)	Find and write the output:
		def solve(s1):
		   k=len(s1)
		   s2=''
		   for j in range (0,k):
		      if s1[j].isupper():
		          s2=s2+s1[j+1].lower()
		      elif s1[j].islower():
		          s2=s2+s1[j-1].upper()
		      else:
		          s2=s2+'@'
		   print(s2)
		
		solve('WeLcoMe')
			2

	f)	Find and write the output of the following python code: def update(p,q=10): p=p+q q=p-q print(p,"#",q) return (p) p1=40 q1=20 p1=update(p1,q1) print(r,"@",q1) q1=update(q1)	3
	g)	What possible outputs are expected to be displayed on the screen at the time of execution of the program from the following code? Also specify the minimum and maximum values that can be assigned to the variable c.	2

		import random temp=[10,20,30,40,50,60] c=random.randint(0,4) for I in range(0, c): print(temp[I],'#',end='') (i) #10#20 (ii) 10#20#30#40#50# (iii). 10#20#30# (iv) 50#60#	
2	a	What do you understand by eval()?	1

	b	Which is the correct form of declaration of dictionary?
		    i) Day=(1;'mon', 2;'tue', 3:'wed')
		    ii) Day=[1:'ONE', 2:'TWO',3:'THREE']
		    iii) Day={1:'APPLE', 2:'ORANGE', 3:'GRAPES'}
		    iv) Day={1'green', 2'red',3'blue']
			1

	c	Identify the valid declaration of L:
		L = [1, 23, 'hi', 6]
		    (i) List
		    (ii) Dictionary
		    (iii) Array
		    (iv) Tuple
			1

	d	Find and write the output of the following python code: x=['5 3 2 1'] y=['8 7 9 10'] z=y+x print(z)	1

	e	Find and write the output of the following python code :
		def come(n):
		  n=n+10
		  m=5+n
		  n,m=m,n+m
		  return n,m
		
		P=come(6)
		print(P)
			1

	f	What do you understand by UDF? What is the need of it ?	2
	g	A bar chart is drawn(using pyplot) to represent sales data of various models of MOBILES, for a month. Write a appropriate statement in python to provide labels MONTH-JUNE and SALES DONE to x and y axis respectively. OR. Give the output from the given python code: import matplotlib.pyplot as plt import numpy as np x = np.arange(1, 5) plt.plot(x, x*1.5, label='Normal') plt.plot(x, x*3.0, label='Fast')	2

		plt.plot(x, x/3.0, label='Slow') plt.legend() plt.show()	
	h	Write a function in python to count the number of vowels in a text file data.txt? OR. Write a function DISPLAY() in python to read and count the word 'THIS' from "NOVEL.TXT".	2
	i	Write a function "perfect()" that determines if parameter number is a perfect number. Use this function in a program that determines and prints all the perfect numbers between 1 and 100. [An integer number is said to be "perfect number" if its factors, including 1(but not the number itself), sum to the number. E.g., 6 is a perfect number because 6=1+2+3]. OR. Differentiate between Bubble shot and Insertion soRt. Which one is better?	3
	j	Write a function in python, **AddQ(Arr)** and **RemoveQ(Arr)** for performing insertion and deletion operations in a Queue. **Arr** is the list used for implementing queue and **data** is the value to be inserted. OR. Write a function in python, **SPush(package)** and **SPop(package)** to add a new Package and delete a Package from a List of Package Description, considering them to act as push and pop operations of the Stack data structure.	4
		SECTION-B	
Q.3	a	………………… is an example of cloud.	1
	b	………………… is a network of physical objects embedded with electronics, software, sensors and network connectivity.	1
	c	………………… is a device to connect two dissimilar network.	1
	d	………………… describes the measuring unit of data transfer rate .	1
	e	Give the full forms of the following : (i) SMTP (ii) SIM (iii) Lifi (iv) GPRS	2
	f	How many pair of wires are there in a twisted pair cable (Ethernet)? What is the name of the port, which is used to connect Ethernet cable to a computer or a laptop?	2
	g	Identify the type of cyber crime for the following situations: (i) A person complains that Rs. 4.25 lacs have been fraudulently stolen from his/her account online via some online transactions in two days using NET BANKING. (ii) A person complains that his/her debit/credit card is safe with him still somebody has done shopping /ATM transaction on this card. (iii) A person complains that somebody has created a fake profile of Facebook and defaming his/her character with abusive comments and pictures.	3
	h	Sharma Medicos Center has set up its new center in Dubai. It has four buildings as shown in the diagram given below:	4

Distance between various building are as follows:

Accounts to research Lab	55m
Accounts to store	150m
Store to packaging unit	160m
Packaging unit to research lab	60m
Accounts to packaging unit	125m
Store to research lab	180m

Number of Computers	
Accounts	25
Research Lab	100
Store	15
Packaging Unit	60

As a network expert, provide the best possible answer for the following queries:
i)   Suggest a cable layout of connections between the buildings.
ii)   Suggest the most suitable place (i.e. buildings) to house the server of this organization.
iii)   Suggest the placement of the following device with justification:
            i. a) Repeater   b) Hub/Switch
iv)   Suggest a system (hardware/software) to prevent unauthorized access to or from the network.

SECTION-C

Q4.	a	Which command is used to open the database?	1
	b	Which clause is used to sort the records of a table?	1
	c	Which command is used to delete the table?	1
	d	Which clause is used to remove the duplicating rows of the table?	1
	e	Differentiate between Django GET and POST method.	2
	f	Define degree and cardinality. Based upon given table write degree and cardinality.	2

PATIENTS

PatNo	PatName	Dept	DocID
1	Leena	ENT	100
2	Supreeth	Ortho	200
3	Madhu	ENT	100
4	Neha	ENT	100
5	Deepak	Ortho	200

	g		7

RxID	DrugID	DrugName	Price	PharmacyName	PharmacyLocation
R1000	5476	Amlodipine	100.00	Rx Pharmacy	Pitampura, Delhi
R1001	2345	Paracetamol	15.00	Raj Medicos	Bahadurgarh, Haryana
R1002	1236	Nebistar	60.00	MyChemist	Rajouri Garden, Delhi
R1003	6512	VitaPlus	150.00	MyChemist	Gurgaon,Haryana

| | | R1004 | 5631 | Levocitrezine | 110.00 | RxPharmacy | South Extension,Delhi | |

Write commands in SQL for (i) to (iv):

I. To increase the price of "Amlodipine" by 50.
II. To display all those medicines whose price is in the range 100 to 150.
III. To display the Maximum price offered by pharmacy located in "Gurgaon"
IV. To display sum of price for each PharmacyName having more than 1 drug.
VI To display Maximum and Minimum price

Write the output(s) produced by executing the following queries:
   i)   SELECT RxID, Price from PharmaDB where PharmacyNa IN ("Rx Parmacy", "Raj Medicos");
   ii)   SELECT PharmacyName, COUNT(*) FROM PharmaDB GROUP BY PHARMACY NAME

		SECTION-D	
5	a	When net is showing the ads related to products you have bought earlier, phenomenon is known as -----------.	1
	b	As a citizen of India, what advice you should give to others for e-waste disposal?	1
	c	What are the two methods to avoid illegal downloading?	2
	d	Define the term Phishing and Vishing ?	2
	e	Stealing someone's intellectual work and representing it as your own known as:- (i) phishing (ii) scam (iii) plagiarism (iv) intellectual property	2
	f	What are intellectual property rights? Why should intellectual property rights be protected?	2

END OF THE THE PAPER

1	a)	Which of the following is valid operator in python : I) % 2) AND 3) => 4) **=	1
ANS		% , **=	
	b)	Write the type of tokens from the following : 1) for 2)_fn	1
ANS		CONTROL FLOW , IDENTIFIER	
	c)	Nam the python library modules which need to be imported to invoke the following functions: 1) sin() 2) randint()	1
ANS		MATH , RANDOM	
	d)	Rewrite the following code in python after removing all syntax error(s).underline each correction done in code. O,P= 10=20 for j n range[O,P]: print(p*4) T= p+5 Print(T)	2
ANS		O,P= <u>10,20</u> for j n range<u>(O,P)</u>: print(<u>P</u>*4) T= <u>P</u>+5 <u>Pri</u>nt(T)	

	e)	Find and write the output:
		def solve(s1):
		   k=len(s1)
		   s2=" "
		   for j in range (0,k):
		      if (s1[i].isupper())
		         s2=s2+s1[j+1].lower()
		      elif s1[i].islower()
		         s2=s2+s1[j-1].upper()
		      else:
		         s2=s2+"@"
		    print(s2)
		
		solve("WeLcoMe")
			2

ANS		eWcLCeM	

	f)	Find and write the output of the following python code:
		def update(p,q=10):
		   p=p+q
		   q=p-q
		   print(p,'#',q)
		   return (p)
		
		p1=40
			3

		q1=20 p1=update(p1,q1) print(p1,'@',q1) q1=update(q1)	
ANS		60 # 40 60 @ 20 30 # 20	
	g)	What possible outputs are expected to be displayed on the screen at the time of execution of the program from the following code? Also specify the minimum and maximum values that can be assigned to the variable c. import random temp=[10,20,30,40,50,60] c=random.randint(0,4) for I in range(0, c): print(temp[i],':',end='#') (i) #10#20 (ii) 10#20#30#40#50# (iii). 10#20#30# (iv) 50#60#	2
ANS		iii) ONLY MIN=0, MAX=3	
2	a	What do you understand by eval()?Give example.	1
ANS		**eval()** evaluates the passed string as a **Python** expression and returns the result. For example, **eval**("1 + 1") interprets and executes the expression "1 + 1" and returns the result (2)	

	b	Which is the correct form of declaration of dictionary?
		    v) Day=(1;'mon', 2;'tue', 3:'wed')
		    vi) Day=[1:'ONE', 2:'TWO',3:'THREE']
		    vii) Day={1:'APPLE', 2:'ORANGE', 3:'GRAPES'}
		    viii) Day={1'green', 2'red',3'blue']
			1

ANS		iii) Day={1:'APPLE', 2:'ORANGE', 3:'GRAPES'}	

	c	Identify the valid declaration of L:
		L = [1, 23, 'hi', 6]
		    (v) List
		    (vi) Dictionary
		    (vii) Array
		    (viii) Tuple
			1

ANS		LIST	
	d	x=['5 3 2 1'] y=['8 7 9 10'] z=y+x print(z)	1
ANS		['8 7 9 10', '5 3 2 1']	

	e	Find and write the output of the following python code :
		def come(n):
		   n=n+10
		   m=5+n
			1

		n,m=m,n+m return n,m P=come(6) print(P)	
ANS		(21, 37)	
	f	What do you understand by UDF? What is the need of it ?	2
ANS		1 MARKS FOR USER DEFINE FUNCTION AND 1 MARKS FOR NEED OF IT	
	g	A bar chart is drawn(using pyplot) to represent sales data of various models of MOBILES, for a month. Write a appropriate statement in python to provide labels MONTH-JUNE and SALES DONE to x and y axis respectively. OR. Give the output from the given python code: import matplotlib.pyplot as plt import numpy as np x = np.arange(1, 5) plt.plot(x, x*1.5, label='Normal') plt.plot(x, x*3.0, label='Fast') plt.plot(x, x/3.0, label='Slow') plt.legend() plt.show()	2
ANS		import matplotlib.pyplot as plt import numpy as np model=('apple','samsung','K10','vivo','nokia') y_pos=np.arange(len(model)) sale=[12000,12174,9000,11520,8060] plt.bar(y_pos,sale,align='center',alpha=0.5) plt.xticks(y_pos,model) plt.xlabel('Month-June') plt.ylabel('Sale done') plt.title('Sales Bar Graph') plt.show() OR 	
	h	Write a function in python to count the number of vowels in a text file data.txt? OR. Write a function DISPLAY() in python to read and count the word 'THIS' from "NOVEL.TXT".	2

ANS		f=open('data.txt','r')
		c=0
		for k in f.read():
		    if k=='a' or k=='e' or k=='i' or k=='o' or k=='u':	

```
            print (k)
            c=c+1
    print (c)
    f.close()
```

OR

```
f=open('NOVEL.txt','r')
c=0
for k in f.readlines():
    for r in k.split():
        if r=="THIS" or r=="this":
            print(k)
            c=c+1
print(c)
f.close()
```

	i	Write a function "perfect()" that determines if parameter number is a perfect number. Use this function in a program that determines and prints all the perfect numbers between 1 and 100. [An integer number is said to be "perfect number" if its factors, including 1(but not the number itself), sum to the number. E.g., 6 is a perfect number because 6=1+2+3]. OR. Differentiate between Bubble shot and Insertion sort. Which one is better?	3

ANS		<pre>def perfect(n):
		    sum = 0
		    for i in range(1,n):
		        if n%i == 0:
		            sum = sum + i
		    if sum == n:
		        return True
		    else:
		        return False
		    for i in range(1,1001):
		        if perfect(i):
		            print(i)</pre>
		     OR
		2 MARKS FOR DIFFERENCE AND 1 MARKS FOR DEFINE THE BEST	

	j	Write a function in python, **AddQ(Arr)** and **RemoveQ(Arr)** for performing insertion and deletion operations in a Queue. **Arr** is the list used for implementing queue and **data** is the value to be inserted. OR. Write a function in python, S**Push(package)** and S**Pop(package)** to add a new Package and delete a Package from a List of Package Description, considering them to act as push and pop operations of the Stack data structure.	4

		<pre>def AddQ(Arr):
		    data=int(input("enter data to be inserted: "))
		    Arr.append(data)</pre>	

```
def RemoveQ(Arr):
  if (Arr==[]):
    print( "Queue empty")
  else:
    print ("Deleted element is: ",Arr[0])
    del(Arr[0])
```
<div align="center">OR</div>

```
def SPush(Package):
  a=int(input("enter package title : "))
  Package.append(a)

def SPop(Package):
  if (Package==[]):
    print( "Stack empty")
  else:
    print ("Deleted element:",Package.pop())
```

		SECTION-B	
Q.3	a	…………………. is an example of cloud.	1
ANS		Google Drive or any other correct example	
	b	…………………. is a network of physical objects embedded with electronics, software, sensors and network connectivity.	1
ANS		The internet of things **OR** Internet	
	c	…………………. is a device to connect two dissimilar network.	1
ANS		Router	
	d	…………………. describes the measuring unit of data transfer rate .	1
ANS		megabit per second	

	e	Give the full forms of the following :
		    (v) SMTP
		    (vi) SIM
		    (vii) Lifi
		    (viii) GPRS
			2

ANS		SIMPLE MAIL TRANSFER PROTOCOL SUBSCRIBER IDENTITY MODULE OR SUBSCRIBER IDENTIFICATION MODULE LIGHT FIDILITY GENERAL PACKET RADIO SERVICES	
	f	How many pair of wires are there in a twisted pair cable (Ethernet)? What is the name of the port, which is used to connect Ethernet cable to a computer or a laptop?	2
ANS		TWO INSULATED COPPER WIRES , ETHERNET PORT	

	g	Identify the type of cyber crime for the following situations:
		    (iv) A person complains that Rs. 4.25 lacs have been fraudulently stolen from his/her account online via some online transactions in two days using NET BANKING.
		    (v) A person complains that his/her debit/credit card is safe with him still somebody has done shopping /ATM transaction on this card.
		    (vi) A person complains that somebody has created a fake profile of Facebook and defaming his/her character with abusive comments and pictures.
			3

ANS		(i) Bank Fraud (ii) Identity Theft (iii) Cyber Stalking	
	h	SHARMA Medicos Center has set up its new center in Dubai. It has four buildings as shown in the diagram given below: Distance between various building are as follows: | Accounts to research Lab	55m
Accounts to store	150m
Store to packaging unit	160m
Packaging unit to research lab	60m
Accounts to packaging unit	125m
Store to research lab	180m | | Number of Computers	
Accounts	25
Research Lab	100
Store	15

Packaging Unit	60	
		
		As a network expert, provide the best possible answer for the following queries:
		  i) Suggest a cable layout of connections between the buildings.
		  ii) Suggest the most suitable place (i.e. buildings) to house the server of this organization.
		  iii) Suggest the placement of the following device with justification:
		        a) Repeater b) Hub/Switch
		  iv) Suggest a system (hardware/software) to prevent unauthorized access to or from the network.
			4

ANS		1 MARKS FOR EACH CORRECT ANS	
		SECTION-C	
4.	a	Which command is used to open the database "SCHOOL"?	1
ANS		USE SCHOOL	
	b	Which clause is used to sort the records of a table?	1
ANS		ORDER BY	
	c	Which clause is used to delete the table?	1

ANS		DROP	
	d	Which clause is used to remove the duplicating rows of the table?	1
ANS		Distinct	
	e	Differentiate between Django GET and POST method.	2
ANS		GET and POST. GET and POST are the only HTTP methods to use when dealing with forms. Django's login form is returned using the POST method, in which the browser bundles up the form data, encodes it for transmission, sends it to the server, and then receives back its response. Both of these are dictionary-like objects that give you access to GET and POST data. POST data generally is submitted from an HTML <form> , while GET data can come from a <form> or the query string in the page's URL.	
	f	Define degree and cardinality. Based upon given table write degree and cardinality.	2

PATIENTS

PatNo	PatName	Dept	DocID
1	Leena	ENT	100
2	Supreeth	Ortho	200
3	Madhu	ENT	100
4	Neha	ENT	100
5	Deepak	Ortho	200

ANS		No of attributes called degree and no. of tuples called cardinality. 4 degree , 5 cardinality	

| | g | **TABLE NAME : PHARMADB** | 7 |

RxID	DrugID	DrugName	Price	PharmacyName	PharmacyLocation
R1000	5476	Amlodipine	100.00	Rx Pharmacy	Pitampura, Delhi
R1001	2345	Paracetamol	15.00	Raj Medicos	Bahadurgarh, Haryana
R1002	1236	Nebistar	60.00	MyChemist	Rajouri Garden, Delhi
R1003	6512	VitaPlus	150.00	MyChemist	Gurgaon,Haryana
R1004	5631	Levocitrezine	110.00	RxPharmacy	South Extension,Delhi

Write commands in SQL for (i) to (iv):

- J. To increase the price of "Amlodipine" by 50.
- JJ. To display all those medicines whose price is in the range 100 to 150.
- JJJ. To display the Maximum price offered by pharmacy located in "Gurgaon"
- IV. To display sum of price for each PharmacyName having more than 1 drug.
- VI To display Average price

Write the output(s) produced by executing the following queries:

		iii) SELECT RxID, Price from PharmaDB where PharmacyNa IN ("Rx Parmacy", "Raj Medicos"); iv) SELECT PharmacyName, COUNT(*) FROM PharmaDB GROUP BY PHARMACY NAME		

ANS		1) Update pharmadb set price =price+50
		 2) Select DrugName from Pharmadb where price>=100 and price<=150
		 3) Select Max(price) form pharmadb where pharmacylocation like "Gurgaon%"
		 4) Select sum(price) from pharmadb group by pharmacyname having count(*)>1
		 5) Select avg(Price) from pahramadb
		 6) R1000 100
		     R001 15
		     R1004 110
		 7) Rx Pharmacy 2
		     Raj Medicos 1
		     MyChemist 2		

		SECTION-D		
5	a	When net is showing the ads related to products you have bought earlier, phenomenon is known as -----------.	1	
ANS		HeadOn		
	b	As a citizen of India, what advice you should give to others for e-waste disposal?	1	
ANS		As a citizen of india , We can advice the following principle of waste management: Reduce , Reuse and Recycle.		
	c	What are the two methods to avoid illegal downloading?	2	
ANS		Legal & Enforcement, Cooperation		
	d	Define the term Phishing and Vishing ?	2	
ANS		Voice **phishing**, or "**vishing**", works the same way as a spear **phishing** attack (by using personalized information to leverage trust), but uses a different channel: the telephone. The scammer calls an individual, pretending to be calling for a trusted organization (like the bank or your credit card company).		
	e	Stealing someone's intellectual work and representing it as your own known as:- (i) phishing (ii) scam (iii) plagiarism (iv) intellectual property	2	
ANS		phishing		
	f	What are intellectual property rights? Why should intellectual property rights be protected?	2	
ANS		Intellectual property rights are the rights given to persons over the creations of their minds. They usually give the creator an exclusive right over the use of his/her creation for a certain period of time.		