COMPUTER SCIENCE – NEW (083) 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

Question 1:

a) Which of the following is valid arithmetic operator in Python: {1}
    (i) **//** (ii) **?**   (iii) **%**   (iv) **and**
    // and %

b) Write the type of tokens from the following: {1}
    (i) **and** (ii) **name_of_the_student**
    Logical operator and variable / identifier

c) Name the Python Library modules which need to be imported to invoke the following functions:
    (i) sin() (ii) randint ()   **{1}**
    math and random

d) Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code. {2}

<u>130=To</u>
for X in range(0<u>,To) IF X%10==0</u>:
    print (X*4) <u>Else</u>:
        print (X+3)

e) Find and write the output of the following python code: {2}

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('james@007')
will convert upper to lower n vice versa. To the digits and special letters it will add 'bb to it

f) Find and write the output of the following python code: {3}

def Change(P ,Q=130):

```
        P=P+Q

        Q=P-Q

        print( P,"#",Q) return (P)

 R=250 S=200

R=Change(R,S)
print(R,"#",S)
S=Change(S)
```

First call will be with 250 and 200 Next o/p 250 , 200 next call 250 and 130

g) What possible outputs(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 FROM and TO.
{2}

```
import random AR=[20,30,40,50,60,70];
FROM=random.randint(1,3)                          20
TO=random.randint(2,4) 50 for K in range(FROM,TO+1):

    print (AR[K],end="#")
```

(i) 10#40#70# (**ii) 30#40#50#**
(iii) 50#60#70# (iv) 40#50#70#

Question 2:
a) What do you understand by the term selection?   {1}
It is another way to selecting one thing out of many. If statements and its types are the part of it

b) Which is the correct form of declaration of dictionary?   {1}

   i. **Day={1:'ramit',2:'ayush',3:' arpan'}**
   ii. Day=(1;' ramit',2;'ayush',3;' arpan')
   iii. Day=[1:' ramit',2:'ayush',3:' arpan']
   iv. Day={1' ramit',2'ayush',3'arpan']

c) Identify the valid declaration of L: {1}
       L = [11, '31', "hello", 5].
   (i) **list**   (ii) dictionary   (iii) array   (iv) tuple   (v) error

d) Find and write the output of the following python code: {1}

 x = "spsec" i = "a"
 while i in x:
print(i, end = " ")
there is no change in the variable of 'i' in keyword is not used with while

e) Find and write the output of the following python code: {1}

 a=10

 def call():

    global a

    a=15

```
    b=20
    print(a)
call()
```

f) What do you understand by local and global scope of variables? How can you access a global variable inside the function, if function has a variable with same name. Illustrate   {2}

local variables are declared / used within a function while global are used anywhere. Using global keyword, this can be used.

g) A bar chart is drawn(using pyplot) to represent sales data of various models of cars, for a month. Write appropriate statements in Python to provide labels **Month - June** and **Sale done** to x and y axis respectively.
                                                    {2}

import mathplotlib.pyplot as plt

plt.bar(l1,l2,strs) # or create a list

plt.show()

OR

Give the output from the given python code:

```
import matplotlib.pyplot as plt; plt.rcdefaults() import numpy as
np import matplotlib.pyplot as plt

objects = ('Python', 'C++', 'Java', 'Perl', 'Scala', 'Lisp') y_pos = np.arange(len(objects))
performance = [10,8,6,4,2,1]

plt.bar(y_pos, performance, align='center', alpha=0.5) plt.xticks(y_pos, objects)
plt.ylabel('Usage') plt.title('Programming language usage')


plt.show()
```

h) Write a function in python to count the number of lines in a text file '**lesson.txt**' which   {2}
is starting with an alphabet '**T' or 't'** .

c=0
f=open("filename.txt",r)
while f:
  a=get(s)
  if a[0]=='t':
    c=c+1
pint(c)
f.close()

OR

Write a method/function **SHOWWORDS()** in python to read lines from a text file **lesson.txt**, and display those words, which are more than 10 characters.
c=0
f=open("filename.txt",r)
while f:
  a=get(s)
  if len(a)<10:
    c=c+1
pint(c)

i) Write a Recursive function in python **linearSearch(Arr,l,X)** to search the given element **X** to be searched from the List **Arr** having **R** elements, where **l** represents starting index   {3}
for I in LIS:
 if I==num:
  f=1

```
   break
if f==1:
 print("Yes!!")
else:
print("No!!")
```

or

Write a Recursive function **recurSumOfDigits(n)** in python to calculate and return the sum of digits of a number **n** passed to the parameter. Eg: if input is 45 then output is 9 ie 4+5

```
def sumD(n):
 if n>0:
  return n%10 + sum(n)
else:
 return 0
```

j) Write a function in Python, **INSERTQ(Arr,val)** and **DELETEQ(Arr)** for performing insertion and deletion operations in a Queue. **Arr** is the list used for implementing queue and **val** is the value to be inserted.

{4}

```
def ins(ar,val):

  if len(ar)==size:

         print("overflow")

else:

  ar.append(val)



def del(arr):

  if f>r:

   print("of")

else:

  print(arr.pop())
```

OR

Write a function in python, **MakePush(bundle)** and **MakePop(bundle)** to add a new bundle and delete a **bundle** from a List of **bundle** Description, considering them to act as push and pop operations of the Stack data structure

```
def makrpush(bundle):

  if len(bundle)==size:

         print("overflow")

else:

  bundle.append(val)



def makepop(bundle):

  if f>r:

   print("of")
```

else:

   print(bundle.pop())

SECTION-B

Question 3:

a)   …………………………is an example of Hybrid cloud   {1}
a business might run a mission-critical workload within a private cloud, but use the database or archival services of a public cloud provider.

b)   A _____ is a **topology** for a Local Area **Network** (LAN) in which all the nodes are connected to a single cable. The cable to which the nodes connect is called a "backbone".
bus   {1}

c)   _____ is a hardware **device** that acts as a "gate" between two networks. It may be a firewall, server, or other **device** that enables traffic to flow in and out of the network
       gateway   {1}

d)   In networking and digital telecommunications, _____ refers to the per-second measurement of **data** that passes through a **communications** network   {1}
Bit-rate

e) Give the full forms of the following

       HTTPS   FQDN   CDMA   SSl   {2}

       Hyper text transmission protocol secure

       fully qualified domain name

       Code division multiple access

       Secure Shell

f)   Compare fiber optic cable with Ethernet cables? Also tell when wireless cables are more advantageous over wired cables   {2}
Ethernet uses copper cables to deliver data using electrical impulse, and it has a reputation of being a lot slower than fiber optic cables. ... Now, however, "fast Ethernet" offers rates of up to 100Mbps, while Gigabit Ethernet can deliver speeds of a hefty 1000Mbps.

g) Identify the type of cyber crime for the following situations: {3}

   (i)   Aman person complains that Rs. 2.5 lacs have been fraudulently stolen from his account online via some online transactions in two days using NET BANKING.

          Cyber fraudulent online transaction

(ii)   Arnav complaints that his debit card is safe with him still some body has done shopping/ATM transaction on this card.
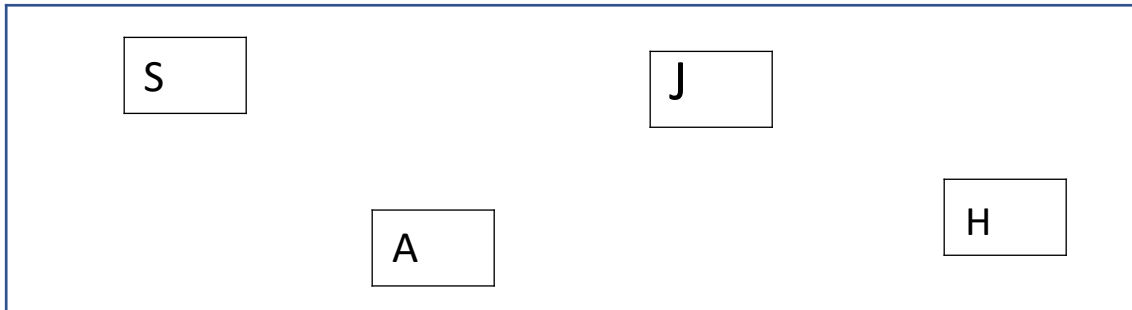
          eShopping fraud

(iii)   Aarav complaints that somebody has created a fake profile on Twitter and defaming his character with abusive comments and pictures.

Identity theft

h)   INDIAN PUBLIC SCHOOL in Darjeeling is setting up the network between its different wings. There are 4 wings named as   {4}

SENIOR(S), JUNIORS (J), ADMIN (A) and HOSTEL (H).

Distance between various wings is given below:

S		J
	A	H

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.1 **star**

ii)   Name the wing where the server to be installed. Justify your answer. 1m **Wing S bcz of max computers**

iii)   Suggest the placement of Hub/Switch in the network. **Everywhere bcz no of computer are more than 1**

iv)   Mention in economic technology to provide internet accessibility to all wings. 1m **TCP/IP**

SECTION-C

QUESTION 4:

a)   Which key word is used to sort the records of a table in descending order?   {1} **desc**
b)   Which clause is used to sort the records of a table?   {1} **order-by**
c)   Which command is used to modify the records of the table?   {1} **update**
d)   Which clause is used to remove the duplicating rows of the table?   {1} **distinct**
e)   Differentiate between Primary key and Candidate key.   {2} **no repeat no blank AND a key which is capable of becoming a primary key**
     OR

          Differentiate between Degree and Cardinality.   **Degree is number of cols and cardinality is no of rows**

f)   Differentiate between Django GET and POST method.   {2} **unsecure and secure data**
g)   Write a output for SQL queries (i) to (iii), which are based on the TABLE   {3}
     Study the following tables FLIGHTS and FARES and write SQL commands for the questions (i) to (iII)

TABLE: FLIGHTS

FL_NO	STARTING	ENDING	NO_FLIGHTS	NO_STOPS
IC301	MUMBAI	DELHI	8	0
IC799	BANGALORE	DELHI	2	1
MC101	INDORE	MUMBAI	3	0
IC302	DELHI	MUMBAI	8	0
AM812	KANPUR	BANGLORE	3	1
IC899	MUMBAI	KOCHI	1	4
AM501	DELHI	TRIVENDRUM	1	5
MU499	MUMBAI	MADRAS	3	3
IC701	DELHI	AHMEDABAD	4	0

TABLE:FARES

FL_NO	AIRLINES	FARE	TAX%
IC701	INDIAN AIRLINES	6500	10
MU499	SAHARA	9400	5
AM501	JET AIRWAYS	13450	8
IC899	INDIAN AIRLINES	8300	4
IC302	INDIAN AIRLINES	4300	10
IC799	INDIAN AIRLINES	1050	10
MC101	DECCAN AIRLINES	3500	4

(i)   Display FL_NO and NO_FLIGHTS from "KANPUR" TO "BANGALORE" from the table FLIGHTS.
        Select a.fno, b.no of flight a, fare b where a.sno=b.fno;
(ii)   Arrange the contents of the table FLIGHTS in the ascending order of FL_NO.
        Select * from flight order by fno;
(iii)   Display the FL_NO and fare to be paid for the flights from DELHI to MUMBAI using the tables
        FLIGHTS and FARES, where the fare to be paid = FARE+FARE+TAX%/100
        Select fno , fare+tax/00 as newFare from fare,flight where where a.sno=b.fno;

h) Write SQL queries for (i) to (iv), which are based on the table given in the question {4}

Consider the following tables Product and Client.
Write SQL commands for the statement (i) to (iv)

Table: PRODUCT

P_ID	Product Name	Manufacturer	Price
TP01	Talcom Powder	LAK	40
FW05	Face Wash	ABC	45

BS01	Bath Soap	ABC	55
SH06	Shampoo	XYZ	120
FW12	Face Wash	XYZ	95

Table: CLIENT

C_ID	Client Name	City	P_ID
01	Cosmetic Shop	Delhi	FW05
06	Total Health	Mumbai	BS01
12	Live Life	Delhi	SH06
15	Pretty Woman	Delhi	FW12
16	Dreams	Banglore	TP01

(i)   To display the details of those Clients whose city is Delhi.
        Select * from client where city = 'Delhi ';

(ii)   To display the details of Products whose Price is in the range of 50 to 100 (Both values included).
        … where price between 50 and 100;

(iii)   To display the ClientName, City from table Client, and ProductName and Price from table Product, with their corresponding matching P_ID.
        Select … from product p, client c where p.id = c.id;

(iv)   To increase the Price of all Products by 10
        Update product set price = price + 100;

SECTION-D

Question 5:

a) Name the protocol used to manage voice based text over internet   {1} **voip**

b) As a citizen of India , What advise you should give to others for e-waste disposal?   {1}
    ou need to find an e-waste recycler who is officially certified by the Basel Action ... have to make a pledge and display their Pledges of Responsible Recycling. ... Old gadgets that you no longer need can be donated as they may be useful to others. ... for environmentally conscious citizens to come and drop off their e-waste.

c) What is phishing and ransomware ?   {2}
    Phishing is a cybercrime in which a target or targets are contacted by email, telephone or text messageby someone posing as a legitimate institution to lure individuals into providing sensitive data such as personally identifiable information, banking and credit card details, and passwords. Ransomware is a type of malicious software that blocks access to a computer system or data, usually by encrypting it, until the victim pays a fee to the attacker. In many cases, the ransom demand comes with a deadline.

d) Amitabh received a mail form IRS department (as shown above). On clicking " Click- Here" ,he was taken to a site designed to imitate an official-looking website, such as IRS.gov. He uploaded some important information on it. Identify and explain the cybercrime being discussed in the above scenario   {2}
    Phishing is a cybercrime in which a target or targets are contacted by email, telephone or text message by someone posing as a legitimate institution to lure individuals into providing sensitive data such as personally identifiable information, banking and credit card details, and passwords Differentiate between open source and open data.   {2}

e) Enumerate any two disability issues while using e-governance   {2}
    Lack of knowledge and internet facility in rural areas . Efrauds