Kendriya Vidyalaya Sangathan, Jaipur Region
Pre Board Examination 2020-21
Class: XII Session: 2020-21
Computer Science (083)

Maximum Marks: 70   Time Allowed: 3 hours

General Instructions:

1. This question paper contains two parts A and B. Each part is compulsory.
2. Both Part A and Part B have choices.
3. Part-A has 2 sections:
     a. Section – I is short answer questions, to be answered in one word or one line.
     b. Section – II has two case studies questions. Each case study has 4 case-based subparts. An examinee is to attempt any 4 out of the 5 subparts.
4. Part - B is Descriptive Paper.
5. Part- B has three sections
     a. Section-I is short answer questions of 2 marks each in which two question have internal options.
     b. Section-II is long answer questions of 3 marks each in which two questions have internal options.
     c. Section-III is very long answer questions of 5 marks each in which one question has internal option.
6. All programming questions are to be answered using Python Language only

Q.No	Part-A	Marks
	Section-I	
	Attempt any 15 questions from question no 1 to 21.	
1	Can List be used as keys of a dictionary?	1
2	Which one is valid relational operator in Python i. / ii. = iii. = = iv. and	1
3	Which of the following can be used as valid variable identifiers in Python? i) 4th Sum ii) Total iii) Number# iv) _Data	1
4	Identify the mutable data types? (i) List (ii) Tuple (iii) Dictionary (iv) String	1
5	What is the length of the tuple shown below? t=((((('a',1),'b','c'),'d',2),'e',3)	1

6	A non-key attribute, whose values are derived from primary key of some other table.
	   i. Alternate Key
	   ii. Foreign Key
	   iii. Primary Key
	   iv. Candidate Key
		1

7	What is Telnet?	1
8	State whether the following statements is True or False. When two entities are communicating and do not want a third party to listen, this situation is defined as secure communication.	1

9	Expand the term
	   i. XML
	   ii. SMS
		1

10	Name two web scripting languages.	1
11	What is the output of the below program? def say(message, times = 1): print(message * times) say('Hello') say('World', 5)	1

12	Name the python library need to be imported to invoke following function
	   i. sqrt()
	   ii. randint()
		1

13	Write a Python Dictionary named classstudent with keys 12101,12102,12103 and corresponding values as 'Rahul','Ravi','Mahesh' respectively	1

14	Identify the DDL Command.
	   (i) Insert into command
	   (ii) Create table command
	   (iii) Drop table Command
	   (iv) Delete command
		1

15	t1=(2,3,4,5,6)
	print(t1.index(4))
	output is
	   i. 4
	   ii. 5
	   iii. 6
	   iv. 2
		1

16	Which clause is used with a SELECT command in SQL to display the records in ascending order of an attribute?	1
17	Which of these is not an example of unguided media? (i) Optical Fibre Cable (ii) Radio wave (iii) Bluetooth (iv) Satellite	1

18	A relation has 45 tuples & 5 attributes, what will be the Degree & Cardinality of that relation?
	   i. Degree 5, Cardinality 45
	   ii. Degree 45, Cardinality 5
	   iii. Degree 50, Cardinality 45
	   iv. Degree 50, Cardinality 2250
		1

19	In SQL, which aggregate function is used to count all records of a table?	1

20	Given employee={'salary':10000,'age':22,'name':'Mahesh'} employee.pop('age') what is output print(employee)	1
21	What is HTML?	1
	Section-II **Both the case study based questions are compulsory. Attempt any 4** **subparts from each question. Each question carries 1 mark.**	

22	Parth Patel of class 12 is writing a program to create a CSV file "emp.csv" which will contain employee code and name of some employees. He has written the following code. As a programmer, help him to successfully execute the given task.
	import _____ #Line 1
	def addemp(empcode,name):#to write/add data into the CSV file
	   fo=open('emp.csv','a')
	   writer=csv._____ (fo) #Line 2
	   writer.writerow([empcode,name])
	   fo.close()
	
	   #csv file reading code
	def reademp():
	   with open('emp.csv','_____ ') as fin: #Line 3
	     filereader=csv.reader(fin)
	     for row in filereader:
	       for data in row:
	         print(data,end='\t')
	       print(end='\n')
	     fin._____ #Line 4
	
	addemp('E105','Parth')
	addemp("E101",'Arunima')
	addemp("E102",'Prahalad')
	reademp() #Line 5
	 Answer the following questions: (1 mark each)
	   (a) Name the module he should import in Line 1.
	   (b) Fill in the blank in Line 2 to write the data in a CSV file.
	   (c) In which mode, Parth should open the file to read the data from the file(Line 3).
	   (d) Fill in the blank in Line 4 to close the file.
	   (e) Write the output he will obtain while executing Line 5.
		4

23	ABC school is considering to maintain their student's information using SQL to store the data. As a database administrator Harendra has decided that: Name of database : school Name of table : student Attributes of the table are as follow: AdmissionNo-numeric	4

FristName –character of size 30
LastName - character of size 20
DOB   - date
Table student

AdmissionNo	FirstName	LastName	DOB
012355	Rahul	Singh	2005-05-16
012358	Mukesh	Kumar	2004-09-15
012360	Pawan	Verma	2004-03-03
012366	Mahesh	Kumar	2003-06-08
012367	Raman	Patel	2007-03-19

Attempt any four questions

(i)	What is the degree and cardinality of the table student	1
(ii)	Identify the attribute best suitable to be declared as Primary Key	1
(iii)	Insert the following data in table student AdmissionNo=012368 FirstName = Kamlesh LastName = Sharma DOB =01 Jan 2004	1
(iv)	Harendra wants to remove the data of mukesh whose admission no is 012358, suggest him SQL command to remove the above said data.	1
(v)	To remove the table student which command is used : i. Delete from student ii. Drop table student iii. Drop database school iv. Delete student from school	1

	Part-B	
	Section-I	
24	Differentiate between "w" and "r' modes used in Python. Illustrate with suitable example.	2
25	Differentiate between fatchone() and fatchmany() method with suitable example.	2
26	What is significance of Primary Key? Give a suitable example of Primary key from a table containing some meaningful data.	2

27	Predict the output for following code.
	``
	def replaceV(st):
	    newstr = ''
	    for character in st:
	      if character in 'aeiouAEIOU':
	       newstr += '*'
	      else:
	       newstr += character
	    return newstr
	st = "Hello how are you"
	st1 = replaceV(st)
	print("The original String is:", st)
	print("The modified String is:", st1)
	``
		2

28	Rewrite the following code after removing syntax error and underline the	2

	correction:
	x=int("Enter value for x:")
	for y in range[0,11]:
	    if x=y
	        print(x+y)
	    else:
	        Print x-y	

29	What is protocol? Name some commonly used protocols. OR Differentiate between virus and worms in context of networking and data communication threats.	2
30	What is difference between actual parameter and formal parameter? Explain with suitable example.	2

31	What possible output(s) are expected to be displayed on screen at the time of execution of the program from the following code?
	Import random
	Ar=[20,30,40,50,60,70]
	From =random.randint(1,3)
	To=random.randint(2,4)
	for k in range(From,To+1):
	    print(ar[k],end="#")
	    (i) 10#40#70# (iii) 50#60#70#
	    (ii) 30#40#50# (iv) 40#50#70#
		2

32	Differentiate between DELETE and DROP TABLE command.	2
33	Write a program that reads a string and check whether it is a palindrome string or not.	2
	Section II	

34	Table : Employee
	
	Give the output of following SQL statement:
	    (i) Select max(salary),min(salary) from job
	    (ii) Select Name,JobTitle, Sales from Employee,Job
	          where Employee.JobId=Job.JobId and JobId in (101,102)
		3

Table : Employee

EmployeeId	Name	Sales	JobId
E1	Sumit Sinha	110000	102
E2	Vijay Singh Tomar	130000	101
E3	Ajay Rajpal	140000	103
E4	Mohit Kumar	125000	102
E5	Sailja Singh	145000	103

Table: Job

JobId	JobTitle	Salary
101	President	200000
102	Vice President	125000
103	Administrator Assistant	80000
104	Accounting Manager	70000
105	Accountant	65000
106	Sales Manager	80000

	(iii) Select JobId, count(*) from Employee group by JobId	
35	Write a function in python that displays the number of lines starting with 'H' in the file "para.txt". Example, if file contains: Whose woods these are I think I know. His house is in the village though; He will not see me stopping here To watch his woods fill up with snow Then the lines count should be 2 OR Write a function countmy() in Python to read file Data.txt and count the number of times "my" occur in file. For example, if the file contain This is my website. I have displayed my preferences in the choice section The countmy() function should display the output as :" my occurs 2 times"	3
36	Write a user define function in Python for push(list) and pop(list) for performing push and pop operations with a stack of list containing integers.	3
37	Write a function LShift(arr,n) in python, which accepts a list of numbers and n as numeric value by which all elements of the list are shifted to left. Sample Input data of the list Arr=[10,20,30,40,12,11]. n=2 Output Arr[30,40,50,12,11,10,20]	3
	Section-III	
38	Write SQL Commands for the following queries based on the relations PRODUCT and CLIENT given below. Table: Product	5

Table: Product

P_ID	ProductName	Manufacturer	Price	ExpiryDate
TP01	Talcum Powder	LAK	40	2011-06-26
FW05	Face Wash	ABC	45	2010-12-01
BS01	Bath Soap	ABC	55	2010-09-10
SH06	Shampoo	XYZ	120	2012-04-09
FW12	Face Wash	XYZ	95	2010-08-15

Table: Client

C_ID	ClientName	City	P_ID
1	Cosmetic Shop	Delhi	FW05
6	Total Health	Mumbai	BS01
12	Live Life	Delhi	SH06
15	Pretty One	Delhi	FW05
16	Dreams	Bengaluru	TP01
14	Expressions	Delhi	NULL

(i) To display the ClientName and City of all Mumbai- and Delhi-based clients in Client table.

(ii) Increase the price of all the products in Product table by 10%.

(iii) To display the ProductName, Manufacturer, ExpiryDate of all the products that expired on or before '2010-12-31'.

	(iv) To display C_ID, ClientName, City of all the clients (including the ones that have not purchased a product) and their corresponding ProductName sold. (v) To display productName, Manufacturer and ClientName of Mumbai City.	
39	Quick Learn University is setting up its academic blocks at Prayag Nagar and planning to set up a network. The university has 3 academic blocks and one human resource Centre as shown in the diagram given below: Business Technology Block Law Block HR Centre Centre-to-Centre distance between various blocks is as follows:	5

Centre-to-Centre distance between various blocks is as follows:

Law block to business block	40 m
Law block to technology block	80 m
Law block to HR block	105 m
Business block to technology block	30 m
Business block to HR block	35 m
Technology block to HR block	15 m

Number of computers in each of the buildings is as follows:

Law block	15
Technology block	40
HR Centre	115
Business block	25

(a) Suggest a cable layout of connection between the blocks.
(b) Suggest the most suitable place to house the server of the organization with suitable reason.
(c) Which device should be placed/installed in each of these blocks to efficiently connect all the computers within these blocks?
 (d) The university is planning to link its sales counters situated in various parts of the other cities. Which type of network out of LAN, MAN or WAN will be formed?
(e) Which network topology may be preferred in each of these blocks?

| 40 | (a) Create a binary file "employee.dat" that stores the records of employees and display them one by one.
(b) Display the records of all those employees who are getting salaries between 25000 to 30000.
<div align="center">**OR**</div>A binary file student.dat has structure (rollno,name,class,percentage). Write a program to updating a record in the file requires roll number to be fetched from the user whose name is to be updated | 5 |

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Marking Scheme

Q.No	Answer	Marks
1	No	1
2	iii. = =	1
3	ii Total iv _Data	1
4	i. List iii. Dictionary	1
5	3	1
6	Foreign Key	1
7	Telnet is an internet utility that lets us log on to a remote computer system. A user is able to log in the system for sharing of files without being the actual user of that system.	1
8	True	1
9	XML-Extensible Markup Language SMS–Short Messaging Service ½ marks for each	1
10	VBScript, JavaScript, ASP, PHP, PERL and JSP etc	1
11	Hello WorldWorldWorldWorldWorld	1
12	Math,random	1
13	classstudent={12101:'Rahul',12102:'Ravi',12103:'Mahesh' }	1
14	Create table command Drop table Command	1
15	iv. 2	1
16	Order By	1
17	i. Optical Fibre	1
18	i. Degree 5, Cardinality 45	1
19	count(*)	1
20	={'salary':10000,'name':'Mahesh'}	1
21	HTML (Hyper Text Markup Language) is used to create Hypertext documents (web pages) for websites.	1
22	(a) LINE 1 : csv (b) LINE 2 : writer (c) LINE 3: r (d) LINE 4: close()	

	(e) E105 Parth
	         E101 Arunima
	    E102 Prahalad	

23	i. Degrre-4 Cardinility-5 ii. AdmissionNo iii. insert into student values(012368,'Kamlesh','Sharma','2004-01-01') iv. Delete command v. Drop table student **One mark for each(Any Four)**	4

24	A file is opened using "w" mode to write content into the file. A file is opened using "r" mode to read content into the file.
	Example:
	 def Create():
	 file=open('NOTES.TXT','w')
	 S="This is a sample"
	 file.write(S)
	 file.close()
	
	 def Read():
	 file=open('NOTES.TXT','r')
	 Lines=file.readline();
	 print(Lines) file.close()
		2

25	fetchone() method will return only one row from the resultset in the form of tuple containg records. fetchmany(n) method will return only the n number of rows from the resultset in the form of tuple containing the records. Any example. 1 Mark for definition and 1 mark for example	2
26	A Primary Key is an attribute of a Table which has a unique value for each of the records and can be used to identify a record of the table. Example with a table. 1 Mark for significane and 1 mark for example	2
27	The original String is: Hello how are you The modified String is: H*ll* h*w *r* y**	2

28	x=int(<u>input</u>("Enter value for x:"))
	for y in range<u>(0,11):</u>
	    if <u>x==y :</u>
	       print(x+y)
	    else:
	       <u>print (x-y)</u>
		2

29	A protocol means the rules that are applicable for a network, or we can say the common set of rules used for communication in network. ---1 marks e.g. HTTP,FTP,PPP,SMTP,POP etc ----- 1 marks of OR Viruses require an active host program or an already-infected and active operating system in order for viruses to run, cause damage and infect other executable files or documents Worms are stand-alone malicious programs that can self-replicate.	2

30	The list of identifiers used in a function call is called actual parameter(s) whereas the list of parameters used in the function definition is called formal parameter(s). Actual parameter may be value / variable or expression. Formal parameter is an identifier. Example: def area(side): # line 1 return side*side; print(area(5)) # line 2 In line 1, side is the formal parameter and in line 2, while invoking area() function, the value 5 is the actual parameter. A formal parameter, i.e. a parameter, is in the function definition. An actual parameter, i.e. an argument, is in a function call.	2
31	30#40#50#	2
32	DROP command is used to drop a table along with all the records stored in it whereas DELETE command is used to delete all the records or some of the records from a table without deleting the table.	2
| 33 | ```
string=input("Enter a string")
length=len(string)
mid=int(length/2)
rev=-1
for a in range(mid):
   if string[a]==string[rev]:
      a+=1
      rev-=1
   else:
      print("string is not palindrome")
      break
else:
   print("string is palindrome")
``` | 2 |
| 34 | i.   200000, 65000
ii.   Vijay Singh Tomar President   130000
            Sumit Sinha   Vice President   110000
            Mohit Kumar   Vice President   125000
iii.   101   1
            102   2
            103   2 | 3 |
| 35 | ```
def countH():
   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)
```
<div align="center">OR</div>

```
def countmy():
   f=open("Data.txt","r")
   count=0
   x=f.read()
``` | 3 |

| | ```
        word=x.split()
        for i in word:
            if i =="my" :
                count=count+1
        print("my occurs ", count, "times")
``` | |
| 36 | ```
def PUSH(Arr,value):
    s=[]
    for x in range(0,len(Arr)):
      if Arr[x]%5==0:
          s.append(Arr[x])
          if len(s)==0:
              print("Empty Stack")
            else:
                print(s)

def popStack(st) :
    # If stack is empty
    if len(st)==0:
      print("Underflow")
      else:
          L = len(st)
          val=st[L-1]
          print(val)
          st.pop(L-1)
``` | 1 ½<br><br><br><br><br><br><br><br><br><br><br><br><br>1 ½ |
| 37 | ```
def LShift(Arr,n):
    L=len(Arr)
    for x in range(0,n):
      y=Arr[0]
      for i in range(0,L-1):
        Arr[i]=Arr[i+1]
      Arr[L-1]=y
    print(Arr)
``` | 3 |
| 38 | (i)   select ClientName, City from Client
       where City = 'Mumbai' or City = 'Delhi';
(ii)   update Product
      set Price = Price + 0.10 * Price;
(iii)   select ProductName, Manufacturer, ExpiryDate from Product
      where ExpiryDate < = '2010-12-31';
(iv)   select C_ID, ClientName, City, ProductName from Client Left Join Product
     on Client. P_ID = Product.P_ID;
(v)   select ProductName, Manufacturer, ClientName from product,client
     Where product.P_ID=Client.P_ID and city='Mumbai' | 5

1
mark
each |
| 40 | ```
import   pickle
f1  =  open('emp.dat','rb')
e  =  pickle.load(f1)
for  x  in  e:
``` | 5 |

```
    print(x)
f1.close()


 import   pickle
f1   =   open('emp.dat','rb')
e   =   pickle.load(f1)
for   x   in   e:
    if(e[x]>=25000   and   e[x]<=30000):
        print(x)
f1.close()
```

<div align="center">OR</div>

```
# Program to update the name of the student from the binary file

import pickle
f - open("student", "rb+")
stud_rec = pickle.load(f) # To read the object from the opened file
found = 0
rollno - int(input("Enter the roll number to search:"))
for R in stud_rec:
    rno = R[0]
    if rno -- rollno:
        print("Current name is:", R[1])
        R[1] = input("New Name:")
        found - 1
        break

if found == 1:
    f.seek(0) # Taking the file pointer to the beginning of the file
    pickle.dump(stud_rec, f)
    print("Name Updated!!!")
f.close()
```

39	(a)	5

(b) HR centre because it consists of the maximum number of computers to house the server.

(c) Switch should be placed in each of these blocks.

(d) MAN

(e) star

1 mark each