KENDRIYA VIDYALAYA SANGATHAN DELHI REGION

1ST PRE-BOARD EXAMINATION 2020-21

COMPUTER SCIENCE NEW (Code: 083)

CLASS: XII

SET-1

Time: 3 hrs. **M.M.: 70**

MARKING SCHEME

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

PART-A

Section-I

Select the most appropriate option out of the options given for each question. Attempt any 15 questions from question no. 1 to 21.

Q. No.	Option No.	Questions Description	Marks Allotted
1.		Identify the invalid keyword in Python from the following: (a) True (b) None (c) Import (d) return	1
		(c) Import	
2.		Write the output of the following python expression: `print((4>5) and (2!=1) or (4<9))`	1
		True	
3.		Write the importance of passing file mode while declaring a file object in data file handling.	1
		File mode is used to tell that file object will read or write or both data in a data file.	
4.		Find the operator which cannot be used with a string in Python from the following: (a) + (b) in (c) * (d) //	1

		(d)	

5.		**Write the output of the following python statements:**
		`Array=[8,5,3,2,1,1]`
		`print(Array[-1:-6:-1])`
			1

		11235	
6.		**Consider the tuple in python named DAYS=("SUN","MON","TUES"). Identify the invalid statement(s) from the given below statements:** **1. S=DAYS[1]** **2. print(DAYS[2])** **3. DAYS[0]="WED"** **4. LIST=list(DAYS)**	**1**
		3. DAYS[0]="WED"	
7.		**Declare a dictionary in python named QUAD having Keys(1,2,3,4) and Values("India","USA","Japan","Australia")**	**1**
		QUAD={1:"India", 2:"USA", 3:"Japan", 4:"Australia"}	
8.		**_____ is a collection of similar modules or packages that are used to fulfills some functional requirement for a specific type of application.**	**1**
		Library	
9.		**Website incharge KABIR of a school is handling downloading/uploading various files on school website. Write the name of the protocol which is being used in the above activity.**	**1**
		File Transfer Protocol(FTP)	
10.		**What is its use of Data encryption in a network communication?**	**1**
		Data encryption is the process of converting a message into an unmeaningful form. It is used to ensure data security while communication.	
11.		**In SQL, write the name of the aggregate function which is used to calculate & display the average of numeric values in an attribute of a relation.**	**1**
		AVG()	
12.		**Write an SQL query to display all the attributes of a relation named "TEST" along with their description.**	**1**
		DESCRIBE TEST; or DESC TEST;	
13.		**What is the use of LIKE keyword in SQL?**	**1**
		LIKE keyword is used to find matching CHAR values with WHERE clause.	
14.		**Which of the following is NOT a DML command?** **1. SELECT 2. DELETE 3. UPDATE 4. DROP**	**1**
		4. DROP	
15.		**Give the full form of the following:** **(a) URL (b) TDMA**	**1**
		(a) URL – Uniform Resource Locator **(b) TDMA – Time Division Multiple Access**	
16.		**Identify the output of the following python statements if there is no error. Otherwise, identify the error(s):**	**1**

		`Str1="Computer2020"`
		`Str2=tuple(Str1[8:12])`
		`Str3=list(Str2)`
		
		`print(Str3,"#",len(Str3))`	

		['2', '0', '2', '0'] # 4	
17.		**List one common property of a String and a Tuple.**	**1**
		Both of them are immutable.	
18.		**What is the purpose of following SQL command:** **SHOW DATABASES;**	**1**
		This command will print name of all the databases present in RDBMS.	
19.		**Differentiate between Bps & bps.**	**1**
		Bps is Byte per second and bps is bits per second which tells the variation in data transmission speed.	
20.		**Identify the error in the following SQL query which is expected to delete all rows of a table TEMP without deleting its structure and write the correct one:** **DELETE TABLE TEMP;**	**1**
		DELETE FROM TEMP;	
21.		**Identify the Guided and Un-Guided Transmission Media out of the following:** **Satellite, Twisted Pair Cable, Optical Fiber, Infra-Red waves**	**1**
		Guided: Twisted Pair Cable, Optical Fiber **Unguided: Satellite, Infra-Red waves**	

PART-A
Section-II

Both the case study-based questions are compulsory. Attempt any 4 out of the 5 subparts from each question. Each question carries 1 mark.

22. **A CD/DVD Shop named "NEW DIGITAL SHOP" stores various CDs & DVDs of songs/albums/movies and use SQL to maintain its records. As a Database Administrator, you have decided the following:**

- **Name of Database - CDSHOP**
- **Name of Relation - LIBRARY**
- **Attributes are:-**
  - **(a) CDNO - Numeric values**
  - **(b) NAME - Character values of size (25)**
  - **(c) QTY - Numeric values**
  - **(d) PRICE - Decimal values**

Table: LIBRARY

CDNO	NAME	QTY	PRICE
10001	Indian Patriotic	20	150
10004	Hanuman Chalisa	15	80

		10005	Instrumental of Kishore	25	95
		10003	Songs of Diwali	18	125
		10006	Devotional Krishna Songs	14	75
		10002	Best Birthday Songs	17	NULL
	Answer the following questions based on the above table LIBRARY:-				
(a)	Write the Degree & Cardinality of the relation LIBRARY.				1
	4 & 6				
(b)	Identify the best attribute which may be declared as Primary key.				1
	CDNO				
(c)	Insert the following record in the above relation: (10009, "Motivational Songs", 15, 70)				1
	INSERT INTO LIBRARY VALUES (10009, "Motivational Songs", 15, 70);				
(d)	Write an SQL query to display the minimum quantity.				1
	SELECT MIN(QTY) FROM LIBRARY;				
(e)	Database administrator wants to count the no. of CDs which does not have any Price value. Write the query for the same.				1
	SELECT COUNT(*) FROM LIBRARY WHERE PRICE IS NULL;				

23. Abhisar is making a software on "Countries & their Capitals" in which various records are to be stored/retrieved in CAPITAL.CSV data file. It consists some records(Country & Capital). He has written the following code in python. As a programmer, you have to help him to successfully execute the program.

```
import _____                                    # Statement-1

def AddNewRec(Country,Capital):      # Fn. to add a new record in CSV file
    f=open("CAPITAL.CSV",_____)          # Statement-2
    fwriter=csv.writer(f)
    fwriter.writerow([Country,Capital])
    f._____                                     # Statement-3

def ShowRec():                              # Fn. to display all records from CSV file
    with open("CAPITAL.CSV","r") as NF:
        NewReader=csv._____(NF)      # Statement-4
        for rec in NewReader:
            print(rec[0],rec[1])

AddNewRec("INDIA","NEW DELHI")
AddNewRec("CHINA","BEIJING")
ShowRec()                                       # Statement-5
```

(a) Name the module to be imported in Statement-1. — 1
(b) Write the file mode to be passed to add new record in Statement-2. — 1
(c) Fill in the blank in Statement-3 to close the file. — 1
(d) Fill in the blank in Statement-4 to read the data from a csv file. — 1
(e) Write the output which will come after executing Statement-5. — 1

	(a) csv (b) "a" (c) close() (d) reader (e) INDIA NEW DELHI CHINA BEIJING	
	PART-B **Section-I** Short answer questions of 2 marks each in which two question have internal options.	
24.	Write the output of the following python statements: (a) print(2 + 3*4//2 - 4) (b) print(10%3 – 10//3)	2
	(a) 4 (b) -2 1 mark for each correct answer.	
25.	Differentiate between SMTP & POP3. **OR** List any two security measures to ensure network security.	2
	SMTP: It is used to send emails. POP3: It is used to receive emails. 1 mark for each correct difference. **OR** 1. Firewall 2. User Authentication .5 mark for any 2 correct answers.	
26.	Rohit has purchased a new Smart TV and wants to cast a video from his mobile to his new Smart TV. Identify the type of network he is using and explain it.	2
	Rohit is using PAN-Personal Area Network. It is a private network which is set-up by an individual to transfer data among his personal devices of home. .5 mark each for correct answer & its definition.	
27.	What is the meaning of return value of a function? Give an example to illustrate its meaning. **OR** Differentiate between a positional and default arguments with the help of an example.	2
	Return value of a function is the value which is being given back to the main program after the execution of function. E.g. def Check(): return 100	

	OR **Positional arguments are those which are used & passed in a particular sequence always.** **Default arguments are those whose default value is used by the function in the absence of actual argument values at the time of functional call.** **1 mark for each correct definition & example.**	
28.	**Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code.** **Y=integer(input("Enter 1 or 10"))** **if Y==10** **for Y in range(1,11):** **print(Y)** **else:** **for m in range(5,0,-1):** **print(thank you)**	**2**
	Y=int(input("Enter 1 or 10")) **if Y==10** **for Y in range(1,11):** **print(Y)** **else:** **for m in range(5,0,-1):** **print("thank you")** **.5 mark for each correct error.**	

29.	**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 BEG and END.**
	
	`import random`
	
	`HEIGHTS=[10,20,30,40,50]`
	`BEG=random.randint(0,2)`
	`END=random.randint(2,4)`
	
	`for X in range(BEG,END):`
	`print(HEIGHTS[X],end="@")`
	
	(a) **30@**
	(b) **10@20@30@40@50@**
	(c) **20@30**
	(d) **40@30@**
		2

	(a) & (b) **Maximum value of BEG: 2** **Maximum value of END: 4**	

	.5 mark for each correct answer upto max. 2 marks.	
30.	**What do you mean by domain of an attribute in DBMS? Explain with an example.**	**2**
	Domain of an attribute is the set of values from which a value may come in a column. E.g. Domain of section field may be (A,B,C,D). **1 mark for each correct answer.**	
31.	**Differentiate between fetchone() and fetchmany() methods with suitable examples.**	**2**
	fetchone() is used to retrieve one record at a time but fetchmany(n) will fetch n records at a time from the table in the form of a tuple. **1 mark for each correct answer.**	
32.	**What is the difference between CHAR & VARCHAR data types in SQL? Give an example for each.**	**2**
	CHAR is used to occupy fixed memory irrespective of the actual values but VARCHAR uses only that much memory which is used actually for the entered values. **E.g. CHAR(10) will occupy always 10 bytes in memory no matter how many characters are used in values. But VARCHAR will uses only that much bytes of memory whose values are passed.** **1 mark for each correct answer.**	

33.	**Find and write the output of the following Python code:**
	`def Convert(Old):`
	`  l=len(Old)`
	`  New=""`
	`  for i in range(0,l):`
	`  if Old[i].isupper():`
	`  New=New+Old[i].lower()`
	`  elif Old[i].islower():`
	`  New=New+Old[i].upper()`
	`  elif Old[i].isdigit():`
	`  New=New+"*"`
	`  else:`
	`  New=New+"%"`
	
	`  return New`
	
	`Older="InDIa@2020"`
	`Newer=Convert(Older)`
	`print("New string is : ",Newer)`
		2

Output: **New string is : iNdiA%******		

2 marks for correct answer. 1 mark for partial correct output.

PART-B
Section-II

Short answer questions of 3 marks each in which two question have internal options.

34. **Write a function in python named SwapHalfList(Array), which accepts a list Array of numbers and swaps the elements of 1st Half of the list with the 2nd Half of the list ONLY if the sum of 1st Half is greater than 2nd Half of the list.** **3**

Sample Input Data of the list
Array= [100, 200, 300, 40, 50, 60],
Output Array = [40, 50, 60, 100, 200, 300]

```
def SwapHalfList(Array):
    s1=s2=0
    l=len(Array)
    for i in range(0,l//2):
        s1+=Array[i]

    for i in range(l//2, l):
        s2+=Array[i]

    if s1>s2:
        for i in range(0,l//2):
            Array[i],Array[i+l//2]=Array[i+l//2],Array[i]


L=[6,5,4,1,2,3]
SwapHalfList(L)
print(L)
```

.5 mark for correct declaration of function header
.5 mark each for correct sum calculation of each half
1.5 marks for any correct swapping

35. **Write a method/function COUNTLINES_ET() in python to read lines from a text file REPORT.TXT, and COUNT those lines which are starting either with 'E' and starting with 'T' respectively. And display the Total count separately.** **3**

For example: if REPORT.TXT consists of
"ENTRY LEVEL OF PROGRAMMING CAN BE LEARNED FROM PYTHON. ALSO, IT IS VERY FLEXIBLE LANGUGAE. THIS WILL BE USEFUL FOR VARIETY OF USERS."

Then, Output will be:
No. of Lines with E: 1
No. of Lines with T: 1

OR

Write a method/function SHOW_TODO() in python to read contents from a text

file ABC.TXT and display those lines which have occurrence of the word "TO" or "DO".

For example : If the content of the file is
"THIS IS IMPORTANT TO NOTE THAT SUCCESS IS THE RESULT OF HARD WORK. WE ALL ARE EXPECTED TO DO HARD WORK. AFTER ALL EXPERIENCE COMES FROM HARDWORK."

The method/function should display:

- THIS IS IMPORTANT TO NOTE THAT SUCCESS IS THE RESULT OF HARD WORK.
- WE ALL ARE EXPECTED TO DO HARD WORK.

```
def COUNTLINES_ET():
    f=open("REPORT.TXT","r")
    lines=f.readlines()
    LineE=0
    LineT=0
    for i in lines:
        if i[0]=='E':
            LineE+=1
        elif i[0]=='T':
            LineT+=1

    print("No. of Lines with E:",LineE)
    print("No. of Lines with T:",LineT)

COUNTLINES_ET()
```

.5 mark for correct function header.
.5 mark for correct opening of file.
1.5 mark for any correct logic & it's code.
.5 mark for printing correct output.

OR

```
def SHOW_TODO():
    f=open("ABC.TXT","r")
    lines=f.readlines()

    for i in lines:
        if "TO" in i or "DO" in i:
            print(i)


SHOW_TODO()
```

	.5 mark for correct function header. **.5 mark for correct opening of file.** **1.5 mark for any correct logic & it's code.** **.5 mark for printing correct output.**	
36.	**Write the Outputs of the SQL queries (i) to (iii) based on the given below 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)	**SELECT DISTINCT(CITY) FROM TRAINER WHERE SALARY>80000;**	**1**
	MUMBAI **DELHI** **CHANDIGARH** **CHENNAI**	
(ii)	**SELECT TID, COUNT(*), MAX(FEES) FROM COURSE GROUP BY TID HAVING COUNT(*)>1;**	**1**
	TID COUNT(*) MAX(FEES) **101 2 20000**	
(iii)	**SELECT T.TNAME, C.CNAME FROM TRAINER T, COURSE C WHERE T.TID=C.TID AND T.FEES<10000;**	**1**
	T.TNAME C.CNAME **MEENAKSHI DDTP**	
37.	**Write a function in python named PUSH(STACK, SET) where STACK is list of some numbers forming a stack and SET is a list of some numbers. The function will push all the EVEN elements from the SET into a STACK implemented by using a list. Display the stack after push operation.** **OR** **Write a function in python named POP(STACK) where STACK is a stack implemented by a list of numbers. The function will display the popped element**	**3**

after function call.

```
def PUSH(STACK,SET):
    for i in SET:
        if i%2==0:
            STACK.append(i)

    print("Updated stack is :",STACK)
```

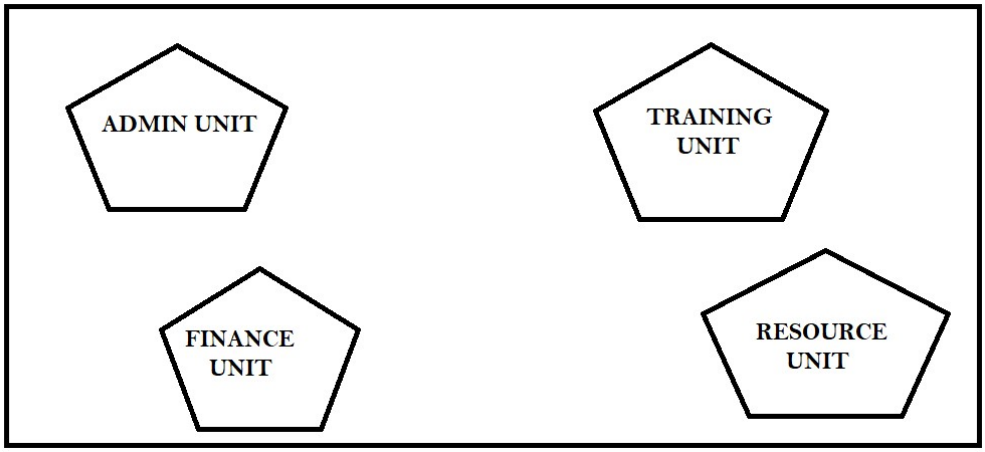
OR

```
def POP(STACK):
    if STACK==[]:
        print("Stack is empty")
    else:
        print(STACK.pop())
```

PART-B
Section-III

Short answer questions of 5 marks each in which ONE question have internal options.

38. **"VidyaDaan" an NGO is planning to setup its new campus at Nagpur for its web-based activities. The campus has four(04) UNITS as shown below:** **5**



➔ **Distances between above UNITs are given here s under:**

UNIT-1	UNIT-2	DISTANCE(In mtrs.)
ADMIN	TRAINING	65
ADMIN	RESOURCE	120
ADMIN	FINANCE	100
FINANCE	TRAINING	60
FINANCE	RESOURCE	40
TRAINING	RESOURCE	50

➔ **No. of Computers in various UNITs are:**

UNIT	NO. OF COMPUTERS
ADMIN	150

		FINANCE	**25**	
		TRAINING	**90**	
		RESOURCE	**75**	
(i)	**Suggest an ideal cable layout for connecting the above UNITs.**			
	Bus/Star topology			
(ii)	**Suggest the most suitable place i.e. UNIT to install the server for the above NGO.**			
	ADMIN			
(iii)	**Which network device is used to connect the computers in all UNITs?**			
	1. ADMIN & RESOURCE **2. ADMIN & FINANCE**			
(iv)	**Suggest the placement of Repeater in the UNITs of above network.**			
	All UNITs			
(v)	**NGO is planning to connect its Regional Office at Kota, Rajasthan. Which out of the following wired communication, will you suggest for a very high-speed connectivity?** **(a) Twisted Pair cable (b) Ethernet cable (c) Optical Fiber**			
	(c) Optical Fiber			
39.	**Write SQL commands for the following queries (i) to (v) based on the relations TRAINER & COURSE given below:**			**5**

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 all details of Trainers who are living in city CHENNAI.**	
	SELECT * FROM TRAINER WHERE CITY IS "CHENNAI";	
(ii)	**Display the Trainer Name, City & Salary in descending order of their Hiredate.**	
	SELECT TNAME, CITY, SALARY FROM TRAINER ORDER BY HIREDATE DESC;	
(iii)	**Count & Display the number of Trainers in each city.**	
	SELECT CITY, COUNT(*) FROM TRAINER GROUP BY CITY;	
(iv)	**Display the Course details which have Fees more than 12000 and name ends with 'A'.**	
	SELECT * FROM COURSE WHERE FEES>12000 AND CNAME LIKE '%A';	
(v)	**Display the Trainer Name & Course Name from both tables where Course Fees is less than 10000.**	
	SELECT T.TNAME, C.CNAME FROM TRAINER T, COURSE C WHERE T.TID=C.CID AND C.FEES<10000;	
40.	**A binary file named "EMP.dat" has some records of the structure** **[EmpNo, EName, Post, Salary]** **(a) Write a user-defined function named NewEmp() to input the details of a new employee from the user and store it in EMP.dat.** **(b) Write a user-defined function named SumSalary(Post) that will accept an argument the post of employees & read the contents of EMP.dat and calculate the SUM of salary of all employees of that Post.** **OR** **A binary file named "TEST.dat" has some records of the structure** **[TestId, Subject, MaxMarks, ScoredMarks]** **Write a function in Python named DisplayAvgMarks(Sub) that will accept a subject as an argument and read the contents of TEST.dat. The function will calculate & display the Average of the ScoredMarks of the passed Subject on screen.**	**5**

```
import pickle

def NewEmp():
    print("Enter the details of an employee:")
    no=int(input("Enter the Empno"))
    name=input("Enter the name")
    post=input("Enter the post")
    sal=float(input("Enter the salary"))

    erec=[no,name,post,sal]
    f=open("EMP.dat","ab")
    pickle.dump(erec,f)
    print("New record saved")
    f.close()

def SumSalary(Post):
    f=open("EMP.dat","rb")
    count=0
    sum=0

    try:
        while True:
            rec=pickle.load(f)
            if rec[3]==Post:
                sum+=rec[4]
    except EOFError:
        f.close()

    print("Sum of Salary :",sum)
```

OR

```
def DisplayAvgMarks(Sub):
    f=open("ABC.dat","rb+")
    count=0
    sum=0

    try:
        while True:
            pos=f.tell()
            rec=pickle.load(f)
            print(rec)
            if rec[1]==Sub:
                sum+=rec[3]
                count+=1
    except EOFError:
        f.close()

    print("Average marks scored :",sum/count)
```

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