MODEL EXAMINATION - FEBRUARY 2023

COMPUTER SCIENCE (083)

CLASS: XII	**Date: 14/02/23**	**Marks: 70**	**Time: 3 Hour**

General Instructions:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A has 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each.
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 03 Long Answer type questions carrying 05 marks each.
7. Section E has 02 questions carrying 04 marks each. One internal choice is given in Q34 against part c only.
8. All programming questions are to be answered using Python Language only.

SECTION A

1. State **True** or **False** 1

   "List can be used as keys of a dictionary."

2. Which of the following can be used as valid variable identifiers in Python? 1

   (a) 4th Sum (b) Total (c) Number# (d) _Data

3. Consider the code: 1

```
t1=(2,3,4,5,6)
print(t1.index(4))
```

   Output is

   (a) 4 (b) 5 (c) 6 (d) 2

4. Consider the given expression 1

```
not True and not (False or False)
```

   Which of the following will be correct output if the given expression is evaluated?

   (a) True (b) False (c) NONE (d) NULL

5. What will be the output of the following Python code? 1

```
d = {'D': "DIFF", 'S': "SUM", 'P': "PROD"}
for i in d:
     print(i, end=":")
```

(a) D:S:P (b) DIFF:SUM:PROD: (c) D:S:P: (d) DIFF:SUM:PROD

6. If we want to know the current position of the file, which method can be applied: 1

(a) seek() (b) tell() (c) read() (d) pos()

7. To remove the data of Pawan from table student which command is used: 1

(a) Delete * from student where FirstName="Pawan";
(b) Delete from table student where FirstName="Pawan";
(c) Delete from student where FirstName="Pawan";
(d) Drop from student where FirstName="Pawan";

8. Which of the following types of table constraints will prevent the entry of duplicate rows? 1

(a) Primary Key (b) NOT NULL (c) Duplicate (d) Distinct

9. Suppose content of 'Myfile.txt' is 1

Honesty is the best policy.

What will be the output of the following code?

```
myfile = open("Myfile.txt")
x = myfile.read()
print(len(x))
myfile.close()
```

(a) 5 (b) 25 (c) 26 (d) 27

10. Which MySQL command is used to see the structure of a table/ relation? 1

(a) Desc (b) Show (c) Display (d) Select

11. Which of the following is not a function / method of csv module in Python? 1

(a) read() (b) reader() (c) writer() (d) writerow()

12. The _____ command is used to remove a table in SQL. 1

(a) DELETE (b) ALTER (c) DROP (d) TCL

13. Which of the following is a unique name given to a website? 1

(a) URL (b) WWW (c) HTTPS (d) FTP

14. Evaluate the following expression: 1

12 * (3 % 4) // 2 + 6

(a) 21 (b) 24 (c) 18 (d) 6

15. All aggregate functions except _____ ignore null values in their input collection. 1

(a) Count(attribute) (b) Count(*) (c) Avg() (d) Sum()

16. Name the method which is used for displaying only one result set. 1

(a) fetchall() (b) fetchone() fetch(one) (d) onefetch()

Q17 and **18** are **ASSERTION AND REASONING** based questions. Mark the correct choice as

(a) Both A and R are true and R is the correct explanation for A

(b) Both A and R are true and R is not the correct explanation for A

(c) A is True but R is False

(d) A is false but R is True

17. **Assertion (A)**:- File mode 'a' overwrites the data in the file. 1
Reasoning (R):- File mode 'w' is used for writing data to a file.

18. **Assertion (A)**:- A function may or may not return a value. 1
Reason (R):- When a function does not have a return statement, the value returned is NULL.

SECTION B

19. Rewrite the following Python program after removing all the **syntactical errors** (if any), underlining each correction: 2

```
def checkval:
     x = input("Enter a number")
     if x % 2 =0:
          print (x, "is even")
     elseif x<0:
          print (x, "should be positive")
     else:
          print (x, "is odd")
```

20. What is protocol? Name two commonly used protocols. 2

OR

Write any two advantages of star topology.

21. (a) Given is a Python string declaration: 2

```
myexam="EXAM23@cbse.com"
```

Write the output of:

```
print(myexam[ : : -2])
```

(b) Write the output of the code given below:

```
fruit={ }
m1=['apple', 'banana', 'APPLE']
for index in m1:
```

```
        if index in fruit:
            fruit[index]+=1
        else:
            fruit[index]=1
print(len(fruit))
print(fruit)
```

22. A result set is extracted from the database using the cursor object (that has been already created) by giving the following statements. 2

```
n= 10
Myrecords =mycursor.fetchmany(n)
```

(a) How many records will be returned by `fetchmany(n)` method?

(b) What will be the datatype of `Myrecords` object after the given command is executed?

23. (a) Write the full forms of the following: 2

(i) XML (ii) POP3

(b) What is the function of a HTTPS in a network?

24. Predict the output of the Python code given below: 2

```
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 modified String is: ", st1)
```

OR

What possible output(s) are expected to be displayed on screen from the options below at time of execution of the program from the following code? Justify.

```
import random
Colours = ["VIOLET","INDIGO","BLUE","GREEN",
"YELLOW","ORANGE","RED"]
End= randrange(2)+3
Begin = randrange(End)+1
for i in range(Begin,End) :
     print(Colours[i],end="&")
```

(i) INDIGO&BLUE&GREEN& (ii) VIOLET&INDIGO&BLUE&
(iii) BLUE&GREEN&YELLOW& (iv) GREEN&YELLOW&ORANGE&

25. Differentiate between **HAVING** and **WHERE** clause in SQL? 2

OR

Differentiate between **DDL** and **DML** with suitable examples for each.

SECTION C

26. (a) Define equi join in MySQL. 1+2

(b) Consider the following tables.

Table: Employee

EmployeeId	Name	Sales	JobId
E1	Sumita 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

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 Employee.JobId in (101,102);

(iii) SELECT JobId,COUNT(*) FROM Employee GROUP BY JobId;

(iv) SELECT * FROM Job WHERE JobTitle LIKE “%in%”;

27. Write a function in Python to read a text file **'PARA.txt'** and display the number of words in each line of this file. 3

For example: if the file **PARA.txt** 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.

Output should be: 8 7 7 8

OR

Write a function in Python that counts the number of words with more than 7 characters from the text file **"DEMO.txt"**.
For example: if the file **DEMO.txt** contains:

Today is a pleasant day.
It might rain today.
It is mentioned on weather sites

Output should be: 2

28. Consider the following tables Sender and Recipient. Write SQL commands for the statements (a) to (c) 3

Table: 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

Table: Recipient

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

(a) To display Recipient details in ascending order of RecName.
(b) To display number of Recipients from each city.
(c) To display the details of senders whose sender city is 'Mumbai'.

29. Write a function listchange(Arr) in Python, which accepts a listArr of numbers, the function will replace the even numbers by value 10 and multiply odd numbers by 5. 3

Sample Input Data of the list is:

```
a=[10,20,23,45]
listchange(a)
```

Output: `[10, 10, 115, 225]`

30. Teena has created a list of marks of 10 students. Write a user defined function to perform the following operations based on this list: 3

(i) PUSH() – To push the marks into a stack, where the marks are greater than 80.

(ii) POP()- To pop the elements of the stack and display them. Also display "Stack Empty" when there are no elements in the stack.

For example:

If the sample content of the list is as follows:

M= [90, 45, 79, 84, 92, 60, 59, 95, 35, 88]

Sample output of the code should be:

88 95 92 84 90 Stack Empty

OR

Write a user defined function in Python, **STACKPUSH(Student)** where, Student is a dictionary containing the details of students- {Roll : Name}. The function should push the names of those students in a stack STACK whose names starts with letter A.

Also write another function **POP(STACK)** to remove and display the element of Stack, STACK.

For example:

If the dictionary contains the following data:

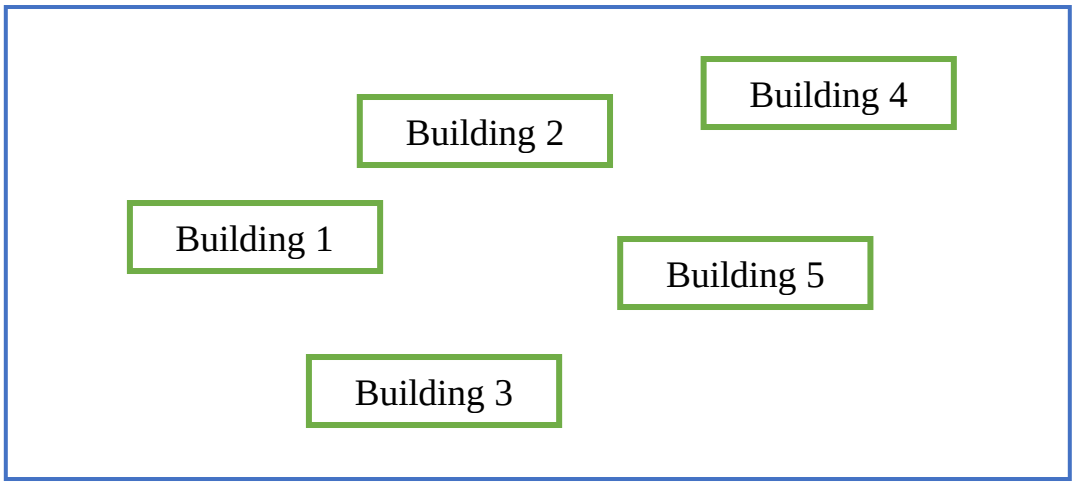
```
Student = {101:"Arun", 102:"Ben", 103:"Patrick",
104:"Abhay"}
```

The stack, STACK should contain

```
Abhay
Arun
```

SECTION D

31. PVS Computers decided to open a new office at Ernakulum, the office consist of Five buildings and each contains number of computers. The details are shown below. 5



Distance between buildings

Building 1 and 2	20 Meters
Building 2 and 3	50 Meters
Building 3 and 4	120 Meters
Building 3 and 5	70 Meters
Building 1 and 5	65 Meters
Building 2 and 5	50 Meters
Building 1 and 3	80 Meters

Number of Computers

Building	**No of Computers**
1	40
2	45
3	110
4	70
5	60

Computers in each building are networked but buildings are not networked so far. The Company has now decided to connect building also.

(i) Suggest cable layout(s) for connecting the buildings.

(ii) Do you think Repeaters are required anywhere in the campus? Why and Where to place?

(iii) The company wants to link this office to their head office at Delhi.

(a) Which type of transmission medium is appropriate for such a link?

(b) What type of network would this connection result into?

(iv) Where server is to be installed? Why?

(v) Suggest the wired Transmission Media used to connect all buildings efficiently.

32. (a) Give the output of the following code: 5

```
def makenew(mystr):
     newstr=" "
     count = 0
     for i in mystr:
          if count%2 != 0:
               newstr = newstr+str(count)
          else:
               if i.islowerO:
                    newstr= newstr+i.upper()
               else:
                    newstr =newstr+i
          count +=1
     newstr =newstr+mystr[:1]
     print("The new string is :", newstr)

makenew("sTUdeNT")
```

(b) The code given below inserts the following record in the table **PAINTING in the database GALLERY:** The table Painting has the following data:

PicID - integer

Title- string

Artist - string

Price - integer

Write the following missing statements to complete the code:

Statement 1- to establish connection

Statement 2 - to form the cursor object

Statement 3 - query to add the record

Statement 4 - to add the record permanently in the database.

```
import mysql.connector as PIC
AR=PIC.connect(_____________) #Statement 1
Paint= _____________ #Statement 2
PicID=int(input("Enter Picture Number :: "))
```

```
Title=input("Enter Title:: ")
Artist=input("Enter Artist Name :: ")
Price=int(input("Enter Price :: "))
Query="_____________________ #Statment 3
Paint.execute(Query)
_____________________ # Statement 4
print("Data Added successfully")
```

OR

(a) Give the output of the following code:

```
def deviation(X,I):
     if X>Y:
          return X- Y
     else:
          return Y-X
NUM= [20,30,34,89,74,23]
for CNT in range (4,0,-1):
     A=NUM[CNT]
     B=NUM[CNT-1]
     print(deviation(A,B),'#', end=" ")
```

(b) The code given below reads the following record from the table named **PAINTING** and displays only those records which belong to the artist 'Van Gogh':

The table Painting has the following data:

PicID - integer

Title - string

Artist - string

Price - integer

Note the following to establish connectivity between Python and MYSQL:

- Username is root
- Password is tiger
- The table exists in a MYSQL database named **GALLERY**.

Write the following missing statements to complete the code:

Statement 1- to establish connection

Statement 2- to form the cursor object

Statement 3- create a query that extracts records of artist Van Gogh

Statement 4- to get the result set of the query

```
import mysql.connector as AR
def sql_data():
     PIC = AR.connect(_____________) #Statement 1
     GA = _____________ #Statement 2
     print("Paintings belonging to Van Gogh are: ")
     _____________________ #Statement 3
      GA.execute(QR)
     GetD=_____________ #Statement 4
     for X in GetD:
          print(X)
     print()
```

33. (a) Explain the seek() function with an example. 2+3

(b) Sham is creating a CSV file which has records of the following type `[Sportname, Coachname]`

Write a Program in Python that defines and calls the following user defined functions:

(i) **INSERT_REC()**- To accept and add data of `Sportname` and `Coachname` to a file **'SPORTS.csv'**.

(ii) **SHOW_REC(SP)** - which displays the `Coachname` of a sport SP given as parameter from the file **'SPORTS.csv'**. It should also count the number of coaches coaching the sport SP.

OR

(a) Explain the use of tell() function with an example.

(b) Anu is creating a CSV file **'album.csv'** which contains records with following fields `[music_id, artist, rating]`.

Write a Program in Python that defines and calls the following user defined functions:

(i) **Getdata()**- To accept and add data of a music album to the file album.csv.

(ii) **Dispdata()** - To display the records of the albums whose rating is above 4.

SECTION E

34. ABC school is considering to maintain their student's information using SQL to store 4

the data. As a database administrator Harendra has decided that:

Name of the database : SCHOOL

Name of table : STUDENT

Table: STUDENT

AdminssionNo	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

Based on the data given above answer the following questions:

(i) If 2 columns are deleted and 2 rows are added in the table STUDENT, what will be the new degree and cardinality of the above table?

(ii) Identity the most appropriate column to be made as primary key? Justify your answer.

(iii) Write the statements to:

(a) Insert a new column called **Phonenumber** - Integer type to the table.

(b) Alter the **Firstname** Pawan as “Pavan”.

OR (Option for part iii and iv only)

(iv) Write the statements to:

(a) Sort the records in descending order of LastName.

(b) Add a new record with the following data 012388, Varun,Shah, 2003-

35. Poornima has been given the following incomplete code for searching for an email from the file "Sender dat" which contains records of following structure: `[name,email_id]` .She has written the following code. As a programmer, help her to successfully execute the given task. 4

```
import _________________          # Statement 1
f = open(___________________)     # Statement 2
data= ______________________      # Statement 3
em = input("Enter E-mail id to be searched: ")
for rec in data:
     if ____________________      #Statement 4
          print (rec)
f.close()
```

(a) Name the module she should import in Statement .1
(b) Fill in the blank Statement 2 where Poornima should open the file to search the data in the file.
(c) Fill in the blank in Statement 3 to read the data from the file.
(d) Fill in the blank in Statement 4 to check for given email id.

******END OFTHE QUESTION PAPER******