ROLL NUMBER					

SET	1

QP.Code:083/01/1

INDIAN SCHOOL MUSCAT
FIRST PRE - BOARD EXAMINATION
COMPUTER SCIENCE (083)

CLASS : XII
DATE: 10.01.2023

TIME ALLOTTED : 3 HRS.
MAXIMUM MARKS: 70

GENERAL INSTRUCTIONS:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 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 (iii) only.
8. All programming questions are to be answered using Python Language only.

SECTION A

1. Can List be used as keys of a dictionary? Why or why not ? 1

2. Which of the following can be used as valid variable identifiers in Python? 1
   i) 4th Sum ii) Total iii) Number# iv)_Data

3. Consider the following code: 1

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

   Output is
   a) 4 b) 5 c) 6 d) 2

4. Which of the following is a unique name given to a website. 1
   (a) URL (b) WWW (c) HTTPS (d)HTTP

5. Name the function which is not associated with dictionary data type. 1
   (a) get() (b) index() (c) pop() (d) min()

6. 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) Error (d)DIFF:SUM:PROD

7. Insert into command of SQL belongs to? 1
(a) DDL (b) DML (c) DML (d) TCL

8. A non-key attribute, whose values are derived from primary key of someother table. 1
(a) Alternate Key (b) Foreign Key (c) Primary Key (d) Candidate Key

9. If a function returns more than one value and the function call is assigned into a single variable, what will be the data type of the variable? 1
(a) List (b) Tuple (c) Dictionary (d) String

10. 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. Delete from student drop FirstName ="Pawan";

11. Evaluate the following expressions: 1
12*(3%4)//2+6

12. Find the output of the following: 1

```
>>>S = 1, (2,3,4), 5, (6,7)
>>> len(S)
```

(a) Error (b) 7 (c) 4 (d) 2

13. Which of the following will give output as (23, 2, 9, 75), if T=(6,23,3,2,0,9,8,75)? 1

(a) print(T[1:7:2]) (b) print(T[0:7:2]) (c) print(T[1:8:2]) (d) print(T[0:8:2])

14. Fill in the blank: 1
The ..... command is used to remove column of a table in SQL.
(a) DELETE (b) ALTER (c) DROP (d) UPDATE

15. All aggregate functions except _____ ignore null values in their input collection. 1
a) Count (attribute) b) Count (*) c) Avg () d) Sum ()

16. If we want to know the current file position, which method can be applied? 1
(a) seek() (b) tell() (c) read() (d) pos()

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="@@CBSE Examination 2023@"
```

Write the output of:

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

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

```
my_dict = {"name": "Varun", "age": 32}
my_dict['age'] = 27
my_dict['address'] = "Chennai"
print(my_dict.items())
```

22. Define a) Degree of a relation b) Cartesian product 2

23. A resultset 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?

24. a) Write the full forms of the following: 2

i) XML ii) SMTP

b) What is the function of a bridge in a network ?

25. 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 += characterreturn
    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&

SECTION C

26 Define a) Tuple in a relation b) Natural Join 3

Consider the following tables. Write the output of the queries (i) to (iv) based on the tables.

Table : Employee

EmployeeId	Name	Sales	JobId
E1	Sumit Sinha	110000	102
E2	Vijay SinghTomar	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**".

28 **Consider the following tables Sender and Recipient. Write SQLcommands 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 Write a function in Python, PUSH(Fruitbasket) where, Fruitbasket is a dictionary containing the details of Fruits– {Fruit:Quantity}. 3
The function should push the names of those Fruits in a stack STK whose quantity is greater than 100.
Also write another function POP(STK) to delete and display the element of Stack, STK.
For example:
If the dictionary contains the following data:
Fruitbasket={"Apple":70,"Orange":120,"Pear":180,"Mango":125}
The stack should contain
Mango
Pear
Orange

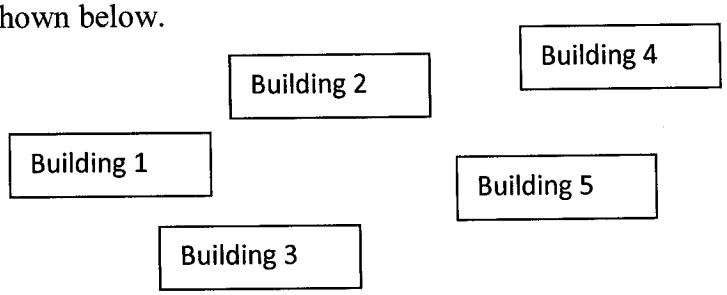
OR

Write a 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

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.islower():
      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,Y):
  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 resultset 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. 5
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 binary 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 SQLto store the data. 4

As a database administrator Harendra has decided that:
Name of database : SCHOOL
Name of table : STUDENT

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

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) Identify 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 only)

(iii) 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,2003-07-14.

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 OF THE QUESTION PAPER******

ROLL NUMBER					

SET	3

QP.Code:083/01/3

INDIAN SCHOOL MUSCAT
FIRST PRE - BOARD EXAMINATION
COMPUTER SCIENCE (083)

CLASS : XII
DATE: 10.01.2023

TIME ALLOTTED : 3 HRS.
MAXIMUM MARKS: 70

GENERAL INSTRUCTIONS:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 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 (iii) only.
8. All programming questions are to be answered using Python Language only.

SECTION A

1. Identify the valid statement for list L=[1,2,"a"]: 1
(i) L.remove("2") (ii) L.del(2) (iii) del L[2] (iv) del L["a"]

2. Which is not a constraint in SQL? 1
a) Unique b) Distinct c) Primary key d) Check

3. Consider the following code: 1
```
t1=(2,3,4,5,6)
print(t1.index(3))
```
Output is
a) 3 b) 4 c) 1 d) 2

4. If a function returns more than one value and the function call is assigned into a single variable, what will be the data type of the variable? 1
(a) List (b) Tuple (c) Dictionary (d) String

5. Name the function which is not associated with dictionary data type. 1
(a) get() (b) index() (c) pop() (d) min()

6. 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. Delete from student drop FirstName ="Pawan";

7. Update command of SQL belongs to? 1
(a) DDL (b) DML (c) DML (d) TCL

8. Fill in the blank: 1
The ..... command is used to remove a table in SQL.
(a) DELETE (b) ALTER (c) DROP (d) UPDATE

9. Which of the following is a unique name given to a website. 1
(a) URL (b) WWW (c) HTTPS (d)HTTP

10. Which of the following will give output as (23, 2, 9, 75). If T=(6,23,3,2,0,9,8,75) 1

(a) print(T[1:7:2]) (b) print(T[0:7:2]) (c) print(T[1:8:2]) (d) print(T[0:8:2])

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

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

12. Find the output of the following: 1
>>>S = 1, (2,3,4), (5,6,7)
>>> len(S)

(a) Error (b) 7 (c) 4 (d)3

13. 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) Error (d)DIFF:SUM:PROD

14. A non-key attribute, whose values are derived from primary key of someother table. 1
(a) Alternate Key (b) Foreign Key (c) Primary Key (d) Candidate Key

15. All aggregate functions except _____ ignore null values in their input collection. 1
a) Count (attribute) b) Count (*) c) Avg () d) Sum ()

16. Evaluate the following expressions: 1
12*(7%4)//3+6

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

What is the difference between bridge and router?

21. 2

(a) Given is a Python string declaration:

```
myexam="@@CBSE Examination 2022@@"
```

Write the output of:

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

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

```
my_dict = {"name": "Varun", "age": 32}
my_dict['age'] = 27
my_dict['address'] = "Chennai"
print(my_dict.items())
```

22. A resultset 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. Define a) Domain of a relation b) Cross Join 2

24. a) Write the full forms of the following: 2

i) XML ii) HTTPS

b) What is the function of a bridge in a network ?

25. 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 += characterreturn
    newstr
 st = "Hello how are you"
 st1 = replaceV(st)
print("The original String is:", st)
print("The modified String is:", st1)
```

OR

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

```
import random
Colours =["VIOLET","INDIGO","BLUE","GREEN", "YELLOW","ORANGE","RED"]
End = random.randrange(2)+3
Begin = random.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&

SECTION C

26. (a) Define Primary Key and candidate key in a relation. 3

(b) Consider the following tables. Write the output of the queries (i) to (iv) based on the tables.

Table : Employee

EmployeeId	Name	Sales	JobId
E1	Sumit Sinha	110000	102
E2	Vijay SinghTomar	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 * from Job where JobTitle like "%in%";

(ii) Select Name,JobTitle, Sales from Employee,Job where Employee.JobId=Job.JobId and JobId in (101,102) ;

(iii) Select max(salary),min(salary) from job ;

(iv) Select JobId,count(*) from Employee group by JobId;

27. Write a function in Python to read a text file '**SAMPLE.TXT**' and display the number of five letter words in each line of this file. 3

For example if the file SAMPLE.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 : 4 1 0 2

OR

Write a function in Python that counts the number of words with more than four characters from the text file "**ARTICLE.TXT**".

28. **Consider the following tables Sender and Recipient. Write SQLcommands 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 numbers divisible by 3 by value 10 and multiply other numbers by 5 . 3

Sample Input Data of the list is:

```
a=[12,21,23,45]

listchange(a)
```

output : [10, 10, 115, 10]

30. Write a function in Python, PUSH(Fruits) where , Fruits is a dictionary containing the details of Fruits– {Fruitname:Quantity}. 3
The function should push the names of those Fruits in a stack STK whose quantity is greater than 100.
Also write another function POP(STK) to delete and display the element of Stack, STK.
For example:
If the dictionary contains the following data:
Fruits={"Apple":70,"Orange":120,"Pear":80,"Mango":125}
The stack should contain
Mango
Orange

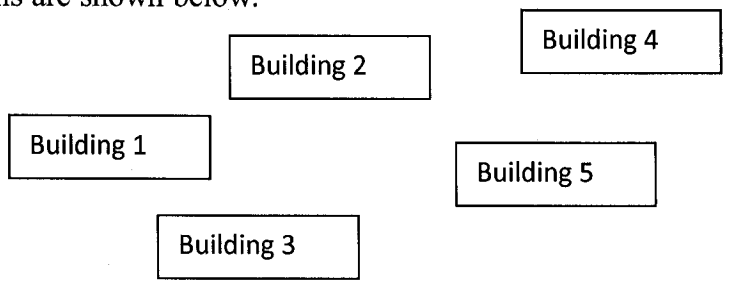
OR

Write a function in Python, STACKPUSH(flight) where , flight is a dictionary containing the details of flights– {flightid:destination}.
The function should push the destination of those flights in a stack STACK whose flightid is >103.
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={104:"Amsterdam",107:"London",102:"Paris",105:"Italy"}
The stack, STACK should contain
Italy
London
Amsterdam

SECTION D

31. 5

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.



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

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) Where server is to be installed? Why?

(ii) Suggest cable layout(s) for connecting the buildings

(iii) Do you think Repeaters are required anywhere in the campus? Why?

(iv) 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?

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

32. 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.islower():
           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,Y):
    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 read the complete result 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 use of tell() function with an example. 5

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 binary file 'SPORTS.csv'.

(ii) SHOW_REC(SP) – which display 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 seek() 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 3.

SECTION E

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

As a database administrator Harendra has decided that:
Name of database : SCHOOL
Name of table : STUDENT
Attributes of the table are as follows:
AdmissionNo-numeric, FirstName–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

Based on the data given above answer the following questions:

(i) If 3 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) Identify 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 of Pawan as 'Pavan.'.

OR (Option for part iii only)

(iii) 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,2003-07-14.

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 OF THE QUESTION PAPER******

ROLL NUMBER				

SET	2

QP.Code:083/01/2

INDIAN SCHOOL MUSCAT
FIRST PRE - BOARD EXAMINATION
COMPUTER SCIENCE (083)

CLASS : XII
DATE: 10.01.2023

TIME ALLOTTED : 3 HRS.
MAXIMUM MARKS: 70

GENERAL INSTRUCTIONS:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 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 (iii) only.
8. All programming questions are to be answered using Python Language only.

SECTION A

1. Which of the following is not a valid identifier name in Python? 1
   a) 5Total b) _Radius c) pie d)While

2. Given the list Lst=['C','O','M','P','U','T','E','R'] , write the output of: 1
   print(Lst[3:6])
   a) ['M','P','U','T'] b) ['M','P','U']
   c) ['P','U','T'] d) ['P','U','T' ,'E']

3. Consider the following code: 1
   t1=(2,3,7,4,6)
   print(t1.index(4))

   Output is
   a) 4 b) 3 c) 6 d) 2

4. If a function returns more than one value and the function call is assigned into a single variable, what will be the data type of the variable? 1
(a) List (b) Tuple (c) Dictionary (d) String

5. Name the function which is not associated with dictionary data type. 1
(a) index() (b) get() (c) pop() (d) min()

6. What will be the output of the following Python code? 1
```
d = {'S' : "SUM", 'P' : "PROD",'D': "DIFF"}
for i in d:
    print(i,end=':')
```
(a) S:P:D: (b) SUM:PROD:DIFF: (c) Error (d) SUM:PROD: DIFF

7. Which of the following will give output as (23, 2, 9, 75). If T=(6,23,3,2,0,9,8,75) 1
(a) print(T[1:7:2]) (b) print(T[0:7:2]) (c) print(T[1:8:2])
(d) print(T[0:8:2])

8. If we want to know the current file position, which method can be applied: 1
(a) seek() (b) tell() (c) read() (d) pos()

9. Which of the following is a unique name given to a website? 1
(a) HTTPS (b) WWW (c) URL (d)HTTP

10. Fill in the blank: 1
The ..... command is used to remove records of a table in SQL.
(a) DELETE (b) ALTER (c) DROP (d) UPDATE

11. Evaluate the following expressions: 1
12*(13%4)//7+6

12. Find the output of the following: 1
```
>>>S = 1, (2,3,4), (5,), (6,7)
>>> len(S)
```
(a) Error (b) 7 (c) 4 (d) 5

13. Alter table command of SQL belongs to? 1
(a) DDL (b) DML (c) DML (d) TCL

14. 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. Delete from student drop FirstName ="Pawan";

15. All aggregate functions except _____ ignore null values in their input collection. 1
a) Count (attribute) b) Count (*) c) Avg () d) Sum ()

16. A non-key attribute, whose values are derived from primary key of someother table. 1

(a) Alternate Key (b) Foreign Key (c) Primary Key
(d) Candidate Key

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): 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.

18. 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.

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. Write the differences between a hub and a switch. 2

OR

Write any two advantages of bus topology.

21. 2

(a) Given is a Python string declaration:

```
myexam="@@CBSE Examination 2022@@"
```

Write the output of:

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

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

```
my_dict = {"name": "Varun", "age": 32}
my_dict['age'] = 27
```

```
my_dict['address'] = "Chennai"
print(my_dict.items())
```

22. Define a) degree of a relation b) Equi Join 2

23. A resultset 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?

24. a) Write the full forms of the following: 2

i) ARPANET ii) GPRS

b) What is the function of HTTP ?

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

```
def replaceV(st):
 newstr = ''
 for character in st:
  if character in 'aeytuAEPTU':
   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 at the timeof execution of the program from the following code? Justify.

```
import random
Colours = ["VIOLET","INDIGO","BLUE","GREEN","YELLOW","ORANGE","RED"]
End = random.randrange(2)+3
Begin = random.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&

SECTION C

26. (a) Differentiate between DDL and DML. 3

(b) Consider the following tables. Write the output of the queries (i) to (iv) based on the tables.

Table : Employee

EmployeeId	Name	Sales	JobId
E1	Sumit Sinha	110000	102
E2	Vijay SinghTomar	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 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 three letter 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 : 1 2 2 1

OR

Write a function in Python that counts the number of words with more than four characters from the text file "**DEMO.TXT**".

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

Table : Customer

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: Reciever

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 odd position number by their squares and even position number by their cubes . 3

Sample Input Data of the list is:

a=[2,4,3,3,5,6]

listchange(a)

output : [4,64,9,27,25,216]

30. Write a function in Python, PUSH(Customer) where , Customer is a dictionary containing the details of Customers– {Name:Age}. 3

The function should push the names of those Customers in a stack STK whose age is greater than 35.

Also write another function POP(STK) to delete and display the element of Stack, STK.

For example:

If the dictionary contains the following data:
Fruitbasket={"Manish":70,"Abhay":20,"Neeraj":40,"Sham":45}
The stack should contain
Sham
Neeraj
Manish

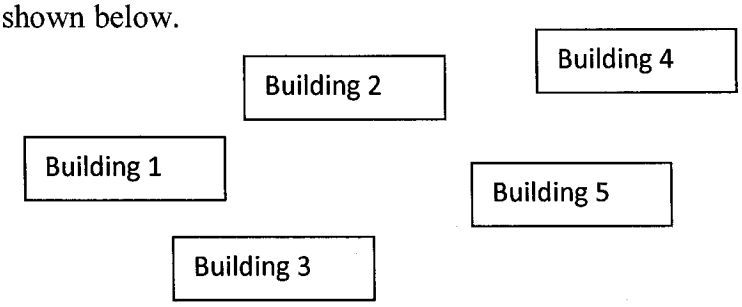
OR

Write a function in Python, STACKPUSH(Employee) where , Employee is a dictionary containing the details of Employees– {Name:Salary}.
The function should push the Salaries of those Employees in a stack STEMP whose names starts with letter A.
Also write another function POP(STEMP) to remove and display the element of Stack, STEMP.
For example:
If the dictionary contains the following data:
Employee={"Arun":4000,"Ben":7000,"Patrick":3500,"Abhay":5000}
The stack,STEMP should contain
5000
4000

SECTION D

31. 5

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.



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

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

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

(i) Do you think Repeaters are required in the campus? Why

(ii) 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?

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

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

(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.islower():
        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,Y):
  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 read the complete result 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. Explain the seek() function with an example. 5
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) Display(SP) – which display the coachname of a sport SP given as parameter from the file 'game.csv'. It should also count the number of coaches coaching the sport SP.
(ii) Addrec( ) – To accept and add data of Sportname and Coachname to a binary file 'game.csv'.

OR

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

Anu is creating a csv file 'music.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) Input( ) – To accept and add data of a music album to the file 'music.csv'.
(ii) Showdata( ) –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 SQLto store the data. 4
As a database administrator Harendra has decided that:
Name of database : SCHOOL
Name of table : STUDENT
Attributes of the table are as follows:
AdmissionNo-numeric, FirstName–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

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) Identify 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 of Pawan as 'Pavan.'.

OR (Option for part iii only)

(iii) 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,2003-07-14.

35. Pooja 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 Pooja 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 OF THE QUESTION PAPER******