Roll No. ☐☐☐☐☐☐☐

- Please check that this question paper contains **12** printed pages.
- Code number given on the right hand side of the question paper should be written on the title page of the answer book by the candidate.
- Please check that this question paper contains **35** questions.
- **Please write down the Serial Number of the question before attempting it.**
- 15 minutes time has been allotted to read this question paper. The students will read the question paper only and will not write any answer on the answer-book during this period.

II PRE BOARD EXAMINATION
COMPUTER SCIENCE

Time allowed : 3 hours   *Maximum Marks : 70*

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.
8. All programming questions are to be answered using Python Language only.

SECTION - A

1. Which of the following statements are correct regarding the file access modes?

   a. 'r+' opens a file for both reading and writing. File object points to its beginning.

   b. 'w+' opens a file for both writing and reading. Adds at the end of the existing file if it exists and creates a new one if it does not exists.

   c. 'wb' opens a file for reading and writing in binary formal. Overwrites the file if it exists and creates a new one if it does not exists.

   d. 'a' opens a file for appending. The file pointer is at the start of the file the file exists.

2. The function of a repeater is to take a weak and corrupted signals and _____ it.

3. A table in a database can contain _____ Primary Key.

   a. Single
   b. Multiple
   c. Two
   d. Three

4. Default arguments to a function have to be assigned from right to left.
   [TRUE / FALSE]

5. Given the following code what should be filled in the missing blank for proper execution of the code:

```
import random
def automatic():     # Function to return a random number between 0 - 1
    s = random._____
    return s
```

   a. randint(0, 100)   b. random()
   c. shuffle()   d. choice()

6. A cookie is a _____ .

   a. Temporary file   b. Protocol
   c. Software   d. Hardware

7. What possible outputs are accepted to be displayed on screen at the time of execution of the program from the following?

```
import random
ar = [20, 30, 40, 50, 60, 70]
fr = random.randint(1, 3)
to = random.randint(2, 4)
for k in range(fr, to +1):
    print(ar[k], end='#')  ⟶
```

   a. 10#40#70#   b. 30#40#50#
   c. 50#60#70#   d. None of these

8. What will be the output of this program?

```
p = '12'
q = '5'
r = 10
s = 8
print(p + q, r + s)
```

   a. 17 18
   b. 125 108
   c. 17 108
   d. 125 18

9. Bluetooth transmission can carry data within :

    a. A city

    b. A country

    c. A state

    d. A room

10. The design of the database is known as :-

    a. Attribute

    b. Database schema

    c. Obstruction

    d. Database oriented

11. What will be the output of this program?

    m = 1

    n = '1'

    print(str(m) + n)

    a. 1

    b. 2

    c. 11

    d. Syntax error

12. The expression 72 // 4 + 12 % 5 + 9 ** 2 – 1 evaluates to :

    a. 101

    b. Error

    c. 100

    d. 99

13. Jaya wants to display the records of her table in descending order of names of products. Which SQL clause she has to use?

    a. Group By

    b. Order By

    c. Between

    d. Check

14. A dictionary can be updated by the contents of other dictionary using the change( ) method. Whether statement is TRUE or FALSE?

15. Sagar wants to find records having NULL values in one of the columns. Which clause he has to use?

   a. NULL

   b. isNULL

   c. Blank

   d. None

16. Which of the following is /are DML commands?

   a. Insert

   b. Delete

   c. Update

   d. All of these

Assertion & Reason

   In the following questions a statement of *Assertion(A)* is fallowed by a statement of *Reason(R)* 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 correct explanation of A.

   c. A is True but R is false.

   d. A is false but R is True

17. *Assertion(A):* Strings in Python are mutable.

   Reason(R) : The first character has the index 0 and the last character has the index n – 1. Where n is the length of the string.

18. *Assertion(A):* Joining 2 list is just like adding 2 strings.

   Reason(R): The concatenation operator + is used to add 2 strings.

   a. Unlimited length

   b. All private members must have leading and trailing underscores.

   c. Underscore and ampersand are only two special characters allowed.

   d. None of the mentioned

SECTION - B

19. (a) When a user browses a website, the web server sends a text file to the web browser. What is the name of this?

    (b) What is the purpose of server in a network?

    OR

    (a) Write the expended names for the following abbreviated terms SMTP, VoIP.

    (b) How is packet switching different from circuit switching?

20. Write a Python Program using function to calculate the area of a triangle after obtaining its 3 sides.

    OR

    Write a function namely check prime(num) that receives a number and returns TRUE if the argument passed is a Prime number else return FALSE.

21. Find and write the output of the following Python code :

```
p = 1
q = 6
def change_values():
    global p
    q = 5
    p = p + q
    return(p)
change_values()
print(p, q)
```

22. Write the Python statement for each of the fallowing task using built in function/methods only:

    a. To display sum of maximum and minimum value of a list-Lst

    b. To remove all the elements of a dictionary-Empdict

23. A table , Teacher has been created in a database with the following fields :
    Tcode, Tname, Dept, Post, Salary
    Give the SQL command to make Tcode as the Primary key. Then after write a query to increase the salary of ' Computer' department teachers by 25%.

    OR

    Define equi join.

24. Write the output of the following code :

```
def changer(p, q = 10):
    p = p/q
    q = p%q
    print(p, '#', q)
    return(p)
a = 200
b = 20
a = changer(a, b)
print(a, '$', b)
b = changer(b)
print(a,'$',b)
a = changer(a)
print(a, '$', b)
```

25. Differentiate between DDL and DML. Identify DDL and DML commands from the followings.

(Update, Select, Alter, Drop)

SECTION - C

26. Find and write the output of Python Code :

```
def fun(s):
    k = len(s)
    m = ''
    for i in range(0, k):
        if s[i].isupper():
            m = m + s[i].lower()
        elif s[i].isalpha():
            m = m + s[i].upper()
        else:
            m = m + 'bb'
    print(m)
fun('school12@com')
```

27. Write the output of the queries i to iii based on the table, *Vaccination_data* given below :

Table : *Vaccination_data*

VID	NAME	AGE	DOSE 1	DOSE 2	CITY
101	RAHUL	27	2021-12-25	2022-01-31	DELHI
102	RAMESH	55	2021-07-14	2021-10-14	MUMBAI
103	RAJ	43	2021-04-18	2021-07-20	DELHI
104	ANIL	36	2021-07-21	NULL	KOLKATA
105	ABHAY	75	2022-01-01	NULL	MUMBAI

I. SELECT NAME , AGE FROM Vaccination_data WHERE DOSE2 IS NOT NULL AND AGE > 40;

II. SELECT CITY, COUNT(*) FROM Vaccination_data GROUP BY CITY;

III. SELECT DISTINCT CITY FROM Vaccination_data;

28. Write a function showords( ) to open a text file 'words.txt' and display the words which have more than 5 letters.

OR

Write a function to count the number of lines in a text file 'players.txt'.

29. Consider the table flight given below :

TABLE : FLIGHT

FNO	START	END	FDATE	FARE
F101	MUMBAI	CHENNAI	2021-12-25	4500
F102	MUMBAI	BENGALURU	2021-11-20	4000
F103	DELHI	CHENNAI	2021-12-10	5500
F104	KOLKATA	MUMBAI	2021-12-20	4500
F105	DELHI	BENGALURU	2021-01-15	5000

Based on the table write SQL queries for the followings:

i. Write a query to change the fare to 6000 of the flight whose FNO is F104.

ii. Write a query to delete the records of flights which ends at MUMBAI.

iii. To display the average fare of among all flight.

30. Write a function to push any students information to stack.

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SECTION - D

31. Galaxy provider limited is planning to connect its office in Taxes, USA with branch at Mumbai. The Mumbai branch has 3 offices in 3 blocks located at some distance from others for different operations. Admin , Sales and Accounts.

As a network consultant you have suggest the best network related solutions for the issue/problems raised in first I to V, keeping in mind the distance between various location and other given parameters.

Layout of the office in the Mumbai branch :

ADMIN
BLOCK

ACCOUNTS
BLOCK

SALES
BLOCK

Shortest distance between various locations :

Admin block to Sales block	300 mts
Sales block to Accounts	175 mtrs
Mumbai Branch to Taxes Head Office	14000 km
Mumbai block to Accounts Block	350 km

Number of computers installed at various locations are as fallows :

Admin Block	256
Accounts Block	75
Sales Block	30
Taxes Head Office	90

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i. It is observed that there is a huge data lose during the process of the data transfer from one block to another. Suggest the more appropriate networking device which needs to be placed along the path of the wire connecting one block office with another to refresh the signal and forward it ahead.

ii. Which hardware networking device will you suggest to connect all the computers within each block?

iii. Which service/protocol will be most helpful to conduct live interactions of employees from Mumbai branch and their counter parts in Taxes?

iv. Draw the cable layout (block to block) to efficiently connect the 3 offices to the Mumbai branch.

v. Suggest placement of server in the network.

32. (i) Differentiate between file modes r+ and w+ with respect to Python.

(ii) Write a program to use pickle module for reading and writing Binary file.

33. (i) Define the term foreign key with respect to RDBMS.

(ii) Write Python code to insert following records into the 'OrderDetails' table:

Database = sales

Userid = admin

Password = salad345

Table name = OrderDetails

ORDENUMB	PARTNUMB	NUMBORD	QUOTPRIC
12489	AX12	11	14.95
12491	BT04	1	402.99
12492	BZ66	1	311.95
12498	CX11	2	57.95

SECTION - E

34. A departmental store "mystore" is considering to maintain their inventory using SQL to store the data. As a database administrator Abhay has decided that :

- Name of database = "MY STORE"
- Name of table = "STORE"
- Attributes of STORE are as follows:

  Itemno - numeric

  Item name- char(20)

  Scode- numeric

  Qty- numeric

TABLE: STORE

ITEM NO	ITEM NAME	SCODE	QTY
2005	SHARPNER	23	60
2003	BALL PEN	22	50
2002	GEL PEN	21	150
2006	GEL PEN CLASSIC	21	250
2001	ERASER SMALL	22	220
2004	ERASER BIG	22	110
2009	BALL PEN 0.5	21	180

(i) Identify the attribute best suitable to be declared as a Primary key.

(ii) Write the degree and cardinality of table STORE.

(iii) Write the command to :

    (a) Insert the following data into the attributes itmeno, item name and scode in the given table

    STORE ITEM NO = 2010, ITEM NAME = NOTEBOOK, SCODE = 25

    (b) Remove the table STORE from the database MY STORE.

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35. Here is the function to find the sum of arguments

```
total = _____                    #Line 1
def sum(arg1,arg2):
    total = arg1 + _____         #Line 3
    print(total)
    return _____                 # Line 5
total = sum(10, 20)
print(_____)                     # Line 7
```

Answer the question that fallows :

i.   Which value or constant will be equal to variable total in Line 1?

ii. Which value will be return in Line 5?

iii. Fill the blanks in Line 3 & Line 7.

Solution from the next page

Section-A

Ans 1) a., b. and c.	1
Ans 2) Regenerate	1
Ans 3) Single	1
Ans 4) TRUE	1
Ans 5) b. random()	1
Ans 6) Temporary file	1
Ans 7) b. 30#40#50#	1
Ans 8) 125 18	1
Ans 9) d. A room	1
Ans 10) b. Database schema	1
Ans 11) c. 11	1
Ans 12) c. 100	1
Ans 13) b. Order By	1
Ans 14) FALSE	1
Ans 15) is NULL	1
Ans 16) d. All of these	1
Ans 17) d. A is False and R is True	1
Ans 18) a. Both A and R are true and R is the correct explanation for A	1

Section-B

Ans 19) (a) cookies   1

(b) A server is a computer or device that provides services to other   1
devices on a network. In a client-server model, the server serves
as the central repository for data and resources, and the clients
are the devices that request access to those resources.

OR

(a) SMTP – Simple Mail Transfer Protocol   1
VoIP - Voice over Internet Protocol

(b) 1

Packet Switching	Circuit Switching
In packet switched network no dedicated path is created between two points. Only the virtual circuit exists.	In circuit switched network a dedicated path is created between two points by setting the switches
Packet switching networks have high installation costs.	Circuit switching's initial cost is low.
In packet switching, low reliability, subject to congestion.	Circuit-switched is highly reliable.

Ans 20) import math 2

```
def triangle_area (a,b,c):
    s=(a+b+c)/ 2
    ar=math.sqrt(s*(s-a)*(s-b)*(s-c))
    return ar
a=float(input( "Enter first side of the triangle: " ))
b=float(input( "Enter second side of the triangle: " ))
c=float(input( "Enter third side of the triangle: " ))
area=triangle_area(a,b,c)
print('Area=',area)
```

OR

```
def check_prime(num):
    for n in range(2,int(num**0.5)+1):
        if num%n==0:
            return False
    return True
```

Ans 21) 6 6 2

Ans 22) a.   min(Lst)+max(Lst) 2
  b.   Empdict.clear()

Ans 23) ALTER TABLE TEACHER ADD PRIMARY KEY(Tcode); 2
        UPDATE Teacher SET Salary=Salary+Salary*0.25 WHERE Dept='Computer';

OR

The EQUI JOIN in SQL performs a JOIN against a column of equality or the matching column(s) values that have the associated tables. Here,

2

we use an equal sign (=) as a comparison operator in our 'where' clause to refer to equality. We can also perform EQUI JOIN by when we use the JOIN keyword followed by the ON keyword and then by specifying the na mes of the columns and their associated tables in order to check equality.

Ans 24) Output   2

    10.0 # 10.0
    10.0 $ 20
    2.0 # 2.0
    10.0 $ 2.0
    1.0 # 1.0
    1.0 $ 2.0

Ans 25) DDL- DDL stands for Data Definition Language. It provides commands for   2
defining relation schemes, deleting relations, creating indexes and modifying relation schemes.
Example- Alter,Drop.
DML- DML stands for Data Manipulation Language It is a language that enables the user to access or manipulate data as organised by the appropriate data module.
Example- Update,Select

Section-C

Ans 26)   S   3
    SC
    SCH
    SCHO
    SCHOO
    SCHOOL
    SCHOOLbb
    SCHOOLbbbb
    SCHOOLbbbbbb
    SCHOOLbbbbbbC
    SCHOOLbbbbbbCO
    SCHOOLbbbbbbCOM

Ans 27) I.   3

NAME	AGE
RAMESH	55
RAJ	43

    II.

CITY	COUNT(*) 3

DELHI	2
MUMBAI	2
KOLKATA	1

III.

CITY
DELHI
MUMBAI
KOLKATA

Ans 28)
```
def showords():
        c=0
        file=open('words.txt','r')
        line = file.read()
        word = line.split()
        for w in word:
                if len(w)>5:
                print( w)
        file.close()
```
                                              OR
```
def countlines():
        c=0
        file=open('players.txt','r')
        line = file.readlines()
        print('Number of lines=',len(line))
```

3

Ans 29) i) UPDATE FLIGHT SET FARE=6000 WHERE FNO='F104';
     ii) DELETE FROM FLIGHT WHERE END='MUMBAI';
     iii) SELECT AVG(FARE) FROM FLIGHT;

3

Ans 30) def push(stack):
```
        s=[]
        s.append(input('Enter student rollno?'))
        s.append(input('Enter student name'))
        s.append(input('Enter student grade'))
        stack.append(s)
```
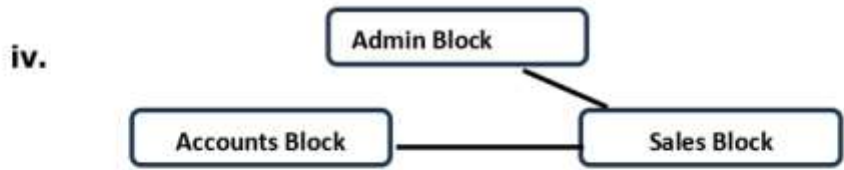
3

Section-D

Ans 31.   i. **repeater**
     ii. **Switch**
     iii. **VoIP**

5

iv.

v. Server should be placed in ADMIN BLOCK
As it has the maximum number of computers.

Ans 32. (i) **r+ mode –** This mode Opens a file for both reading and writing.   **2**
The file pointer placed at the beginning of the file
w+ mode- This mode Opens a file for both writing and reading.
Overwrites the existing file if the file exists. If the file does not exist,
creates a new file for reading and writing

(ii)   **3**

```
import pickle
def binarywrite():
        fw=open("emp.dat","ab")
        empno=int(input("enter employe no"))
        empname=input("enter employe name")
        empsal=int(input("enter employe salary"))
        record=[empno,empname,empsal]
        pickle.dump(record,fw)
        fw.close()
def binaryread():
        fin=open('emp.dat','rb')
        try:
                while True:
                        emp=pickle.load(fin)
                        print(emp)
        except EOFError:
                fin.close()
binarywrite()
binaryread()
```
**[Note: or any program which will use pickle module to read and
Write Binary file]**

Ans 33.(i) A foreign key is a column or group of columns in a relational   **2**
database table that provides a link between data in two tables.
It is a column (or columns) that references a column (most often
the primary key) of another table.

(ii)   **3**
```
import mysql.connector
mydb = mysql.connector.connect(
```

```
host="localhost",
user="admin",
password="salad345",
database="sales"
)
mycursor = mydb.cursor()
sql = "INSERT INTO OrderDetails (ORDENUMB, PARTNUMB, NUMBORD,
QUOTPRIC) VALUES (%s, %s, %s, %s)"
val = [
(12489, "AX12", 11, 14.95),
(12491, "BT04", 1, 402.99),
(12492, "BZ66", 1, 311.95),
(12498, "CX11", 2, 57.95)
]
try:
        mycursor.executemany(sql, val)
        print(mycursor.rowcount, "records inserted.")
except:
        print('Something went wrong.')
mydb.commit()
```

Section-E

Ans 34.(i) ITEM_NO is the attribute best suited to become Primary key.   4
    (ii) Degree – 4, Cardinality -7
    (iii) INSERT INTO STORE(ITEMNO,ITEMNAME,SCODE) VALUES
        (2010,'NOTEBOOK',25);
    (iv) DROP TABLE STORE;

Ans 35. **i.** total=0   4
    ii. total
    iii. Line3 = arg2
       Line7 = total

****All the best****