Roll No. | | | | | | | |

Candidates must write the Code on the title page of the answer book.

- Please check that this question paper contains **16** 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.

I PRE BOARD EXAMINATION
COMPUTER SCIENCE

Time allowed : 3 hours ***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.*
8. *All programming questions are to be answered using Python Language only.*

SECTION - A

1. State True or False:-

"The data type of a variable in Python can be modified during a program."

2. The Python statement (using function) to raise the number 6 to the power 2 is _____ .
3. Which of these about a dictionary is false?
   a. The values of a dictionary can be accessed using keys.
   b. The keys of a dictionary can be accessed using values.
   c. Dictionaries are not ordered.
   d. Dictionaries are mutable.
4. Consider the given expression : **not True and False or True**

   Which of the following will be correct output if the given expression is evaluated?
   a. True
   b. False
   c. NONE
   d. NULL

5. Select the correct output of the code :

```
s = "GOOD MORNING"
print (s.capitalize( ), s.title( ), end = "!")
```

a. GOOD MORNING! Good morning

b. Good Morning! Good Morning

c. Good morning! Good morning!

d. Good morning Good morning!

6. What will the following command do?

```
file.read(-2)
```

a. The last two records of file will be read.

b. The last two bytes of the file will be read.

c. The entire contents of file will be read.

d. Error will be generated.

7. Fill in the blank :

_____ command is used to add primary key to the existing table in SQL.

a. update

b. remove

c. alter

d. drop

8. Which of the following commands in SQL can be used to make changes in table rows?

a. Select

b. Alter table

c. Update

d. Insert into

9. Which of the following statement(s) would give an error after executing the following code?

```
S = "Welcome to class XII"      # Statement 1 print(S)
                                # Statement 2
S="Thank you"                   # Statement 3
S[0] = '@'                      # Statement 4
S = S * 2                       # Statement 5
```

a. Statement 3

b. Statement 4

c. Statement 5

d. Statement 4 and 5

10. Fill in the blank :

_____ are choices available for Primary key.

a. Foreign Key
b. Candidate Key
c. Boyh (a) and (b)
d. None of these

11. Syntax of a seek( ) function in Python is

myfile.seek(offset, reference_point) where myfile is the file object. What is the default value of reference point?

a. 0
b. 1
c. 2
d. 3

12. Fill in the blank :

The SELECT statement when combined with _____ clause. returns records without repetition.

a. DESCRIBE
b. UNIQUE
c. DISTINCT
d. NULL

13. Fill in the blank:

_____ can be a hardware device or a software that helps protect the computer from various network threats.

a. Hub
b. Switch
c. Antivirus
d. Firewall

14. What will the following expression be evaluated to in Python?

print(16 + 18 - 90 % 2)

a -56
b. 0
c. 16
d. 34

15. Which is not a MySQL function ?

a. Mult( )
b. Min( )
c. Count( )
d. Sum( )

16. To establish a connection between Python and SQL database, connect( ) is used. Which of the following arguments may notnecessarily be given while calling connect( )?

a. host
b. database
c. user
d. password

Q.17- and Q.18- are ASSERTION AND REASONING based questions.

Mark the correct choice as :

a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

b. Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A).

c. Assertion (A) is true but Reason (R) is false.

d. Both Assertion (A) and Reason (R) are false.

17. Assertion (A): In order to access the global variable within a function , we need to write the kewword global.

Reasoning (R): In Python , a local variable declared in a function overrides a global variable with the same name.

18. Assertion (A): Binary file can store objects like dictionaries, tuples, lists.

Reason (R) : Pickling is the process of converting python object hierarchy into a byte stream so that it can be written into a file.

SECTION - B

19. Rao has written a code to input a number and check whether it is prime or not. His code is having errors. Rewrite the correct code and underline the corrections made.

```
def prime( ):
    n = int(input("Enter number to check :: ")for i in range (2, n//2):
        if n % i = 0:
            print("Number is not prime \n")break
        else:
            print("Number is prime \n')
```

20. Write two points of difference between Hub and Switch?

OR

Write two points of difference between Star and Bus topology.

21. a. Given is a Python string declaration :

myexam = "**CBSE Examination 2023**"

Write the output of: print(myexam[::-3])

b. Write the output of the code given below :

```
my_dict = {"name": "Aman", "age": 26}
my_dict['age'] = 27 my_dict['address'] = "Delhi"
print(my_dict.items( ))
```

22. Define Foreign Key and what is its importance in Relational database?

23. a. Write the full forms of the following:

(i) VoIP

(ii) POP

b. What is MAC address?

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

```
def LChange( ):
    for i in range(len(L)):
        if L[i] % 2 == 0:
            L[i] = L[i] * 2
        if L[i] % 3 == 0:
            L[i] = L[i] * 3
        else:
            L[iL[i] * 5
L = [2, 6, 9, 10]
LChange( )
for i in L:
    print(i, end = "#")
```

OR

Predict the output of the Python code given below:

```
L1, L2 = [10, 15, 20, 25], []
for I in range (len(L1)):
    L2.insert(i, L1.pop( ))
print(L1,L2, sep = "&")
```

25. Differentiate between count() and count(*) functions in SQL with appropriate example.

OR

Categorize the following commands as DDL or DML : INSERT, UPDATE, ALTER, DROP

SECTION - C

26. a. Consider the following tables - Doctor and Patient :

Table : DOCTOR

DNo	DName	Fees
D1	AMITABH	1500
D2	ANIKET	1000
D3	NIKHIL	1500
D4	ANJANA	1500

Table: PATIENT

PNO	PNAME	ADMDATE	DNO
P1	NOOR	2021-12-25	D1
P2	ANNIE	2021-11-20	D2
P3	PRAKASH	2020-12-10	D3
P4	HARMEET	2019-12-20	D1

What will be the output of the following statement?

SELECT * FROM Doctor NATURAL JOIN Patient;

b. Write the output of the queries (i) to (iv) based on the table, TRANSACT given below:

Table: TRANSACT

TNO	ANO	TYPE	AMOUNT	DOT
T1	101	WITHDRAW	25000	2016-06-12
T2	102	WITHDRAW	20000	2020-12-20
T3	101	DEPOSIT	22000	2021-03-10
T4	103	DEPOSIT	15000	2022-12-23

i. SELECT DISTINCT TYPE FROM TRANSACT;

ii. SELECT ANO,COUNT(*),MIN(AMOUNT) FROM TRANSACT GROUP BY ANO HAVING COUNT(*)>1;

iii. SELECT COUNT(*),SUM(AMOUNT) FROM TRANSACT WHERE DOT<="2017-06-12";

iv. SELECT * FROM TRANSACT ORDER BY AMOUNT DESC;

27. Write a method COUNTLINES( ) in Python to read lines from text file 'MYFILE.TXT' and display the lines which are starting with anyvowel.

Example :

If the file content is as follows:

An apple a day keeps the doctor away. We all pray for everyone's safety.

A marked difference will come in our country.

The COUNTLINES( ) function should display the output as :

The number of lines starting with any vowel - 2

OR

Write a function ETCount( ) in Python, which should read each character of a text file "MYFILE.TXT" and then count and displaythe count of occurrence of alphabets E and T individually (includingsmall cases e and t too).

Example :

If the file content is as follows :

Today is a pleasant day.It might rain today.

It is mentioned on weather sites

The ETCount( ) function should display the output as :

E or e : 6

T or t : 9

a. Write the outputs of the SQL queries (i) to (iv) based on the relations COMPANY and CUSTOMER given below :

Table : COMPANY

CID	NAME	CITY	PRODUCTNAME
111	SONY	DELHI	TV
222	NOKIA	MUMBAI	MOBILE
333	ONIDA	DELHI	TV
444	SONY	MUMBAI	MOBILE
555	BLACKBERRY	MADRAS	MOBILE
666	DELL	DELHI	LAPTOP

Table: CUSTOMER

CUSTID	NAME	PRICE	QTY	CID
101	ROHAN SHARMA	70000	20	222
102	DEEPAK KUMAR	50000	10	666
103	MOHAN KUMAR	30000	5	111
104	SAHIL BANSAL	35000	3	333
105	NEHA SONI	25000	7	444
106	SONAL AGARWAL	20000	5	333
107	ARUN SINGH	50000	15	666

i. To display those company name which are having price less than 30000.

ii. To display the name of the companies in reverse alphabetical order.

iii. To display customer details along with the company name.

29. Write a function ODD_LIST(L), where L is the list of elements passed as argument to the function. The function returns another list named'indexList' that stores the indices of all Odd Elements of L.

For example:

If L contains [13, 4, 0, 11, 0, 51]

The indexList will have - [0, 3, 5]

30. Write a menu driven program to implement a stack data structure using PUSBOOK( ) and POPBOOK( ) user defined functions. Each stack node has book details(bookNo and bookName) stored as dictionary.

OR

Write a program to input a list of strings and do following operations using separate user defined functions.

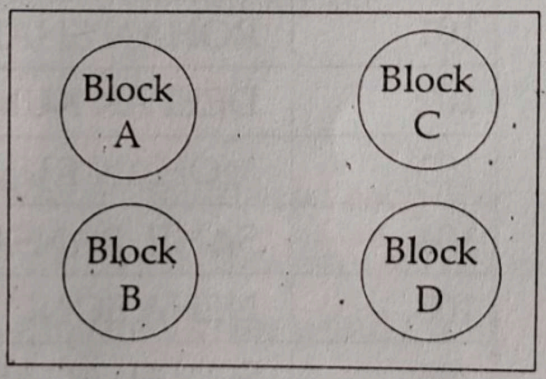
- To push strings ending with letter's' in a stack.

  To pop elements of stack.

SECTION - D

31. Knowledge Supplement Organization has set up its new center at Mangalore for its office and web based activities. It has 4 blocks of buildings as shown in the diagram below:

Block	No. of Computers
Block A	25
Block B	50
Block C	125
Block D	10



Centre to Centre distance between blocks	
Block A to Block B	50 meter
Block B to Block C	150 meter
Block C to Block D	25 meter
Block A to Block D	170 meter
Block B to Block D	125 meter

1. Suggest a cable layout of connections between blocks.
2. Suggest the most suitable place(i.e. block) to house the server with suitable reason.
3. Suggest the placement of the following devices with justifications : Repeater, Hub

4. The organization is planning to link its front office situated in the city in a hilly region where cable connection is not feasible, suggest an economic way to connect it with reasonably high speed?
5. Suggest a device/software to be installed in the Campus to take care of data security.

32. a. Write the output of the code given below :

```
p = 5
def sum(q, r = 2):
    global p
    p = r + q ** 2
    print(p, end = '#')
a = 10
b = 5 sum(a, b)
sum(r = 5, q = 1)
```

b. The code given below inserts the following record in the tableStudent :

RollNo - integer
Name - string
Clas - integer
Marks - integer

Note the following to establish connectivity between Python and MYSQL:

- Username is root a
- Password is tiger
- The table exists in a MYSQL database named school.
- The details (RollNo, Name, Clas and Marks) are to be accepted from the user.

Write the following missing statements to complete the code :

Statement 1 - to form the cursor object

Statement 2 - to execute the command that inserts the record in the table Student.

Statement 3 - to add the record permanently in the database

```
import mysql.connector as mysql
def sql_data( ):
con1 = mysql.connect(host = "localhost", user = "root",
password = "tiger", database="school")
mycursor =              //Statement 1
rno = int(input("Enter Roll Number :: ")) name=input("Enter name ::")
clas = int(input("Enter class :: "))
marks = int(input("Enter Marks :: "))
querry = "insert into student
values([ ],'[ ]',[ ],[ ])".format(rno, name, clas, marks)
#Statement 2
# Statement 3
print("Data Added successfully")
```

OR

a. Predict the output of the code given below :

```
s = "welcome2cs"
n = len(s)
m = ""
for i in range(0, n):
if (s[i] >= 'a' and s[i] <= 'm'):
    m = m +s[i].upper( )
elif (s[i] >= 'n' and s[i] <= 'z'):
    m = m +s[i - 1]
elif (s[i].isupper( )):
    m = m + s[i].lower( )
else:
    m = m +'&' print(m)
```

b. The code given below reads the following record from the table named student and displays only those records who have marks greater than 75 :

RollNo - integer

Name - string

Clas - integer

Marks - 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 school.

Write the following missing statements to complete the code :

Statement 1 - to form the cursor object

Statement 2 - to execute the query that extracts records of those students whose marks are greater than 75.

Statement 3 - to read the complete result of the query (records whose marks are greater than 75) into the object named data, from the table student in the database.

```
import mysql.connector as mysql
def sql_data( ):
    con1= mysql.connect(host = "localhost", user = "root",
password ="tiger", database = "school")
    mycursor =              # Statement 1
    print("Students with marks greater than 75 are :")
# Statement 2
data =                      # Statement 3
    for i in data:
        print(i)
        print( )
```

33. What is the advantage of using a csv file for permanent storage? Write a Program in Python that defines and calls the following user defined functions:

i. ADD( ) - To accept and add data of an employee to a CSV file 'record.csv'. Each record consists of a list with field elements as empid, name and mobile to store employee id, employee name and employee salary respectively.

ii. COUNTR( ) - To count the number of records present in the CSV file named 'record.csv'.

OR

Give any one point of difference between a binary file and a csv file. Write a Program in Python that defines and calls the following user defined functions:

(i) add( ) - To accept and add data of an employee to a CSV file 'furdata.csv'. Each record consists of a list with field elements as fid, fname and fprice to store furniture id, furniture name and furniture price respectively.

(ii) search( ) - To display the records of the furniture whose price is more than 10000.

SECTION - E

34. Write SQL statements for following based on same tables CONSIGNOR and CONSIGNEE .

Table : CONSIGNOR

Cnorld	CnorName	CnorAddress	City
ND01	R Singhal	24, ABC Enclave	New Delhi
ND02	Amit Kumar	123, Palm Avenue	New Delhi
MU15	R Kohli	5/A, South Street	Mumbai
MU50	S Kaur	27-K, Westend	Mumbai

Table: CONSIGNEE

Cneeld	Cnorld	CneeName	CneeAddress	CneeCity
MU05	ND01	Rahul Kishore	5, Park Avenue	Mumbai
ND08	ND02	P Dhingra	16/J, Moore Enclave	New Delhi
K019	MU15	A P Roy	2A, Central Avenue	Kolkata
MU32	ND02	S Mittal	P-245 , AB Colony	Mumbai
ND48	MU50	B P Jain	13, Block D, A Vihar	New Delhi

i. To display the names of all Consignors from Mumbai.

ii. To display the Cneeld, CnorName, CnorAddress, CneeName, CneeAddress for every consignee.

iii. To display consignee details in ascending order of CneeName.

iv. To display number of consignees from each city.

v. To add a new consignee(KO123,ND01,A K Sharma, 24 Salt Lake, Kolkata)

35. Aman is a Python programmer. He has written a code and created a binary file record.dat with employeeid, ename and salary. The file contains 10 records.

He now has to update a record based on the employee id entered by the user and update the salary. The updated record is then to be written in the file temp.dat. The records which are not to be updated also have to be written to the file temp.dat. If the employee id is not found, an appropriate message should to be displayed.

As a Python expert, help him to complete the following code based on the requirement given above:

```
import                                          #Statement 1
def update_data():rec= [ ]
    fin = open("record.dat", "rb")
    fout = open(" ")                            #Statement 2found = False
```

```
eid = int(input("Enter employee id to update their salary :: "))
while True:
    try:
        rec = _____                          #Statement 3
        if rec["Employee id"] == eid :
            found = True
            rec["Salary"] = int(input("Enter new salary::"))
            pickle._____                     #Statement 4
        else:
            pickle. dump(rec,fout)
        except:
            break
    if found == True:
        printfThe salary of employee id ", eid," hasbeen updated.")
    else :
        print("No employee with such id is not found")
        fin.close( )
        fout.close( )
```

i. Which module should be imported in the program? (Statement l)

ii. Write the correct statement required to open a temporary filenamed temp.dat. (Statement 2)

iii. Which statement should Aman fill in Statement 3 to read the data from the binary file, record.dat and in Statement 4 towrite the updated data in the file, temp.dat?

#####