

THE VILLAGE INTERNATIONAL SCHOOL THODUPUZHA

Class: XII

**SECOND MODEL EXAMINATION 2023-24
Computer Science**

**Time: 3 Hours
Max.Marks : 70**

General Instructions:-

- » This question paper contains five sections, Section A to E.
- » All questions are compulsory.
- » Section A has 18 questions carrying 01 mark each.
- » Section B has 07 very short answer type questions carrying 02 marks each.
- » Section C has 05 short answer type questions carrying 03 marks each.
- » Section D has 03 long answer type questions carrying 05 marks each.
- » Section E has 02 questions carrying 04 marks each.
- » All programming questions are to be answered using Python 3.x Language only.

Qst. No.	Question	Mark
Section A		
1.	Which of the following cannot be a variable? (a) islower (b) print (c) __init__ (d) it	1
2.	Consider the code given below and write the output: >>>L=[1,2,3,4,5] >>>L.insert(10,2) >>>L (a) [1,2,2,3,4,5] (b) [1,2,10,3,4,5] (c) [1,2,3,4,5,2] (d) [1,2,3,4,5,10]	1
3.	What will be the output of: >>>print("red pen with red ink" . partition('red')) (a) ('', 'red', ' pen with red ink') (b) (' pen with ', 'red', ' ink') (c) ('red', ' pen with ', 'red ink') (d) error	1
4.	Which of the following statement is false? (a) a try-except block can have more than one except statement (b) one block of except statement cannot handle multiple exceptions (c) the finally block is always executed (d) when 1=="1" is executed, no exception is raised.	1
5.	Which of the following statement(s) would give an error during the execution of the following code? R={'pno':52, 'pname':'Virat', 'expert':['Badminton', 'Tennis'], 'score':(77,44)} print(R) #statement 1 R['expert'][0]='Cricket' #statement 2 R['score'][0]=50 #statement 3 R['pno']=50 #statement 4 (a) statement 1 (b) statement 2 (c) statement 3 (d) statement 4	1
6.	_____ is used for point-to-point communication or unicast communication such as radar and satellite. (a) infrared wave (b) Bluetooth (c) Microwave (d) radiowave	1

7.	fetchall() method fetches all rows in a result set and return a: (a) Tuple of lists (b) List of tuples (c) List of strings (d) Tuple of strings	1
8.	In mysql database, if a table Alpha has degree 5 and cardinality 3, and another table Beta has degree 3 and cardinality 5, what will be the degree and cardinality of the cartesian product of Alpha and Beta? (a) 5,3 (b) 8,15 (c) 3,5 (d) 15,8	1
9.	The correct syntax of seek() is: (a) file_object.seek(offset[,reference point]) (b) seek(offset [,reference point]) (c) seek(offset, file_object) (d) file_object.seek(offset)	1
10.	Consider the expression: not 5 or 4 and 10 and 'bye' Which of the following will be the correct output if the expression is evaluated? (a) True (b) False (c) 10 (d) 'bye'	1
11.	Expand the following terms: (i) PPP (ii) VoIP	1
12.	What will be the following expression be evaluated to in python? >>>print((-33//13)*(35%-2)*15/3) (a) 10.0 (b) -15.0 (c) 15.0 (d) -10.0	1
13.	_____ is a communication methodology designed to establish a direct and dedicated communication between an internet user and his/her ISP. (a) VoIP (b) SMTP (c) PPP (d) HTTP	1
14.	Consider the code given below: b=100 def Test(a): _____ #missing statement b=b+a print(a,b) Test(10) print(b) Which of the following statement should be given in the blank for #missing statement, if the output produced is 110? (a) global a (b) global b=100 (c) global b (d) global a=100	1
15.	Which of the following statement is FALSE about keys in a relational database? (a) any candidate key is eligible to become a primary key (b) a primary key uniquely identifies the tuples in a relation (c) a candidate key that is not a primary key is a foreign key (d) a foreign key is an attribute whose value is derived from the primary key of another relation	1
16.	import random alpha = ['T', 'U', 'V', 'W'] dig = [2,6,7,3] print("The winner is:',end=" ") print(alpha[random.randint(0,3)], end=" ") for i in range(4): print(dig[i + random.randint(0,3)], end=" ") What possible output(s) is expected to be displayed on screen at the time of execution of the program from the above code: (i) The winner is: T 7 3 6 (ii) The winner is: W 2 6 7 5 (iii) The winner is: V 6 6 0 (iv) The winner is: U 2 7 3 (a) i (b) i and iv (c) ii and iii (d) iii	1

24. Give the **output** of the following python code:

```
def comp(N1, N2=10):
    return N1>N2
Num=[10, 23, 14, 54, 32]
for var in range(4,0,-1):
    A=Num[var]
    B=Num[var-1]
    if var>len(Num)//2:
        print(comp(A,B),"#", end="")
    else:
        print(comp(B,A),"%",end="")
```

OR

Write the **output** of the following:

```
tuple1=([7,6], [4,4], [5,9], [3,4], [5,5], [6,2], [8,4])
listy=list(tuple1)
new_list=list()
for ele in listy:
    tot=0
    for value in ele:
        tot+=value
        if ele.count(value)==2:
            new_list.append(value)
            tot=0
else:
    print(tuple(new_list))
```

2

25. Consider the following two commands with reference to a table, named Students, having a column named Section:

(a) select count(section) from Students;

(b) select count(*) from Students;

If these two commands are producing different results,

(i) What may be the possible reason?

(ii) Which command, (a) or (b), might be giving high value?

OR

Differentiate between WHERE and HAVING clauses in Mysql.

2

Section C

26. (a) Consider the table given below:

Table: UNIFORM

Ucode	Uname	Ucolour
1	Shirt	White
2	Pant	Grey
3	Tie	Black

Table: COST

Ucode	Size	Prize
1	L	550
1	M	500
2	L	850
2	M	810

What will be the output of the following statement?

```
SELECT * from UNIFORM natural join COST;
```

(b) Consider the following table SPORTSCLUB and write SQL queries for the following statements:

1

Table: SPORTSCLUB

PlayerId	Pname	Sports	Country	Rating	Salary
1001	Pele	Soccer	Brazil	A	50000
1002	Federer	Tennis	Sweden	A	20000
1003	Virat	Cricket	India	A	15000
1004	Sania	Tennis	India	B	5000
1005	Neeraj	Athletics	India	A	12000
1006	Bolt	Athletics	Jamaica	A	8000
1007	Paul	Snooker	USA	B	10000

- (i) To display the different Sports in SPORTSCLUB.
(ii) To display the maximum Salary of each Sports other than Snooker from the table SPORTSCLUB.
(iii) To display the Indian Player name(s) along with their Salary and Sports in descending order of Salary
(iv) To display the total Salary of players whose rating is 'B'.

27. Write a function COUNT() in python to read from a text file 'Gratitude.txt' and display the count of the letter 'e' in each line.

Example:

*Gratitude is a huble heart's radiant glow,
A timeless gift that nurtures and bestows.
It's the appreciation for the love we're shown,
In moments big and small, it's truly known.*

The COUNT() function should display the output as:

*Line 1 : 3
Line 2 : 4
Line 3 : 6
Line 4 : 1*

OR

Write a function STARTS_WITH_I() in python, which should read a text file 'Gratitude.txt' and then display lines starting with 'I'.

Example:

*Gratitude is a huble heart's radiant glow,
A timeless gift that nurtures and bestows.
It's the appreciation for the love we're shown,
In moments big and small, it's truly known.*

The STARTS_WITH_I() should display the output as:

*It's the appreciation for the love we're shown,
In moments big and small, it's truly known.*

28. Consider the following tables - FACULTY and COURSES:
Table: FACULTY

FID	FNAME	LNAME	JOINDATE	SALARY
F01	Anishma	Garg	2000-12-14	32000
F03	Bhumi	Goel	2001-08-10	15000
F04	Neha	Verma	2000-05-17	27000
F05	Meenu	Sharma	2006-07-11	30000

Table: COURSES

C_ID	FID	CNAME	FEES
C11	Fo1	Grid Computing	40000
C12	F04	Python	17000
C13	F03	C++	8000
C14	F04	Computer Network	15000
C15	F01	HTML	12000
C16	F05	Data Science	NULL

(a) Write the output for the following SQL queries.

- (i) Select FID, min(FEES), max(FEES) from COURSES group by FID;
- (ii) Select avg(SALARY) from FACULTY where FNAME like '%a';
- (iii) Select FNAME, CNAME from FACULTY F, COURSES C where F.FID = C.FID and COURSES.FID='Fo4'
- (iv) Select FNAME, CNAME, FEES from FACULTY F, COURSES C where F.FID = C.FID and FEES>15000;

(b) Write the command to display the structure of a table in the database.

29. Write a function ***index_List(L)***, where L is the list of elements passed as argument to the function. The function returns another list named '***in_list***' that stores the indices of all non-multiples of 3 elements of L.

For example:

if L contains [12, 4, 18, 56]

The in_list will have [1, 3]

30. Manoj has a list of 10 integers. You need to help him write a program with separate user defined functions to perform the following operations based on this list.

- ▶ Traverse the content of the list and push the even numbers into a stack.
- ▶ Pop and display the content of the stack

For example:

if the sample content of the list is:

N=[12, 13, 34, 56, 21, 79, 98,22, 35, 38]

Sample output of the code should be:

38 22 98 56 34 12

OR

Julie has created a dictionary containing names and marks as key-value pairs of 6 students. Write a program, with separate user defined functions to perform the following operations:

- ▶ Push the keys(name of students) of the dictionary into a stack, where the corresponding value(marks) is greater than 75.
- ▶ Pop and display the content of the stack

For example:

if the sample content of the dictionary is as follows:

R={"Niki" : 76, "Manu" : 45, "Bilu" : 54, "Ani" : 65, "Kanu" : 90, "Hok" : 82}

The output from the program should be:

NikiBiluKanuHok

Section D

31. (a) What will be the **output** of the following code?

5

```
value=100
def display(N):
    global value
    value=150
    if N%7==0:
        value = value+N
    else:
        value = value -N
print(value, end='#')
display(50)
print(value)
```

(b) The code given below inserts the following record in the table student:

Rollno - integer, Name - string, class - 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

The details (Rollno, Name, Class 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 write a query to insert records into the table

statement 3 - to execute the query

statement 4 - to add 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 the roll number:"))
```

```
    name = input("Enter the name:")
```

```
    class = int(input("Enter the class:"))
```

```
    marks = int(input("Enter the marks:"))
```

```
    query = _____ #statement 2
```

```
    _____ #statement 3
```

```
    _____ #statement 4
```

```
    print("Data added successfully")
```

OR

(a) Give the **output** for the following:

```
st="CbSe@24@Exam"
```

```
m=""
```

```
for i in range(0, len(st)):
```

```
    if st[i].isupper():
```

```
        m=m+st[i].lower()
```

```
    elif st[i].islower():
```

```
        m=m+st[i].upper()
```

```
    else:
```

```
        if i%2==0:
```

```
            m=m+st[i-1]
```

```
        else:
```

```
            m=m+'#'
```

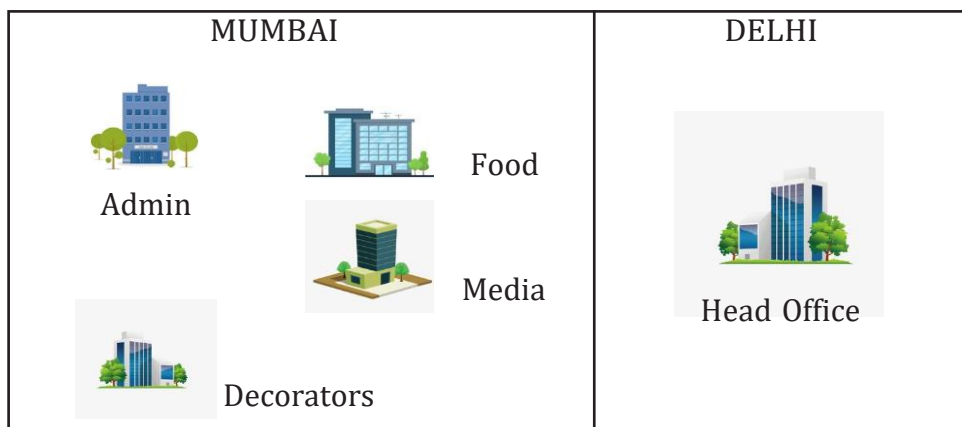
```
print(m)
```

(b) Kabir wants to write a program in python to insert the following record in the table named student in mysql database School:
 rno(roll number) - integer
 name(Name) - string
 DOB(date of birth) - date
 Fee - float

Note the following to establish connectivity between python and mysql.
 user name - root, password - tiger, host - localhost
 The values of fields rno, name, dob and fee has to be accepted from the user. Help Kabir to write the program in python.

32. Fun Media Services Ltd. is an event planning organization. It is planning to set up its campus in Mumbai with its head office in Delhi. The Mumbai campus will have four blocks/buildings - Admin, Decorators, Food and Media.
 You as a network expert need to suggest the best network related solutions for them to resolve the issue/problems mentioned in points (i) to (iv), keeping in mind the distance between various blocks / locations and other given parameters.

5



Distance between various building:

Admin to Decorators	90m
Admin to Media	75m
Admin to Food	50m
Decorators to Food	65m
Decorators to Media	50m
Food to Media	45m
Delhi head office to Mumbai Campus	1475 Km

Number of computers at various buildings:

Building	No. of computers
Admin	110
Decorators	75
Media	12
Food	20

- (i) Draw the cable layout to efficiently connect the computers in various building economically and mention the wired medium for that.
- (ii) Suggest a device / software to be installed in the Mumbai campus to take care of data security.
- (iii) Suggest the most appropriate location of the server inside the Mumbai campus. justify your answer. Also mention the type of network that will be set up so as to connect Mumbai campus with head quarters in Delhi
- (iv) What will you suggest to establish online face to face communication between the people in Admin office of the Mumbai campus and the Delhi Head quarters? Mention the protocol for the above.

33.	<p>(a) Write the function of reader object in CSV file.</p> <p>(b) Write a program in python that defines and calls the following user defined functions.</p> <p>(i) Write() - To input and add data of a student into a CSV file named 'Records.csv'. Each student record consists of a list with elements as roll number, name and aggregate marks respectively.</p> <p>(ii) count() - To count and display the number of student records with aggregate marks more than 75, present in the CSV file named 'Records.csv'.</p> <p style="text-align: center;">OR</p> <p>(a) Why is it important to close a file before exiting?</p> <p>(b) Write a program in python that defines and calls the following user defined functions:</p> <p>(i) courier_ADD() - It takes the value from the user and adds the details to a CSV file 'Courier.csv'. Each record contains a list with field elements as cid, s_name, source, destination to store courier_id, sender name, source and destination address respectively.</p> <p>(ii) courier_SEARCH() - Take the destination as the input and displays all the courier records going to that destination.</p>	5
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Section E

34.	<p>Sandeep creates a table Result with a set of records to maintain the marks secured by students in sem1, sem2, sem3 and their division. After creation of the table, he entered data of students in the table.</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>SID</th> <th>SName</th> <th>Sem1</th> <th>Sem2</th> <th>Sem3</th> <th>Division</th> </tr> </thead> <tbody> <tr><td>101</td><td>Karan</td><td>366</td><td>410</td><td>402</td><td>I</td></tr> <tr><td>102</td><td>Naman</td><td>300</td><td>350</td><td>325</td><td>I</td></tr> <tr><td>103</td><td>Isha</td><td>400</td><td>410</td><td>415</td><td>I</td></tr> <tr><td>104</td><td>Renu</td><td>350</td><td>357</td><td>415</td><td>I</td></tr> <tr><td>105</td><td>Arpit</td><td>100</td><td>75</td><td>178</td><td>IV</td></tr> <tr><td>106</td><td>Sabina</td><td>100</td><td>205</td><td>217</td><td>II</td></tr> <tr><td>107</td><td>Neelam</td><td>470</td><td>450</td><td>471</td><td>I</td></tr> </tbody> </table> <p>Based on the data given above answer the following questions:-</p> <p>(i) Identify the most appropriate column, which can be considered as primary key.</p> <p>(ii) If two columns are added and 2 rows are deleted from the table Result, what will be the new degree and cardinality of above table.</p> <p>(iii) Write atatements to:</p> <p>(a) Increase sem2 marks of the student by 4% where name begins with 'P'.</p> <p>(b) Delete the record of students in IV division.</p> <p style="text-align: center;">OR(option for part (iii) only)</p> <p>(a) Change the column name division to Grade in the table.</p> <p>(b) Arrange the table in ascending order of sem1 mark and then by sem2.</p>	SID	SName	Sem1	Sem2	Sem3	Division	101	Karan	366	410	402	I	102	Naman	300	350	325	I	103	Isha	400	410	415	I	104	Renu	350	357	415	I	105	Arpit	100	75	178	IV	106	Sabina	100	205	217	II	107	Neelam	470	450	471	I	4
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35.	<p>Satya 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.</p> <p>He now has to update a record based on the employeeid entered by the user and update the salary. The updated record is then to be written in the file 'temp.dat'. If the employeeid is not found, an appropriate message should to be displayed.</p> <p>As a python expert, help him to complete the following code based on the requirement given below.</p>	4																																																

```

import pickle
def update_data():
    rec={}
    fin = open("Record.dat","rb")
    fout = open(" _____")----->#1
    found = False
    eid = int(input("Enter the employee id to update:"))
    while True:
        try:
            rec = _____>#2
            if rec["Employeeid"]==eid:
                found = True
                rec["Salary"] = int(input("Enter the new salary:"))
                _____>#3
            else:
                pickle . dump(rec, fout)
        except:
            break
    if _____: ----->#4
        print("The salary of employee id", eid, "has been updated")
    else:
        print("No such employee exists")
    fin.close()
    fout.close()

```

- (i) Write correct statement require to open the temporary file temp.dat(**statement #1**)
- (ii) Which statement should Satya fill in **statement #2** to read data from binary file Record.dat and in **statement #3** to write the updated data?
- (iii) Which statement should Satya fill in **statement #4** so that he can display the proper message.