

BLUEPRINT (XII Computer Science)

UNIT	1 Mark	2 Mark	3 Mark	4 Mark	5 Mark	Total Questions	Total Marks
Computational Thinking & Programming -2	11	03	03	01	02	20	40
SQL & Database Concepts	07	04	02	01	01	15	30
Total	18	07	05	02	03	35	70

Sample Question Paper**Computer Science (083)****Class XII (2023-24)****Maximum Marks: 70 Time Allowed: 3 hours 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 Q35 against part C only.
8. All programming questions are to be answered using Python Language only.

SECTION A		
1.	State True or False "In Python, data types of a variable depends on its value"	(1)
2.	Which of the following datatype in Python supports concatenation? a) int b) float c) bool d) str	(1)
3.	What will be output of the following code: <pre>d1={"Year":2023} d2={"Marks":500} print(d1.update(d2))</pre> a) {'Year': 2023, 'Marks': 500} b) {'Marks': 500, 'Year': 2023} c) {'Year': 2023} d) None	(1)

4.	<p>Consider the given expression: (not True) and False or True Which of the following is the correct value of the expression? a) True b) False c) NONE d) NULL</p>	(1)
5.	<p>Fill in the blank: _____ command is used to add a new column in a table in SQL. a) update b) remove c) alter d) drop</p>	(1)
6.	<p>Which of the following mode in file opening statement generates an error if the file exists? a) a+ b) r+ c) w+ d) None of these</p>	
7.	<p>Select the correct output of the code: a = "Year 2022 at all the best" a = a.split('a') b = a[0] + "-" + a[1] + "-" + a[3] print (b)</p> <p>a) Year . 0. at All the best b) Ye-r 2022 -ll the best c) Year . 022. at All the best d) Year . 0. at all the best</p>	(1)
8.	<p>Which of the following commands will remove all the data from a table in a MYSQL database? a) DELETE b) DROP c) REMOVE d) ALTER</p>	(1)
9.	<p>Which of the following statement(s) would give an error during execution?</p> <pre>S=["CBSE"] # Statement 1 S+="Delhi" # Statement 2 S[0]= '@' # Statement 3 S=S+"Thank you" # Statement 4</pre> <p>a) Statement 1 b) Statement 2 c) Statement 3 d) Statement 4</p>	(1)
10.	<p>Fill in the blank: A candidate key, which is not the primary key of a table, is a/an _____. a) Primary Key b) Foreign Key c) Candidate Key d) Alternate Key</p>	(1)
11.	<p>The method seek() returns: a) an integer b) a file object c) a record d) None</p>	(1)

12.	Select the correct statement, with reference to SQL: a) Aggregate functions ignore NULL b) Aggregate functions consider NULL as zero or False c) Aggregate functions treat NULL as a blank string d) NULL can be written as 'NULL' also.	(1)
13.	A SQL table ITEMS contains the following columns: INO, INAME, QUANTITY, PRICE , DISCOUNT Write the SQL command to remove the column DISCOUNT from the table.	(1)
14.	What will the following expression be evaluated to in Python? $15.0 // 4 * 5 / 3$ a) 6.25 b) 5 c) 5.0 d) 0.25	(1)
15.	Which function is used to display the total number of data values (except NULL) from a column in a table? a) sum() b) total() c) count() d) return()	(1)
16.	In context of Python - Database connectivity, the function fetchone() is a method of which object? a) connection b) database c) cursor d) query	(1)
	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	(1)
17.	Assertion (A):- The number of actual parameters in a function call may not be equal to the number of formal parameters of the function. Reasoning (R):- During a function call, it is optional to pass the values to default parameters.	(1)
18.	Assertion (A): A tuple can be concatenated to a list, but a list cannot be concatenated to a tuple. Reason (R): Lists are mutable and tuples are immutable in Python.	(1)
SECTION B		
19.	Mohini has written a code to input a positive integer and display all its even factors in descending order. Her code is having errors. Rewrite the correct code and underline the corrections made. <pre>n=input("Enter a positive integer: ") for i in range(n): if i%2: if n%i==0: print(i,end=' ')</pre>	(2)

20.	Differentiate between Candidate Key and Primary Key in the context of Relational Database Model.	(2)
21.	(a) Given is a Python string declaration: <pre>myexam="Russia Ukrain"</pre> Write the output of: <code>print(myexam[-2:2:-2])</code> (b) Write the output of the code given below: <pre>d1 = {"name": "Aman", "age": 26} d2 = {27:'age', 'age':28} d1.update(d2) print(d1.values())</pre>	(1) (1)
22.	Explain the use of 'Foreign Key' in a Relational Database Management System. Give an example to support your answer.	(2)
23.	Categorize the following SQL commands into DDL and DML: CREATE, UPDATE, INSERT, DROP	(2)

24.	Predict the output of the Python code given below: <pre>def Alpha(N1,N2): if N1>N2: return N1%N2 else: print(N2%N1) NUM=[10,23,14,54,32] for C in range (4,1,-1): A=NUM[C] B=NUM[C-1] print(Alpha(A,B),'#', end=' ') OR</pre> Predict the output of the Python code given below: <pre>List1 = list("Examination") List2 =list1[1:-1] new_list = [] for i in list2: j=list2.index(i) if j%2==0: list1.remove(i) print(list1)</pre>	(2)
25.	Consider the following two commands with reference to a table, named Students, having a column named Section: (a) <code>Select count(Section) from Students;</code> (b) <code>Select count(*) from Students;</code> If these two commands are producing different results, (i) What may be the possible reason? (ii) Which command (a) or (b) might be giving higher value? OR Name the aggregate functions which work only with numeric values, and those that work with any type of values.	(2)

SECTION C

26.	<p>(a) Consider the following tables – Bank_Account and Branch: Table: Bank_Account</p> <p>A Code Name Type A01 Amrita Savings A02 Parthodas Current A03 Miraben Current</p> <p>Table: Branch A Code City A01 Delhi A02 Mumbai A01 Nagpur</p> <p>What will be the degree and cardinality of the Cartesian product and the Natural join of these tables?</p>	(1)
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	<p>(b) Write the output of the queries (i) to (iv) based on the table TECH_COURSE given below:</p> <p>Table: TECH_COURSE</p> <table><thead><tr><th>CID</th><th>CNAME</th><th>FEES</th><th>STARTDATE</th><th>TID</th></tr></thead><tbody><tr><td>C201</td><td>A nima tion and VFX</td><td>12000</td><td>2022-07-02</td><td>101</td></tr><tr><td>C202</td><td>CADD</td><td>15000</td><td>2021-11-15</td><td>NULL</td></tr><tr><td>C203</td><td>DCA</td><td>10000</td><td>2020-10-01</td><td>102</td></tr><tr><td>C204</td><td>DDTP</td><td>9000</td><td>2021-09-15</td><td>104</td></tr><tr><td>C205</td><td>Mob App Development</td><td>18 000</td><td>2022-11-01</td><td>101</td></tr><tr><td>C206</td><td>Digital marketing</td><td>16000</td><td>2022-07-25</td><td>103</td></tr></tbody></table> <p>(i) <code>SELECT TID FROM TECH_COURSE;</code> (ii) <code>SELECT TID, sum(fees), MIN(FEES) FROM TECH_COURSE GROUP BY TID HAVING COUNT(TID)=1;</code> (iii) <code>SELECT CNAME FROM TECH_COURSE WHERE FEES>15000 and Cname like 'D%';</code> (iv) <code>SELECT MAX(FEES) FROM TECH_COURSE WHERE FEES BETWEEN 15000 AND 17000;</code></p>	CID	CNAME	FEES	STARTDATE	TID	C201	A nima tion and VFX	12000	2022-07-02	101	C202	CADD	15000	2021-11-15	NULL	C203	DCA	10000	2020-10-01	102	C204	DDTP	9000	2021-09-15	104	C205	Mob App Development	18 000	2022-11-01	101	C206	Digital marketing	16000	2022-07-25	103	(2)
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27.

Write a method `SHOWLINES()` in Python to read lines from text file 'TESTFILE.TXT' and display the lines which do not contain 'ke'.

(3)

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 `SHOWLINES()` function should display the output as:

We all pray for everyone's safety.

OR

Write a function `RainCount()` in Python, which should read the content of a text file "TESTFILE.TXT" and then count and display the count of occurrence of word RAIN (case-insensitive).

Example: If the file content is as follows:

It rained yesterday.
It might rain today.
I wish it rains tomorrow too.
I love Rain.

The `RainCount()` function should display the output as: Rain - 2

www.pythontforall.com

28.	<p>(a) Write the outputs of the SQL queries (i) to (iv) based on the relations Teacher and Placement given below:</p> <p>Table : Teacher</p> <table border="1"> <thead> <tr> <th>T_ID</th> <th>Name</th> <th>Age</th> <th>Department</th> <th>Date_of_join</th> <th>Salary</th> <th>Gender</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Arunan</td> <td>34</td> <td>Computer Sc</td> <td>2019-01-10</td> <td>12000</td> <td>M</td> </tr> <tr> <td>2</td> <td>Saman</td> <td>31</td> <td>History</td> <td>2017-03-24</td> <td>20000</td> <td>F</td> </tr> <tr> <td>3</td> <td>Randeep</td> <td>32</td> <td>Mathematics</td> <td>2020-12-12</td> <td>30000</td> <td>M</td> </tr> <tr> <td>4</td> <td>Samira</td> <td>35</td> <td>History</td> <td>2018-07-01</td> <td>40000</td> <td>F</td> </tr> <tr> <td>5</td> <td>Raman</td> <td>42</td> <td>Mathematics</td> <td>2021-09-05</td> <td>25000</td> <td>M</td> </tr> <tr> <td>6</td> <td>Shyam</td> <td>50</td> <td>History</td> <td>2019-06-27</td> <td>30000</td> <td>M</td> </tr> <tr> <td>7</td> <td>Shiv</td> <td>44</td> <td>Computer Sc</td> <td>2019-02-25</td> <td>21000</td> <td>M</td> </tr> <tr> <td>8</td> <td>Shalakra</td> <td>33</td> <td>Mathematics</td> <td>2018-07-31</td> <td>20000</td> <td>F</td> </tr> </tbody> </table> <p>Table : Placement</p> <table border="1"> <thead> <tr> <th>P_ID</th> <th>Department</th> <th>Place</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>History</td> <td>Ahmedabad</td> </tr> <tr> <td>2</td> <td>Mathematics</td> <td>Jaipur</td> </tr> <tr> <td>3</td> <td>Computer Sc</td> <td>Nagpur</td> </tr> </tbody> </table> <p>(i) <code>SELECT Department, max(salary) FROM Teacher GROUP BY Department;</code></p> <p>(ii) <code>SELECT MAX(Date_of_Join),MIN(Date_of_Join) FROM Teacher;</code></p> <p>(iii) <code>SELECT Name, Salary, T.Department, Place FROM Teacher T, Placement P WHERE T.Department = P.Department AND P.Department='History';</code></p> <p>(iv) <code>SELECT Name, Place FROM Teacher T, Placement P WHERE Gender='F' AND T.Department=P.Department;</code></p> <p>(b) Write the command to view all the databases in an RDBMS.</p>	T_ID	Name	Age	Department	Date_of_join	Salary	Gender	1	Arunan	34	Computer Sc	2019-01-10	12000	M	2	Saman	31	History	2017-03-24	20000	F	3	Randeep	32	Mathematics	2020-12-12	30000	M	4	Samira	35	History	2018-07-01	40000	F	5	Raman	42	Mathematics	2021-09-05	25000	M	6	Shyam	50	History	2019-06-27	30000	M	7	Shiv	44	Computer Sc	2019-02-25	21000	M	8	Shalakra	33	Mathematics	2018-07-31	20000	F	P_ID	Department	Place	1	History	Ahmedabad	2	Mathematics	Jaipur	3	Computer Sc	Nagpur	(3)
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29.	<p>Write a function <code>INDEX_LIST(S)</code>, where <code>S</code> is a string. The function returns a list named 'indexList' that stores the indices of all vowels of <code>S</code>.</p> <p>For example: If <code>S</code> is "Computer", then indexList will have - [1,4,6]</p>	(3)																																																																											
30.	<p>A list contains following record of a doctor: [Doc_ID, Doc_name, Phone_number, Speciality]</p> <p>Write the following user defined functions to perform given operations on the stack named "status":</p> <p>(i) <code>Push_element()</code> - To Push an object containing Doc_ID and Doc_name and of doctors who specialize in Anesthesia to the stack.</p> <p>(ii) <code>Pop_element()</code> - To Pop the objects from the stack and display them. Also, display "Stack Empty" when there are no elements in the stack.</p>	(3)																																																																											

For example: If the lists of Doctors' details are:

```
["D01", "Gurdas", "9999999999", "Anesthesia"]  
["D02", "Julee", "8888888888", "cardiology"]  
["D03", "Murugan", "7777777777", "Anesthesia"]  
["D04", "Ashmit", "1010101010", "Medicine"]
```

The stack should contain

```
["D01", "Gurdas"]  
["D03", "Murugan"]
```

The output should be:

```
["D01", "Gurdas"]  
["D03", "Murugan"]  
Stack Empty
```

OR

Write a function in Python, Push(KItem), where SItem is a dictionary containing the details of Kitchen items– {Item:price}.

The function should push the names of those items in the stack which have price less than 100. Also display the average price of elements pushed into the stack.

For example: If the dictionary contains the following data:

```
Kitem={"Spoons":116, "Knife":50, "Plates":180, "Glass":60}
```

The stack should contain

```
Knife  
Glass
```

The output should be:

```
The average price of items is 55
```

SECTION D

	<p>(a) Give any one point of difference between a binary file and a csv file. (b) Write a Program in Python that defines and calls the following user defined functions:</p> <p>(i) ADD() – To accept and add data of an item to a binary file 'furniture.dat'. Each record of the file is a list [Fur_id, Description, Price, and Discount]. Fur_Id and Description are of str type, Price is of int type, and Discount is of float type.</p> <p>(ii) COUNTR() – To count the number of records present in 'furniture.dat' whose price is less than 5000.</p> <p>OR</p> <p>(a) What is the advantage of using a csv file for permanent storage? (b) Write a Program in Python that defines and calls the following user defined functions:</p> <p>(i) ADD() – To accept and add data of an item to a CSV file 'furniture.csv'. Each record consists of Fur_id, Description, Price, and Discount.</p> <p>(ii) COUNTR() – To count the number of records present in 'furniture.csv' whose price is less than 5000.</p>	(5)																																																																											
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33.	<p>(a) Write the output of the code given below: (2)</p> <pre>p=8 def sum(q, r=5): global p p=(r+q)**2 print(p, end= '#') a=2; b=5; sum(b, a) sum(r=3, q=2)</pre> <p>(b) The code given below accepts the roll number of a student and increases the marks of that student by 5 in the table Student. The structure of a record of table Student is: (3)</p> <p>RollNo – integer; Name – string; Clas – integer; Marks – integer</p> <p>Note the following to establish connectivity between Python and MySQL:</p> <ul style="list-style-type: none">· Username is root· Password is abc· The table exists in a MySQL database named school. <p>Write the following missing statements to complete the code: Statement 1 – to open/activate the school database. Statement 2 – to execute the command that updates the record in the table Student. Statement 3- to make the updation in the database permanent</p>	
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```

import mysql.connector as mysql def sql_data():
con1=mysql.connect(host="localhost",user="root"
, password="abc")
mycursor= con1.cursor()
_____ #Statement 1
rno=int(input("Enter Roll Number :: "))
name=input("Enter name :: ")
querry="update student set marks=marks+5
where RollNo={}".format(rno)
_____ #Statement 2
_____ # Statement 3
print("Data updated successfully")

```

OR

(a) Predict the output of the code given below:

```

s="3 & Four"
n = len(s)
m=""
for i in range(0, n):
    if (s[i] >= 'A' and s[i] <= 'Z'):
        m = m +s[i].upper()
    elif (s[i] >= 'a' and s[i] <= 'z'):
        m = m +s[i-1]
    if (s[i].isdigit()):
        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 abc
- 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 create 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)

```

SECTION E

34. Tushar is a Python programmer. He has written a code and created a binary file record.dat with employee id, ename and salary. The file contains 10 records. (4)

He now has to delete a record based on the employee id entered by the user. For this purpose, he creates a temporary file, named temp.dat, to store all the records other than the record to be deleted. 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 (by completing statements 1, 2, 3, and 4) based on the requirement given above:

- (i) Which module should be imported in the program? (#Statement 1)
- (ii) Write the correct statement required to open a temporary file named temp.dat. (Statement 2)
- (iii) Which statement should Aman fill in Statement 3 to read the data from the binary file, record.dat
- (iv) What should be written in Statement 4 to write the required records in the file temp.dat?

```
import _____ #Statement 1
def update_data():
    rec={}
    fin=open("record.dat","rb")
    fout=open("_____") #Statement 2
    found=False
    eid=int(input("Enter employee id: "))
    while True:
        try:
            rec=_____ #Statement 3
            if rec["Employee id"]==eid:
                found=True
            else:
                _____ #Statement 4
        except:
            break
    if found==True:
        print("Record deleted.")
    else:
        print("Employee with such id is not found")
    fin.close()
    fout.close()
```

35. Navdeep 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 has entered data of 7 students in the table.

ROLL_NO 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

Based on the data given above answer the following questions:

(i) Can Name be a candidate key of the table? Justify your answer. (ii) If a column is added and 3 rows are deleted from the table result, what will be the new degree and cardinality of the above table?

(iii) Write the statements to:

a) Insert the following record into the table

Roll_No- 108, Name- Aadit, Sem1- 470, Sem2-444, Sem3-475, Div- I. b) Increase the SEM2 marks of the students by 3% whose Name ends with 'A'.

OR (Option for part iii only)

(iii) Write the statements to:

a) Delete the record of students securing IV division.

b) Add a column RESULT, of type varchar with 50 characters.