

**Sample Paper 04**  
**Computer Science (083)**  
**CLASS XII 2024-25**

**Time: 3 Hours**

**Max. Marks: 70**

**General Instructions:**

1. This question paper contains 37 questions.
  2. All questions are compulsory. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions
  3. The paper is divided into 5 Sections- A, B, C, D and E.
  4. Section A consists of 21 questions (1 to 21). Each question carries 1 Mark.
  5. Section B consists of 7 questions (22 to 28). Each question carries 2 Marks.
  6. Section C consists of 3 questions (29 to 31). Each question carries 3 Marks.
  7. Section D consists of 4 questions (32 to 35). Each question carries 4 Marks.
  8. Section E consists of 2 questions (36 to 37). Each question carries 5 Marks.
  9. All programming questions are to be answered using Python Language only.
  10. In case of MCQ, text of the correct answer should also be written.
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**SECTION A**

1. State True or False  
“The method that can be used to delete a range of values from a list is del”.
2. Given L= [2,3,4,5,6]. The output of print(L[-1:-5]) is  
(a) [6,5,4] (b) Error  
(c) [ ] (d) [6,5]
3. What are the rows of a relation called?  
(a) relation (b) tuples  
(c) data structure (d) an entity
4. If a table carries 10 columns and 15 rows, what is its degree?  
(a) 10 (b) 150  
(c) 15 (d) 25
5. Which function returns True if all characters in a string are digits?  
(a) isalnum() (b) isdigit()  
(c) isnumber() (d) isalpha()

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6. What will be the output of the following code snippet?

```
message = "Computer Science"  
print(message[:8:-2])
```

7. The seek(n) places the file pointer at position n with reference to

- (a) Beginning (b) End  
(c) Current position (d) Position 10

8. For the tuple t = (2, 5, 1, 6, 3), what will be the result of executing t.sort()?

- (a) (1,2,3,5,6) (b) (6,5,3,2,1)  
(c) Error (d) None of these

9. t1=(9, 6, 7, 6)

t2=(2.8, 12, 20)

The output of the statement below is

```
print( min(t1) + max(t2) )
```

- (a) 26 (b) 25  
(c) Error (d) None of these

10. Identify the missing code to complete this snippet:

```
file = open("myfile.txt", "a")  
file.write("Appending new content")  
file.seek(0)  
print(file.read())  
file.close()
```

11. State whether the following statement is True or False:

The `try` block in Python can exist without an accompanying `except` block.

12. The ceil() function is part of which module?

- (a) pandas (b) pyplot  
(c) random (d) math

13. Which command is used to view a list of all databases in the system?

- (a) Show (b) Show databases  
(c) Display databases (d) View databases

14. Which among the following are constraints ?

- (a) Primary key (b) Unique  
(c) NOT NULL (d) All of these

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15. in and not in are.....Operators.
- (a) Arithmetic (b) Membership  
(c) Logical (d) Identity
16. Modulation and demodulation are performed by which device?
- (a) microwave (b) satellite  
(c) modem (d) gateway
17. A set of possible data values is called
- (a) attribute (b) degree  
(c) tuple (d) domain
18. The.....attribute of the connection string specifies the password to connect to the database.
- (a) code (b) password  
(c) passwd (d) All of these
19. Which character must be added to the mode when opening a binary file?
- (a) b (b) x  
(c) u (d) b\*

**Directions (Q.Nos. 20-21) are Assertion and Reason based questions.**

20. **Assertion (A)** : A function with 3 formal parameters must be called with 3 actual parameters.  
**Reason (R)** : Since, all the formal parameters are used to produce the output from the function , the function expects the same number of parameters from the function call.
- (a) Both A and R are true and R is the correct explanation of A.  
(b) Both A and R are true but R is not the correct explanation of A.  
(c) A is true but R is false.  
(d) A is false but R is true.
21. **Assertion (A)** : A binary file uses the dump() function to write data into it.  
**Reason (R)** : The load() function reads data from a binary file.
- (a) Both A and R are true and R is the correct explanation of A.  
(b) Both A and R are true but R is not the correct explanation of A.  
(c) A is True but R is false.  
(d) A is false but R is true.

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## SECTION B

22. What will be the output of following code ?

```
L = [15, 25, 45, 55]
L.append(65)
L.insert(2, 35)
L.sort()
print(L)
```

23. Find outputs of following code.

```
(a) L = [200, 25, [15, 35, 55], 150]
    L1 = [14, 25, 27]
    L.extend(L1)
    print(L[2][1])
    print(L)

(b) t1 = (8, 5, 3, 15)
    t2 = (20, 14, 18)
    print(t1 + t2)
    print(t1 * 3)
    print(t2 - t1)
```

24. List two advantages and two disadvantages of bus topology.

**or**

Which part of TCP/IP is responsible for dividing a file or message into very small parts, at the source computer? Also, define, TCP/IP.

25. Explain the concept of a primary key, and provide an example of a primary key from a table with meaningful data.

26. (a) Write the full forms of

- (i) LAN
- (ii) XML

(b) What was the role of ARPANET in the computer network?

27. What will be the output of the following code, when executed?

```
d = {'Name': 'Sita', 'Subjects': ['Math', 'Biology', 'History'], 'Marks': [85, 92, 76]}
print(d['Subjects'])
print(d['Subjects'][1])
```

**or**

What will be the output of the following code, when executed?

```
tupnames=("India", "Australia",
         ("UK", "Nepal"), "Bangladesh")
```

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```
print (tupnames[5 : ])
print (tupnames[2][1])
```

28. List the major components of a database system.

or

What is a join? What are the different types of joins?

## SECTION C

29. Suppose a STACK is allocated 6 memory locations and starts as empty (Top = 0). Provide the output of the following program segment:

```
AAA = 5
BBB = 8
Push (STACK, AAA)
Push (STACK, 3)
Push (STACK, BBB + 1)
Push (STACK, AAA + BBB)
Push (STACK, 12)
while (Top > 0):
    Element = STACK.Pop()
    print (Element)
```

or

Consider the following operations are done on a stack. What will be the final status of the stack after all the operations are performed.

- (a) Push(True)
  - (b) Push(False)
  - (c) Push(10)
  - (d) Pop()
  - (e) Push(50)
  - (f) Push(70)
  - (g) Pop()
  - (h) Pop()
30. Write a program to accept a filename and a position. Using the inputs, call a function SearchFile(Fname, pos) to read the contents of the file from the position to the end. Now, display all those words that start with “U” or “u”.

or

Write a program to search a Employee record according to Id from the “emp.txt” file. The “emp.txt” file contains Id, Name and Salary fields. Assume that first field of the employee records (between Id and Name) is separated with a comma(,).

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31. The code given below opens a binary file and writes records of customer's roomid, Name and days of stay . Some of the codes are missing .Write codes to fill up the blanks :

```
import.....      # Blank1
hotellst=[]
cname=""
days=0.0
roomid=0
ans='y'
f=open("hotel.dat", "wb")
print("Welcome to my Hotel ")
while ans=='y':
    roomid=input("Enter RoomId :")
    cname=input("Enter Customer name
                :")
    days=float(input("Enter days of
                    stay :"))
    hotellst=[....., ....., .....]
    # Blank2 To create the record to
    be written .....# Blank3 To
    write the data to the binary file.
    ans=input("Continue (y/n)")
f.close()
```

- (i) Write the missing code for Blank1.  
(ii) Write the missing code for Blank2.  
(iii) Write the missing code for Blank3.

or

Write a user defined function change(L) to accept a list of numbers and replace the number in the list with its factorial.

**Example :**

Input : [3,4,5,6,7]

Output: [6, 24, 120, 720, 5040]

## SECTION D

32. (a) The code given below will give an error on execution. Identify the type of the error and modify the code to handle such type of an error.

```
x = int(input("Enter the value of
              x : "))
y = int(input("Enter the value of
              y : "))
z = x/y
print ("The value of z : ", z)
```

- (b) Note the following to establish the connection between Python and MySQL:

A resultset is extracted from the database using the cursor object (that has been already created) by giving the following statement.

```
Mydata=cursor.fetchone( )
```

- (i) How many records will be returned by fetchone() method?  
(ii) What will be the datatype of Mydata object after the given command is executed?

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or

(a) Predict the output :

```
str = "Python Program"
def sStringoutput(str):
    print(str[3:5])
    print(str[-10])
    print(str[5:])
    print(str[-28])
```

(b) Define fetchmany([size]). How does fetchone() method differ from fetchall() method?

33. (a) Consider the tables Student and House given below. What will be the output of the statement given?

Table: Student			
Rno	Sname	Class	Hcode
1	Raj	12ScA	C1
2	Shekhar	11ComC	C2
3	Ravi	12HumB	C2
4	Jaisnav	12ScB	C3

Table: House	
H code	L name
C1	East
C2	West
C3	South
C4	North

```
SELECT S.Sname , H.Lname FROM Student S, House H WHERE S.Hcode = H.Hcode AND SName LIKE "R%";
```

(b) Consider the following table STORE and answer the questions

TABLE: STORE					
Item No	Item	S code	Qty	Rate	Last Buy
2005	Sharpener Classic	23	60	8	31-JUN-09
2003	Balls	22	50	25	01-FEB-10
2002	Gel Pen Premium	21	150	12	24-FEB-10
2006	Gel Pen Classic	21	250	20	11-MAR-09
2001	Eraser Small	22	220	6	19-JAN-09
2004	Eraser Big	22	110	8	02-DEC-09
2009	Ball Pen 0.5	21	180	18	03-NOV-09

Write SQL commands for the following statements:

- (i) To display details of all the items in the STORE table in ascending order of LastBuy.
- (ii) To display ItemNo and Item name of those items from STORE table, whose Rate is more than ₹15.
- (iii) To display the details of those items whose Supplier code (Scode) is 22 or Quantity in Store (Qty) is more than 110 from the table STORE.



34. Granuda consultants are setting up a secured network for their office campus at Faridabad for their day-to-day office and web based activities. They are planning to have connectivity between 3 buildings and the head office situated in Kolkata.

Answer the questions (i) to (v) after going through the building positions in the campus and other details, which are given below:

**Distance between various buildings**

Building RAVI to Building JAMUNA	120 m
Building RAVI to Building GANGA	50 m
Building GANGA to Building JAMUNA	65 m
Faridabad Campus to Head Office	1460 km

**Number of computers**

Building RAVI	25
Building JAMUNA	150
Building GANGA	51
Head Office	10

- (i) Suggest the most suitable place (i.e. block) to house the server of this organisation. Also, give a reason to justify your suggested location.
- (ii) Suggest a cable layout of connections between the building inside the campus.
- (iii) Suggest the placement of the following devices with justification:
- Switch
  - Repeater
- (iv) The organisation is planning to provide a high speed link with its head office situated in the Kolkata using a wired connection. Which of the following cable will be most suitable for this job?
- Optical fibre
  - Co-axial cable
  - Ethernet cable

**or**

- (v) Consultancy is planning to connect its office in Faridabad which is more than 10 km from Head office. Which type of network will be formed?

35. Consider the following tables GARMENT and FABRIC. Write SQL commands for the statements (i) to (iv).

TABLE: GARMENT				
GCODE	DESCRIPTION	PRICE	FCODE	READY-DATE
10023	PENCIL SKIRT	1150	F03	19-DEC-08
10001	FORMAL SHIRT	1250	F01	12-JAN-08
10012	INFORMAL SHIRT	1550	F02	06-JUN-08
10024	BABY TOP	750	F03	07-APR-07
10090	TULIP SKIRT	850	F02	31-MAR-07
10019	EVENING GOWN	850	F03	06-JUN-08
10009	INFORMAL PANT	1500	F02	20-OCT-08

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10007	FORMAL PANT	1350	F01	09-MAR-08
10020	FROCK	850	F04	09-SEP-07
10089	SLACKS	750	F03	20-OCT-08

TABLE: FABRIC	
FCODE	TYPE
F04	POLYSTER
F02	COTTON
F03	SILK
F01	TERELENE

- (i) To display GCODE and DESCRIPTION of each GARMENT in descending order of GCODE.
- (ii) To display the details of all the GARMENTs, which have READYDATE in between 08-DEC-07 and 16-JUN-08 (inclusive of both the dates).
- (iii) To display the average PRICE of all the GARMENTs. Which are made up of FABRIC with FCODE as F03.
- (iv) To display FABRIC wise highest and lowest price of GARMENTs from GARMENT table. (Display FCODE of each GARMENT along with highest and lowest price.)

## SECTION E

36. What are the advantages of CSV files?

Write a Python program that includes the following functions to work with a file named “teacher.csv,” which contains columns for city, teacher name, and salary amount.

(a) Search() : Search and print all rows where city is “delhi”.

Sample “teacher.csv” :

City	Teacher Name	Salamount
Delhi,	Anil Sharma,	10000
Pune,	Mr Dua,	20000
Delhi,	Mr Das,	25000

(b) Searchfromfile() : From the file “teacher.csv” print all rows where teacher name is “Anil”.

or

What are the Disadvantages of CSV files?

Write a program using functions :

(a) addTransaction() : To append bank transactions of following structure to “bank.csv”

TranlD      TranDate      Amount      Type

(b) getTran() : To display those transactions whose type is “Deposit”.

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37. Consider the following “Student” table:

<b>Table : Student</b>				
<b>Adm No</b>	<b>Roll No</b>	<b>Name</b>	<b>Class</b>	<b>Marks</b>
2715	1	Ram	12	90
2816	2	Shyam	11	95
2404	3	Ajay	10	92
2917	4	Tarun	12	94

- (i) Can the “Class” column be used as the primary key of the table?
- (ii) What is the cardinality of the table?
- (iii) Write statements to :
- (a) Display the average Marks .
  - (b) Display the different Classes .

or

**(Option for part (iii) only)**

Write statements to :

- (a) Change the data type of Marks column so that it can take fractional values upto 2 decimals .
- (b) Increase width of Name column to varchar(50).

END

