

**Sample Paper 03**  
**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  
“Lists and dictionaries are mutable.”
  
2. What is the default value of the host parameter?  
(a) host (b) localhost  
(c) globalhost (d) None of these
  
3. Observe the following tuples and choose the correct option  
t1=(4, 7, 8, 9)  
t2=(0, 4, 3)  
>>>t=t1+t2  
>>>print(t)  
(a) (4, 7, 8, 9, 0, 4, 3) (b) (4, 7, 8, 9, 4, 7, 8, 9)  
(b) (4, 7, 8, 9) (d) None of these
  
4. Which of the following SQL commands displays the structure of a table?  
(a) ALTER (b) STRUCTURE  
(c) DESCRIBE (d) SHOW DATA

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5. Which of the following is the correct output for the execution of the following Python statement?

```
print (5+3**2/2)
```

- (a) 32 (b) 8.0  
(c) 9.5 (d) 32.0

6. Which type of path does not begin with a leading forward slash?

- (a) Relative (b) Absolute  
(c) Both (a) and (b) (d) None of these

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

```
text = "Artificial Intelligence"  
print (text[3:15:4])
```

8. Which command is used to add a primary key to a table after it has already been created?

- (a) MODIFY (b) ADD PRIMARY  
(c) ALTER (d) ADD KEY

9. Which clause is used to retrieve unique values from a field in a table?

- (a) MAX (b) UNIQUE  
(c) DISTINCT (d) None of these

10. Fill in the blank to complete the following code:

```
file = open("data.txt", "w")  
file.write("Learning file handling in Python.")  
file.close()
```

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

If there is no `except` block to handle an exception, Python will raise an error and stop execution.

12. \_\_\_\_\_ is an attribute that makes a link between two tables to fetch corresponding data.

- (a) Primary key (b) Secondary key  
(c) Foreign key (d) Composite key

13. Assume that the position of the file pointer is at the beginning of 3rd line in a text file. Which of the following option can be used to read all the remaining lines?

- (a) myfile.read(n-3) (b) myfile.read(n)  
(c) myfile.readline( ) (d) myfile.readlines( )

14. Which protocol is used for uploading and downloading files over a network?

- (a) SMTP (b) FTP  
(c) PPP (d) VoIP

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15. 

```
sub = "PYTHON"
for i in sub:
    print (i, ' ', end = " ")
```
- (a) PYTHON (b) P  
Y  
T  
H  
O  
N
- (c) None (d) P, Y, T, H, O, N
16. In complex number  $a + ib$ ,  $b$  represents as
- (a) real part (b) imaginary part  
(c) special part (d) None of these
17. Given an object `obj1 = (15, 25, 35, 45, 55, 65, 75, 85, 95)`, what will be the output of `print(obj1[3:7:2])`?
- (a) (45,55,65,75,85) (b) (45,55,65,75)  
(c) (45,55,65) (d) (45,65)
18. Which of the following function returns the total number of values?
- (a) MAX (b) MIN  
(c) COUNT (d) SUM
19. Which of the following is the correct output for the following execution ?
- ```
print (print ("Biscope"))
```
- (a) Biscope None (b) None  
(c) Biscope (d) Error

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

20. **Assertion (A)** : A Python function that accepts parameters can be called without any parameters.  
**Reason (R)** : Functions can carry default values that are used, whenever values are not received from calling function.
- (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 CSV file is by default delimited by comma(,), but the delimiter character can be changed.  
**Reason (R)** : The `writerow()` function for CSV files has a "delimiter" parameter that can be used to specify the delimiter to be used for a CSV 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.

## SECTION - B

22. What is the output of the following Python statement?

```
L = [10, 20, 30, 40, 50]
L = L + 5
print(L)
```

23. (a) What will be the output of the following Python code?

```
L = [10, 20]
L1 = [30, 40]
L2 = [50, 60]
L.append(L1)
L.extend(L2)
print(L)
```

(b) Find the output

```
>>> l1 = [1, 2, 3, 4]
>>> l2 = [1, 2, 3, 4]
>>> l1 > l2
```

24. Write any two disadvantages of star topology.

or

Why is a switch called an intelligent hub?

25. Mention the various advantages of using a DBMS.

26. (a) Write the full forms of the following

- (i) WAN
- (ii) GSM

(b) Write down the expansion of Modem. Also, write its role in a network.

27. What is the output of the following code?

```
x = (1, 2, 3)
y = (3, 4)
t = x + y
print(t)
```

or

Observe the following tuple and answer the questions that follow:

```
t1 = (70, 56, 'Hello', 22, 2, 'Hi', 'The', 'World', 3)
```

- (i) `t1[2 : 4]`
- (ii) `t1[- 6]`

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28. If relation R1 has 8 rows and 5 columns, what is its cardinality?  
If 5 more rows are added, what will be the degree of the table?

or

Identify commands/functions for the following actions

- (i) To display only records of Trains from the Train table whose starting station is “NDLS”. (Column for starting station is “Start”, table name is “Train”)
- (ii) To get the average of percentage of students (Table name : “Student” , Percentage column : “Perc”).

## SECTION - C

29. Write a Python program that read the data from file ‘original.dat’ and delete the line(s) having word (passed as an argument). Then write these data after removing lines into file ‘duplicate.dat’.

or

Write a program in Python to open a text file “lines.txt” and display all those words whose length is greater than 5.

30. Consider the following stack of characters, where STACK is allocated N = 8 memory cells.

STACK : A, C, D, F, K,.....

Describe the STACK at the end of the following operations. Here, Pop and Push are algorithms for deleting and adding an element to the stack.

- (i) Pop (STACK, ITEM)
- (ii) Pop (STACK, ITEM)
- (iii) Push (STACK, L)
- (iv) Push (STACK, P)
- (v) Pop (STACK, ITEM)
- (vi) Push (STACK, R)

or

Consider the following sequence of numbers:

1, 2, 3, 4

These are supposed to be operated through a stack to produce the following sequence of numbers:

2, 1, 4, 3

List the Push and Pop operations to get the required output.

31. Given below is a table Item in database Inventory.

| Item ID | Item Name | Quantity | UnitPrice |
|---------|-----------|----------|-----------|
| 101     | ABC       | 5        | 120       |
| 102     | XYZ       | 7        | 70        |
| 103     | PQR       | 8        | 65        |
| 104     | XYZ       | 12       | 55        |

Riya created this table but forget to add column ManufacturingDate. Can she add this column after creation of table? If yes, write the code where user’s name and password are system and test respectively.

Note the following to establish the connection between Python and MySQL:

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Host : localhost  
 Username : system  
 Password : test  
 Database : Inventory

or

Consider the following table structure

**Table: Faculty**

F\_ID (P)  
 Fname  
 Lname  
 Hire\_date  
 Salary

Write the Python code to create the above table.

**Consider :**

host : localhost  
 UserName : root  
 Password : system  
 Database :School

## SECTION - D

32. What do you mean by file? What do you mean by file handling?

Write a program code in python to perform the following using two functions as follows :

- (a) addBook( ) : to write to a csv file “book.csv” file book no, book name and no of pages with separator as tab.  
 (b) countRecords( ) : To count and display the total number of records in the “book.csv” file

or

Explain open( ) function with its syntax.

Write python code to perform the following using two user defined functions.

- (a) showData( ) : To display only roll no and student name of the file “student.csv”

|         |         |       |
|---------|---------|-------|
| RollNo, | Name,   | Marks |
| 1,      | Nilesh, | 65    |
| 2,      | Akshay, | 75    |

- (b) showSelect( ) : To display only roll number and marks of the students from the csv file “student.csv”

33. (a) Consider the tables CITY and LOCATION given below.

| Table : CITY   |           |             |
|----------------|-----------|-------------|
| Field Name     | Data Type | Remarks     |
| CITYCODE       | CHAR(5)   | Primary Key |
| CITYNAME       | CHAR(30)  |             |
| SIZE           | INTEGER   |             |
| AVGTEMP        | INTEGER   |             |
| POPULATIONRATE | INTEGER   |             |
| POPULATION     | INTEGER   |             |

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| Table: Location |       |
|-----------------|-------|
| Citycode        | Lname |
| C1              | East  |
| C2              | West  |
| C3              | South |
| C4              | North |

Write a command to display the Cityname and corresponding Location name (Lname), where the average temperature is greater than 35 from the tables.

(b) Write outputs for the SQL commands (i) to (iv) based on the table CUSTOMER given below:

| TABLE: CUSTOMER |                 |        |     |       |
|-----------------|-----------------|--------|-----|-------|
| CID             | CNAME           | GENDER | SID | AREA  |
| 1001            | R SHARMA        | FEMALE | 101 | NORTH |
| 1002            | M R TIWARY      | MALE   | 102 | SOUTH |
| 1003            | M K KHAN        | MALE   | 103 | EAST  |
| 1004            | A K SINGH       | MALE   | 102 | EAST  |
| 1005            | S SEN           | FEMALE | 101 | WEST  |
| 1006            | R DUBEY         | MALE   | 104 | NORTH |
| 1007            | M AGARWAL       | FEMALE | 104 | NORTH |
| 1008            | S DAS           | FEMALE | 103 | SOUTH |
| 1009            | R K PATIL       | MALE   | 102 | NORTH |
| 1010            | N KRISHNA MURTY | MALE   | 102 | SOUTH |

- (i) SELECT COUNT (\*), GENDER FROM CUSTOMER GROUP BY GENDER;
- (ii) SELECT CNAME FROM CUSTOMER WHERE CNAME LIKE 'L%';
- (iii) SELECT DISTINCT AREA FROM CUSTOMER;
- (iv) SE.LECT'COUNT (\*) FROM CUSTOMER WHERE GENDER="MALE";

34. Answer the questions (i) to (iv) on the basis of the following tables SHOPPE and ACCESSORIES.

| TABLE: SHOPPE |                    |             |
|---------------|--------------------|-------------|
| Id            | S Name             | Area        |
| S001          | ABC Computeronics  | CP          |
| S002          | All Infotech Media | GK II       |
| S003          | Tech Shoppe        | CP          |
| S004          | Geeks Tecno Soft   | Nehru Place |
| S005          | Hitech Tech Store  | Nehru Place |

| TABLE: ACCESSORIES |              |       |     |
|--------------------|--------------|-------|-----|
| No                 | Name         | Price | Id  |
| A01                | Mother Board | 12000 | S01 |
| A02                | Hard Disk    | 5000  | S01 |

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|     |              |       |     |
|-----|--------------|-------|-----|
| A03 | Keyboard     | 500   | S02 |
| A04 | Mouse        | 300   | S01 |
| A05 | Mother Board | 13000 | S02 |
| A06 | Keyboard     | 400   | S03 |
| A07 | LCD          | 6000  | S04 |
| T08 | LCD          | 5500  | S05 |
| T09 | Mouse        | 350   | S05 |
| T10 | Hard Disk    | 4500  | S03 |

- To display Name and Price of all the ACCESSORIES in ascending order of their Price.
- To display Id and SName of all SHOPPE located in Nehru Place.
- To display Minimum and Maximum Price of each Name of ACCESSORIES.
- To display Name, Price of all ACCESSORIES and their respective SName, where they are available.

35. Write a userdefined function parser(L) that accepts a list as parameter and creates another two lists storing the numbers from the original list , that are even and numbers that are odd.

## SECTION-E

36. Consider the following table STORE and answer the questions:

| TABLE: STORE |                   |       |     |      |           |
|--------------|-------------------|-------|-----|------|-----------|
| ItemNo       | Item              | Scode | Qty | Rate | LastBuy   |
| 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 |

- What is the degree of the table?
- Write the syntax of the SQL command to change data of the table.
- Write statements to :
  - Display the number of distinct Scodes.
  - Display the maximum and minimum quantities.
 (Option for part (iii) only)  
 Write statements to :
  - Display the structure of the STORE table.
  - Add a new column Location varchar(50) in the table to store the location details of the items.

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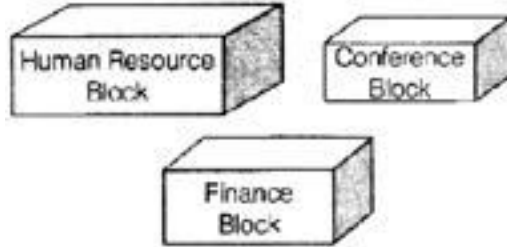
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37. Trine Tech Corporation (TTC) is a professional consultancy company. The company is planning to set up their new offices in India with its hub at Hyderabad. As a network adviser, you have to understand their requirement and suggest them the best available solutions. Their queries are mentioned as (i) to (v) below.

**Physical locations of the blocks of TTC**



**Block to block distance (In m)**

| Block (From)   | Block (To) | Distance |
|----------------|------------|----------|
| Human Resource | Conference | 110      |
| Human Resource | Finance    | 40       |
| Conference     | Finance    | 80       |

Expected number of computers to be in each block

| Block          | Computers |
|----------------|-----------|
| Human Resource | 25        |
| Finance        | 120       |
| Conference     | 90        |

- (i) Which will be the most appropriate block, where TTC should plan to install their server?
- (ii) Draw a block to block cable layout to connect all the buildings in the most appropriate manner for efficient communication.
- (iii) Suggest a suitable topology to connect the computers in each building.
- (iv) Which of the following device will be suggested by you to connect each computer in each of the buildings?
  - (a) Switch/Hub
  - (b) Modem
  - (c) Gateway
- (v) Company is planning to connect its offices in Hyderabad which is less than 1 km. Which type of network will be formed?

END

