

**Sample Paper 07**  
**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  
Integer is a mutable data type in Python.
2. Which of the following functions is used to write data to a binary file?  
(a) pickle() (b) writer()  
(c) load() (d) dump()
3. \_\_\_\_\_ can be created using the cursor() method of a connection object.  
(a) Cursor object (b) Cursor variable  
(c) Connect (d) None of these
4. \_\_\_\_\_ command displays the contents of a table.  
(a) DISPLAY (b) VIEW  
(c) SELECT (d) SHOW
5. What will be the output of the following Python code?  

```
b = 1
for a in range(1, 10, 2):
    b += a + 2
```

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```
print(b)
```

- (a) 31 (b) 33  
(c) 36 (d) 39

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

```
phrase = "Deep Learning"  
print(phrase[4::-1])
```

7. Which of the following Python function displays the memory id of a variable?

- (a) type( ) (b) str( )  
(c) getid( ) (d) id( )

8. Which of the following is an advantage of SQL?

- (a) High speed (b) Client/Server language  
(c) Easy to learn (d) All of these

9. Which operator is used for integer division?

- (a) \* (b) //  
(c) / (d) \*\*

10. Insert the missing statement to complete this code snippet:

```
file = open("notes.txt", "r+")  
file.write("New Text")  
print(file.read())  
file.close()
```

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

In Python, the `else` block following a `try` block is executed only when no exception occurs in the `try` block.

12. Predict the output of the following program:

```
a = 5  
b = a = 15  
c = (a < 15)  
print("a = ", a)  
print("b = ", b)  
print("c = ", c)
```

- (a) a=15 (b) a=15  
b=15 b=10  
c=False c=True  
(c) a=15 (d) None of these  
b=None  
c=False



13. Given `s="AISSE@2023"`. What will be the output of `print(s[-1: :-1])` ?
- (a) '3202@ESSIA' (b) 3  
(c) AISSE (d) ESSIA
14. A primary key of a relation must be\_\_\_\_\_.
- (a) UNIQUE only (b) NOT NULL only  
(c) Both UNIQUE and NOT NULL (d) Neither UNIQUE nor NOT NULL
15. Which clause is used to group records based on shared values within a specific field?
- (a) JOIN (b) GROUP  
(c) GROUP BY (d) AGGREGATE
16. Which Python function appends the elements of one list to the end of another list?
- (a) `join()` (b) `add()`  
(c) `append()` (d) `extend()`
17. Which of the following functions will read entire contents of a text file?
- (a) `read()` (b) `readfull()`  
(c) `readline()` (d) `readfile()`
18. What is another name for a cross join in SQL?
- (a) Merging (b) Cartesian product  
(c) Natural join (d) Equi join
19. Which protocol serves as the foundation for all application protocols?
- (a) FTP (b) TCP/IP  
(c) IRCP (d) Telnet

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

20. **Assertion (A)** : Pickling is a way to convey a Python object into character stream.  
**Reason (R)** : To perform pickling, the pickle module needs to be imported.
- (a) Both A and R are true and R is the correct explanation for A.  
(b) Both A and R are true but R is not the correct explanation for A.  
(c) A is true but R is false.  
(d) A is false but R is true. A.

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21. **Assertion (A)** : A recursive function does not require a loop.

**Reason (R)** : A recursive function calls itself again and again until a certain condition is true.

- (a) Both A and R are true and R is the correct explanation for A.
- (b) Both A and R are true but R is not the correct explanation for A.
- (c) A is true but R is false.
- (d) A is false but R is true.

## SECTION B

22. Examine the code provided below and determine the output:

```
s = "oceanview"
count = 0
for a in s:
    if a in "stuv":
        count += 1
print(count)
```

23. (a) Given the following code :

```
d={'Bed':145000, 'Almirah':9000,
   'Chair':1000}

for v in d.keys():
    if d[v]>100000:
        d[v]- =10000
print(d)
```

What will be the output of the print statement?

(b) State the value stored in the variable Num after each of the following statements.

- (i) Num = 2 \* 3 - 4
- (ii) Num = 2+3-1\*3
- (iii) Num = (2+3)\*2

24. Provide a detailed explanation of a database and a Database Management System (DBMS).

25. What is the distinction between video conferencing and chat?

or

What is WWW?

26. (a) Write the full forms of :

- (i) RJ45
- (ii) XML

(b) Write one advantages of Bus topology compared to Star and one advantage of star topology compared to Bus.

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27. What output will the following code produce?

```
y = str(456)
x = "hi" * 4

print(x, y)
x = "hi" + "there"
y = len(x)
print(y, x)
```

or

Write function names for the following with respect to strings.

- (i) To make the first letter of a string in capital
- (ii) To find the index of the 1st occurrence of a string in another

28. Define DDL and explain its commands with examples.

or

What is DML? Explain with its commands.

## SECTION C

29. Write a Python program to open a binary file named "College.dat," which contains student records with the structure:

Roll            Name            SemPercentage

The program should display only the records of students whose percentage is above 30.

or

Create a method countopen() to count and display the number of lines that start with the word "OPEN" (case-insensitive) in a text file named "start.txt".

For example, if "start.txt" contains the following lines:

Get the data value to be deleted,

Open the file for reading from it.

Read the complete file into a list

Delete the data from the list

Open the file

Open same file for writing into it

Write the modified list into file.

Close the file.

The method should display

Total lines started with word 'OPEN' is/are: 3

30. Describe the traversal operation in a stack and provide the algorithm for traversing a stack to display its contents. There is no need to write the actual code.

or

Find the final contents of a stack that encounters the following tokens.

Assume that an operand is pushed to stack and a binary operator pops two operands from stack and pushes the result to the stack.

7,11,\*,80,+,50,+

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31. Write a user-defined function that accepts a string and checks whether it is a palindrome (a string that reads the same forwards and backwards).

or

A program in python to modify records of a binary file "hotel.dat" using random access. The program would accept the room id , search the record by random access and display. It will then accept the new data and modify the file.

The file structure is :

Roomid      Customer Name      Days

```
import pickle
lst=[]
f=open("hotel.dat", "rb+")
ans='y'
while ans=='y':
    r=int(input("Enter roomid to
                modify :"))

    lst=pickle.load(f)
    size=f.tell()
    f.seek(0)
    f.seek((r-1)*size)
    lst=pickle.load(f)
    print("old record ")
    print("Room Id :", lst[0])
    print("Customer :", lst[1])
    print("Days :", lst[2])
    f.seek(0)
    ... .. # Statement 1
    print("Enter new record ")
    nm=input("Enter, customer name
             :")

    days=input("Enter days :")
    rs=str(r)
    lst=[rs,nm,days]
    pickle.dump(lst,f)
    ans=input("Modify another (y/n)")
f.close()
```

- (i) What type of data is returned by the load() method?  
(ii) Which method closes a binary file?  
(iii) What will be inserted in statement 1?

## SECTION D

32. (a) Underline the errors in the following code and write the correct code:

```
s= WelcometoCS"
For a IN s :
    If a IN "aeiou" :
        print(a)
    else
        print("False")
```

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- (b) Write a code in Python to update the class of a student to 12 whose roll number is 22. The table structure is as follows :

RollNo    Name    Class    Perc  
 Note :  
 Database : PythonDB  
 Table : Student  
 Host : localhost  
 UserId : root  
 Password : arihant

or

- (a) Write the output of the following function

```
def showOutput ( ) :
    num=4 + float (7)/int (2.0)
    print ("num =", num)
```

- (b) Write a code in Python to delete the record of a student whose rollno is 33. The table structure is as follows

RollNo    Name    Class    Perc  
 Note :  
 Database : PythonDB  
 Table : Student  
 Host : localhost  
 UserId : root  
 Password : arihant

33. (a) Consider the following tables PERSON and ORDERS

Table : PERSON			
P_Id	Last_Name	First_Name	City
1	Sharma	Abhay	Mumbai
2	Gupta	Mohan	Delhi
3	Verma	Akhil	Mumbai

Table : ORDERS		
O_Id	Order_No	P_Id
1	10050	3
2	25000	3
3	5687	1
4	45000	1
5	35000	15

With respect to the tables given above write a command to display the Lastname, Firstname and corresponding order number arranged by Lastname.

- (b) With respect to the table PAYMENTS given below, write, output of the following questions.

TABLE : PAYMENTS			
EmpId	Emp_Name	Salary	Department
1	Ridhi	20000	D1

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2	Rohit	25000	D2
3	Rakesh	20000	D2
4	Roshan	44000	D1
5	Rohini	15000	D3
6	Radha	14000	D1

- (i) To display the average of employees salary from PAYMENTS table.
- (ii) To count the total number of employees from PAYMENTS table Department wise
- (iii) To count distinct values of column Department from PAYMENTS table.
- (iv) To display department wise number of employees , but for only those departments where number of employees are more than 2.

34. Write SQL commands from (i) to (iv) on the basis of the table INTERIORS given below

TABLE : INTERIORS					
No	ITEMNAME	TYPE	DATEOF-STOCK	PRICE	DISC-OUNT
1	Red rose	Double Bed	23/02/02	32000	15
2	Soft touch	Baby cot	20/01/02	9000	10
3	Jerry's home	Baby cot	19/02/02	8500	10
4	Rough wood	Office Table	01/01/02	20000	20
5	Comfort zone	Double Bed	12/01/02	15000	20
6	Jerry look	Baby cot	24/02/02	7000	19
7	Lion king	Office Table	20/02/02	16000	20
8	Royal tiger	Sofa	22/02/02	30000	25
9	Park sitting	Sofa	13/12/01	9000	15
10	Dine Paradise	Dining Table	19/02/02	11000	15
11	White Wood	Double Bed	23/03/03	20000	20
12	James 007	Sofa	20/02/03	15000	15
13	Tom look	Baby cot	21/02/03	7000	10

- (i) To show all information about the Sofa from the INTERIORS table.
- (ii) To list the ITEMNAME, which are priced at more than 10000 from the INTERIORS table.
- (iii) To list ITEMNAME and TYPE of those items, in which DATEOFSTOCK is before 22/01/02 from the INTERIORS table in descending order of ITEMNAME.
- (iv) To insert a new row in the INTERIORS table with the following data  

```
{14, 'TrueIndian', 'Office Table', '25/03/03', 15000, 20}
```

or

Write the command to display the sum of prices of items of type "cot".

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35. What is the purpose of the `writerows()` function for handling CSV files?

A binary file named "Hotel.dat" stores hotel customer details with the following structure:

RoomId CustomerName Days

Write a program in python for adding and displaying records from the binary file using following functions

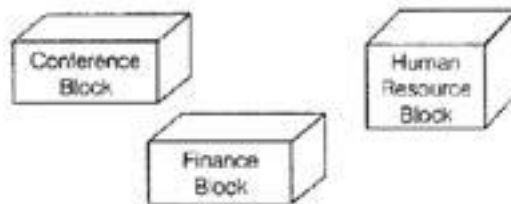
(a) `Reserve()` : To add data of customers to the binary file.

(b) `ShowReservations()` : To open the file "Hotel.dat" and display all the records.

## SECTION E

36. Tech Up Corporation (TUC) is a professional consultancy firm planning to establish new offices in India, with Hyderabad as its central hub. As their network consultant, you are tasked with assessing their requirements and recommending optimal solutions. Their queries are listed below from (i) to (v).

Physical locations of TUC's blocks:



Block to block distances (in metre)

Block (From)	Block (To)	Distance
Human Resource	Conference	60
Human Resource	Finance	120
Conference	Finance	80

Expected number of computers to be installed in each block

Block	Computers
Human Resource	125
Finance	25
Conference	60

- (i) What will the most appropriate block, where TUC 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) Write names of different types of Modems.
- (iv) Which of the following devices will be suggested by you to connect each computer in each of the buildings?
  - (a) Gateway (b) Switch (c) Modem
- (v) Company is planning to connect its Block in Hyderabad which is more than 20 km. Which type of network will be formed?

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37. Consider the following table

TABLE : INTERIORS					
No	ITEM NAME	TYPE	DATE OF STOCK	PRICE	DISCOUNT
1	Red rose	Double Bed	23/02/02	32000	15
2	Soft touch	Baby cot	20/01/02	9000	10
3	Jerry's home	Baby cot	19/02/02	8500	10

(i) What should be the data type for the DATEOFSTOCK column?

(ii) Write a command to add a new record as follows :

4, "Morris", "Sofa Set"

Rest of the field values are not given

(iii) Write statements to :

(a) Write a command to display only the Column ITEMNAME, Net Amount(PRICE-DISCOUNT)

(b) Display only ITEMNAME and Discount column.

**or**

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

(a) Which clause is to be used to search non blank values in the table?

(b) Which command will be used to make the "No" column as the primary key?

**END**

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