

5. In the `readline()` function, a line is terminated by:
- (a) `'\n'` (b) EOF
(c) Either (a) or (b) (d) None of these
6. What will be the output of the following code snippet?
- ```
text = "Machine Learning"
print(text[7:2:-2])
```
7. The join operation can combine \_\_\_\_\_ tables.
- (a) 1 (b) 2  
(c) 3 (d) Multiple
8. A table can have maximum.....primary key(s).
- (a) 1 (b) 2  
(c) 3 (d) Many
9. Which comments start with `#` symbol?
- (a) Double line (b) Multi-line  
(c) Single line (d) All of these
10. Identify the missing code to complete this snippet:
- ```
file = open("logs.txt", "r")
logs = file.readlines()
print(logs[0])
file.close()
```
11. What will be the output of the following code snippet?
- ```
word = "Comprehension"
print(word[::3])
```
12. To ensure that values in the Salary column of a table are restricted to being more than 50000, which constraint should be used?
- (a) NULL (b) PRIMARY KEY  
(c) CHECK (d) NOT NULL
13. To insert a record from Python to a mysql database the.....function needs to be executed.
- (a) `execute()` (b) `executeUpdate()`  
(c) `executeQuery()` (d) None of these

Continue on next page.....

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14. You can repeat the elements of the tuple using which operator?  
(a) \* (b) +  
(c) \*\* (d) %
15. A table can be sorted by.....fields.  
(a) 1 (b) 2  
(c) More than 2 (d) None of these
16. A device that connects the network cable to the NIC is  
(a) RJ45 (b) Repeater  
(c) Hub (d) Switch
17. Which index number represents the last character of a string?  
(a) - 1 (b) 1  
(c) 0 (d) n - 1
18. What will be the output of the following code?  
a, b = 8, 4  
x, y = a + b, b - 2  
z = x - y  
print("x:", x, "y:", y, "z:", z)  
(a) x: 12 y:3 z:10 (b) x: 10 y:3 z:12  
(c) x: 16 y:3 z:12 (d) x: 12 y:2 z:10
19. The.....clause groups records by common values of a column.  
(a) BETWEEN (b) ORDER BY  
(c) HAVING (d) GROUP BY

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

20. **Assertion (A)** : Default parameters to a function are not compulsory but are a good practice to specify.  
**Reason (R)** : If default parameters are specified the formal parameters will take the default values , if any of the actual parameters are not passed.  
(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.

Continue on next page.....

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- 21. Assertion (A) :** A recursive function requires a base condition.  
**Reason (R) :** The base condition is the one that makes the function exit at a point.
- Both A and R are true and R is the correct explanation for A.
  - Both A and R are true and R is not the correct explanation for A.
  - A is true but R is false.
  - A is false but R is true.

## SECTION B

- 22.** Determine the output for the following Python expressions:

- `'amazing'.center(15, '#')`
- `'python123'.isalnum()`

- 23.** (a) Given the following code :

```
str1 = input ("Enter the string:")
final = ""
for i in range(len(str1)):
 if (i%2 == 0):
 final = final + str1[i]
print("Modified string is : ",
 final)
```

What is the above code doing?

- (b) Consider the following list and answer the below questions.

```
l = [6, 9, 8, 'Hi', 'Hello', 45,
 23, 'New']
```

- `l[4:]`
- `l[-4]`
- `l[2:5]`
- `'World' in l`

- 24.** Identify the types of networks formed in the following cases :

- Two friends sharing files between a distance of 1000 km.
- A device transmitting voice to stations within a distance of 30 km.

**or**

Write names of protocols used in following cases :

- A network user downloading a photograph from a server
- Two friends chatting over the web.

- 25.** Write few advantages of SQL.

- 26.** (a) Why is 256.200.192.1 not considered a valid IP address?  
 (b) What is the purpose of an IP address and how does it differ from a domain name? Provide examples to illustrate each.

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27. Distinguish between tuple and list.

or

How can you add following data in empty dictionary?

| Keys | Values |
|------|--------|
| A    | One    |
| B    | Two    |
| C    | Three  |
| D    | Four   |

28. What is equi join ? Explain with an example.

or

Identify the aggregate functions from the following list:

COUNT() , LEFT() , RIGHT() , MAX() , AVG() , TRIM()

## SECTION C

29. Write a method Filterwords() to find and display words from the text file NewsLetter.txt that have a length of less than 4 characters.

or

Write a method countAN() that checks the number of occurrence of “A” and “N” in a text file “Story.txt”.

30. A linear stack named status contains the following information:

Employee’s Phone Number

Employee’s Name

Write the methods needed to perform the specified operations on the status stack.

(i) Push\_element ( ) To Push an object containing Phone number of Employee and Name of Employee into the stack.

(ii) Pop\_element ( ) To Pop an object from the stack and to release the memory.

or

Write a function to pop an element from a stack “s” using a function stackpop().

31. Write a user-defined function patterns(n) to display the following pattern for n lines, based on the number passed to the function. The number should be entered in the main() function..

Example :

Enter a number : 4

4

4 4

4 4 4

4 4 4 4

Enter a number 5

5

5 5

5 5 5

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5 5 5 5  
5 5 5 5 5

or

A user defined method to open a text file “para.txt” and display count of number of ‘c’ or ‘C’ and number of ‘e’ or ‘E’ separately.

```
def test():
 f=open("Para.TXT")
 n1=0
 n2=0
 while True:
 l=..... //Statement
 if not l:
 break
 for i in l:
 if (i=='E' or i=='e'):
 n1=n1+1
 elif(i=='C' or i=='c'):
 n2=n2+1
 print(n1)
 print(n2)
 f.close()
```

- Which module needs to be imported to use text file handling functions?
- Write the functionname to close a file object.
- Write the code best suitable for statement as marked.

## SECTION D

32. (a) Write a program to find all numbers between 200 and 300 (inclusive) that are divisible by 7 but not multiples of 5.
- (b) Consider the table Faculty whose columns' name are  
F\_ID, Fname, Lname, Hire\_date,  
Salary, Course\_name

Write the code to insert the following record into the above table.

|     |        |        |            |       |                |
|-----|--------|--------|------------|-------|----------------|
| 101 | Riya   | Sharma | 12-10-2004 | 35000 | Java Advance   |
| 102 | Kiyaan | Mishra | 3-12-2010  | 28000 | Data Structure |

or

- Identify which of the following names are invalid and explain why:
  - PaidInterest
  - S-num
  - Percent
  - 123
- What is the utility of fetchall() method? Write a code to fetch all the records of a Student table from PythonDB Database.

Note :

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Host : localhost

Database : PythonDB

User : root

Password:arihant

Table : Student

**33.** Which file can be opened with notepad as well as MS Excel?

A CSV file “Garment.csv” file exists containing records of different types of garments as per following structure.

GarmentID    Type    Gender    Cost

Write a python program to add and search records of garments from the csv file and display using the following functions :

- (a) AddGarment() : Function to input details of garments and store them to the file “Garment.csv”, if the garment type is “cotton” or “silk”.
- (b) ShowGarments() : To open the file “ Garment.csv”, display details and number of “silk”.garments

**34.** (a) Consider the tables EMP and SALGRADE storing details of employees and their salaries.

| Table: EMP |        |       |            |
|------------|--------|-------|------------|
| empno      | ename  | sal   | date       |
| 110        | Priya  | 7000  | 11-11-2010 |
| 111        | Seema  | 14000 | 15-02-2014 |
| 151        | Sachin | 30000 | 18-04-2015 |
| 142        | Deepa  | 25000 | 20-05-2015 |

| Table : SALGRADE |        |        |       |       |
|------------------|--------|--------|-------|-------|
| empno            | city   | lowsal | hisal | grade |
| 110              | Delhi  | 5000   | 10000 | 2     |
| 111              | NCR    | 11000  | 13000 | 1     |
| 142              | Meerut | 10000  | 20000 | 5     |

With respect to the tables given above write a command to display the Employee names and the corresponding cities.

(b) With respect to the tables given above , write commands for the following :

- (i) To display the average salaries of all employees who are not from Delhi.
- (ii) To display, maximum salary from the EMP table among employees whose date is after “2014”
- (iii) To find the count of employees who are from “Delhi”
- (iv) To display each employee’s name and Grade.

Continue on next page.....

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35. Given the following tables for a database LIBRARY

Write SQL commands (i) to (iv) with respect to the tables BOOKS and ISSUED

| TABLE: BOOKS |                |                 |            |       |         |     |
|--------------|----------------|-----------------|------------|-------|---------|-----|
| Book_Id      | Book Name      | Author_Name     | Publishers | Price | Type    | Qty |
| F0001        | The Tears      | William Hopkins | First Publ | 750   | Fiction | 10  |
| F0002        | Thunder bolts  | Anna Roberts    | First Publ | 700   | Fiction | 5   |
| T0001        | My First C++   | Brain & Brooke  | EPB        | 250   | Text    | 10  |
| T0002        | C++ Brainworks | A.W. Rossaine   | TDH        | 325   | Text    | 5   |
| C0001        | Fast Cook      | Lata Kapoor     | EPB        | 350   | Cookery | 8   |

| TABLE : ISSUED |                 |
|----------------|-----------------|
| Book_Id        | Quantity_Issued |
| F0001          | 3               |
| T0001          | 1               |
| C0001          | 5               |

- (i) To show Book name, Author name and Price of books of EPB Publishers.  
(ii) To list the names from books of Fiction type.  
(iii) To display the names and price of the books in descending order of their price.  
(iv) To increase the price of all books of First Publ Publishers by 50.

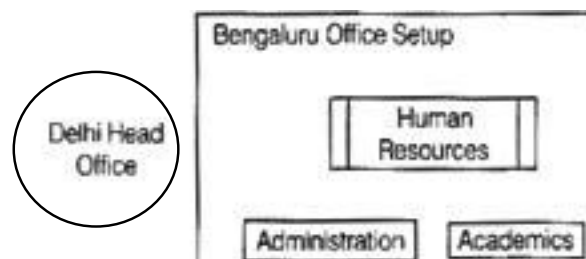
or

Write the command to remove all the records of the BOOKS table keeping the structure.

## SECTION E

36. G.R.K International Inc. is planning to connect its Bengaluru Office Setup with its Head Office in Delhi. The Bengaluru Office G.R.K. International Inc. is spread across an area of approx. 1 square kilometres consisting of 3 blocks. Human Resources, Academics and Administration. You as a network expert have to suggest answers to the questions (i) to (v) raised by them.

Note Keep the distances between blocks and number of computers in each block in mind, while providing them the solutions.



Shortest distances between various blocks

|                                   |       |
|-----------------------------------|-------|
| Human Resources to Administration | 100 m |
| Human Resources to Academics      | 65 m  |

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|                                             |         |
|---------------------------------------------|---------|
| Academics to Administration                 | 110 m   |
| Delhi Head Office to Bengaluru Office Setup | 2350 km |

Number of computers installed at various blocks

| Block             | Number of Computers |
|-------------------|---------------------|
| Human Resources   | 155                 |
| Administration    | 20                  |
| Academics         | 100                 |
| Delhi Head Office | 20                  |

- (i) Suggest the most suitable block in the Bengaluru Office Setup to host the server. Give a suitable reason with your suggestion.
- (ii) Suggest the cable layout among the various blocks within the Bengaluru Office Setup for connecting the blocks.
- (iii) Suggest the placement of switch.
- (iv) Suggest the most suitable media to provide secure, fast and reliable data connectivity between Delhi Head Office and the Bengaluru Office Setup.
- (v) Expand the following  
 WAN  
 LAN

37. Consider the following table

| TABLE : PATIENTS |        |     |                  |           |         |     |
|------------------|--------|-----|------------------|-----------|---------|-----|
| No               | Name   | Age | Department       | Dateofadm | Charges | Sex |
| 1                | Kettu  | 16  | ENT              | 24/02/23  | 300     | F   |
| 2                | Ankita | 29  | Cardiology       | 20/02/23  | 800     | F   |
| 3                | Rekha  | 45  | Gynaecology      | 22/02/23  | 300     | F   |
| 4                | Kushi  | 19  | Cardiology       | 13/01/23  | 800     | M   |
| 5                | Antim  | 31  | Nuclear Medicine | 19/02/23  | 400     | M   |

- (i) What should be the width of the Dateofadm field?
- (ii) Write commands to remove the records of “Cardiology” department.
- (iii) Write statements to :
  - (a) Display a report showing Name, charges and discount (15%) for all patients.
  - (b) Display names of female patients .

or

(option for part (iii) only)

- (a) Which function will find the total charges of all patients?
- (b) Name the constraint that will restrict duplicate values in Name column.

END

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