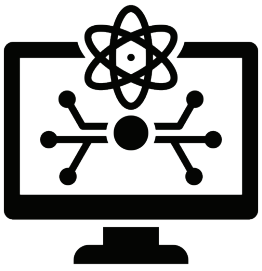
CUET UG 2026

COMPUTER SCIENCE

2022 TO 2025

PREVIOUS YEAR QUESTION WITH
DETAILED EXPLANATIONS



IfAS | IFAS Publications

Copyright 2026, IFAS Publications

All rights reserved. No part of this publication or the information contained herein may be reproduced, adapted, abridged, translated, stored in a retrieval system, computer system, photographic or other systems or transmitted in any form or by any means, electronic, mechanical, optical, digital, by photocopying, recording or otherwise, without written prior permission from the publisher. Any breach will attract legal action and prosecution without further notice.

Disclaimer: While every effort has been made to avoid errors and omissions, this publication is being sold and marketed on the understanding and presumption that neither the editors (or authors) nor the publishers nor the printers would be liable in any manner whatsoever, to any person either for an error or for an omission in this publication, or for any action to be taken on the basis of this work. Any inadvertent discrepancy noted may be brought to the attention of the publisher, for rectifying it in future editions, if published.

This book contains information obtained from authentic and highly regarded sources. Reasonable efforts have been made to publish reliable data and information, but the editors and publisher cannot assume responsibility for the validity of all materials or the consequences of their use. The editors and publisher have attempted to trace and acknowledge the copyright holders of all material reproduced in this publication and apologize to copyright holders if permission and acknowledgement to publish in this form have not been obtained. If any copyright material has not been acknowledged please write and let us know so that we may rectify it.

Trademark Notice: Publications or corporate names may be trademarks, and are used only for identification and explanation in bonafide intent without intent to infringe.

Design & Published by:
IFAS Publications

Address:
Shivranjan Complex,
Someshwar Wadi, Near
Rajwada Hotel, Baner Road,
Pune 411 008.

Contact No.: **+91 952 92 88 455**

Website: **https://ifasonline.com**

Price: ₹ **895.00**

ISBN: **978-81-982930-4-6**

PREFACE

Welcome to the **CUET UG Computer Science** book, designed specifically to help you achieve success in the CUET (Common University Entrance Test) for undergraduate programs. This book is structured to provide you With comprehensive resources that will enhance your understanding, practice, and performance for the Computer Science section of the exam.

The CUET UG Computer Science paper demands a solid understanding of the fundamental concepts in Computer Science, Coupled with the ability to apply this knowledge to solve complex questions efficiently. Our goal with this Book is to make your preparation as focused, systematic, and efficient as possible.

Key Features of This Book:

1. **Previous Year Questions (PYQs) from 2022 to 2025**: This book contains a carefully curated collection of **Previous Year Questions (PYQs)** from the CUET UG Computer Science exam (2022-2025). Every PYQ is organized **chapter-wise** and **topic-wise**, allowing you to focus on specific areas that require more attention. This makes it easier to track patterns, understand the types of questions asked, and pinpoint areas where you may need additional practice.

2. **Detailed Solutions and Explanations:** Each PYQ is accompanied by a **detailed solution and step-by-step explanation**. These explanations not only help you understand the correct answers but also provide insights into the reasoning and concepts behind each question.

3. **3 Mock Tests for Practice:** To further aid in your preparation, this book contains **3 full-length mock tests** designed to simulate the actual exam. These mock tests are crafted in the same format as the CUET UG Computer Science exam, ensuring that you get an authentic practice experience.

4. **OMR Sheet for Practice**: The book includes a **solvable OMR sheet**, enabling you to practice marking answers in the same way you would in the actual exam. This will help you get comfortable with time management, answer marking, and improving your speed and accuracy under exam conditions.

As you proceed through the book, we encourage you to stay focused, practice regularly, and review the solutions to your practice questions and mock tests. By doing so, you will not only improve your performance in the CUET UG exam but also build a solid foundation in Computer Science that will serve you well in future academic pursuits.

Good luck with your preparation, and may you achieve great success in your CUET UG Computer Science exam!
Happy studying!

Exam Details

There will be one question paper which will contain two sections:

1. Section A will have 15 questions covering both Computer Science/Information Practices which will be compulsory for all candidates.
2. Section B1 will have 35 questions from Computer Science out of which 25 questions need to be attempted.

OR

Section B2 will have 35 questions purely from Information Practices out of which 25 questions will be attempted.

Mode of Examination	**Computer Based Test**
Duration of Exam	**60 minutes**
Total number of questions to be attempted	**40**
Marks for each correct answer	**+5**
Marks for each incorrect answer	**-1**
Total Marks	**200**

S Y L L A B U S

Section A

1. Exception and File Handling in Python

Exception Handling: syntax errors, exceptions, need of exception handling, user-defined exceptions, raising exceptions, handling exceptions, catching exceptions, Try - except - else clause, Try - finally clause, recovering and continuing with finally, built-in exception classes.

File Handling: text file and binary file, file types, open and close files, reading and writing text files, reading and writing binary files using pickle module, file access modes.

2. Database Concepts

Introduction to database concepts, difference between database and file system, relational data model: concept of domain, tuple, relation, keys - candidate key, primary key, alternate key, foreign key; Relational algebra: selection, projection, union, set difference and cartesian product;

3. Structured Query Language

Advantages of using Structured Query Language, Data Definition Language, Data Query Language and Data Manipulation Language, Introduction to MySQL, Creating a database using MySQL, Data Types

Data Definition: CREATE TABLE, DROP TABLE, ALTER TABLE,

Data Query: SELECT, FROM, WHERE

Data Manipulation: INSERT, UPDATE, DELETE

Math functions: POWER (), ROUND (), MOD ().

Text functions: UCASE ()/UPPER (), LCASE ()/LOWER (), MID ()/SUBSTRING ()/SUBSTR (), LENGTH (), LEFT (), RIGHT (), INSTR (), LTRIM (), RTRIM (), TRIM ().

Date Functions: NOW (), DATE (), MONTH (), MONTHNAME (), YEAR (), DAY (), DAYNAME (). Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT (); using COUNT (*). Querying and manipulating data using Group by, Having, Order by.

Operations on Relations - Union, Intersection, Minus, Cartesian Product, JOIN

4. Computer Networks

Introduction to computer networks, Evolution of networking,

Network types: LAN, WAN, MAN

Network devices: Modem, Ethernet Card, Repeater, Hub, Switch, Router, Gateway.

Network Topologies: Mesh, Ring, Bus, Star, and Tree topologies

Basic concept of MAC and IP Address

Difference between Internet and web

Section B1: Computer Science

1. **Exception and File Handling in Python**

   Exception Handling: syntax errors, exceptions, need of exception handling, user-defined exceptions, raising exceptions, handling exceptions, catching exceptions, Try - except - else clause, Try - finally clause, recovering and continuing with finally, built-in exception classes.

   File Handling: text file and binary file, file types, open and close files, reading and writing text files, reading and writing binary files using pickle module, file access modes.

2. **Stack**

   Stack (List Implementation): Introduction to stack (LIFO Operations), operations on stack (PUSH and POP) and its implementation in python. Expressions in Prefix, Infix and postfix notations, evaluating arithmetic expressions using stack, conversion of Infix expression to postfix expression

3. **Queue**

   Queue (List Implementation): Introduction to Queue (FIFO), Operations on Queue (INSERT and DELETE) and its implementation in Python.

   Introduction to DQueue and its implementation in Python.

4. **Searching**

   Searching: Sequential search, Binary search, Analysis of Sequential and Binary Search. Dry run to identify best, worst and average cases. Implementation of searching techniques in Python.

5. **Sorting**

   Overview of sorting techniques, Bubble Sort, Selection Sort and Insertion Sort. Dry run to identify best, worst and average cases. Implementation of sorting techniques in Python.

   Hashing: Hash Functions, Collision Resolution, Implementing the Map Abstract Data Type.

6. **Understanding Data**

   Data and its purpose, collection and organization; understanding data using statistical methods: mean, median, standard deviation, variance; data interpretation; visualization of data.

7. **Database Concepts**

   Introduction to database concepts, difference between database and file system, relational data model: concept of domain, tuple, relation, keys - candidate key, primary key, alternate key, foreign key; Relational algebra: selection, projection, union, set difference and cartesian product;

8. **Structured Query Language**

   Advantages of using Structured Query Language, Data Definition Language, Data Query Language and Data Manipulation Language, Introduction to MySQL, Creating a database using MySQL, Data Types

   Data Definition: CREATE TABLE, DROP TABLE, ALTER TABLE,

   Data Query: SELECT, FROM, WHERE

   Data Manipulation: INSERT, UPDATE, DELETE

   Math functions: POWER (), ROUND (), MOD ().

Text functions: UCASE ()/UPPER (), LCASE ()/LOWER (), MID ()/SUBSTRING ()/SUBSTR (), LENGTH (), LEFT (), RIGHT (), INSTR (), LTRIM (), RTRIM (), TRIM ().

Date Functions: NOW (), DATE (), MONTH (), MONTHNAME (), YEAR (), DAY (), DAYNAME (). Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT (); using COUNT (*). Querying and manipulating data using Group by, Having, Order by.

Operations on Relations - Union, Intersection, Minus, Cartesian Product, JOIN

9. Computer Networks

Introduction to computer networks, Evolution of networking,

Network types: LAN, WAN, MAN

Network devices: Modem, Ethernet Card, Repeater, Hub, Switch, Router, Gateway.

Network Topologies: Mesh, Ring, Bus, Star, and Tree topologies

Basic concept of MAC and IP Address

Difference between Internet and web

Section B2: Informatics Practices

---

1. Database Query using SQL

Math functions: POWER (), ROUND (), MOD ().

Text functions: UCASE ()/UPPER (), LCASE ()/LOWER (), MID ()/SUBSTRING ()/SUBSTR (), LENGTH (), LEFT (), RIGHT (), INSTR (), LTRIM (), RTRIM (), TRIM ().

Date Functions: NOW (), DATE (), MONTH (), MONTHNAME (), YEAR (), DAY (), DAYNAME (). Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT (); using COUNT (*). Querying and manipulating data using Group by, Having, Order by.

Operations on Relations - Union, Intersection, Minus, Cartesian Product, JOIN

2. Data Handling using Pandas – I

Introduction to Python libraries- Pandas, NumPy, Matplotlib.

Data structures in Pandas - Series and DataFrames.

Series: Creation of Series from – and array, dictionary, scalar value; mathematical operations; Head and Tail functions; Selection, Indexing, and Slicing.

DataFrames: creation - from the dictionary of Series, list of dictionaries, Text/CSV files; display; iteration; Operations on Rows and columns: add, select, delete, rename; Head and Tail functions; Indexing using Labels, Boolean Indexing; Styling & Formatting data, Head and Tail functions; Joining, Merging and Concatenations.

Importing/Exporting Data between CSV files and DataFrames.

3. Data Handling using Pandas – II

Descriptive Statistics: max, min, count, sum, mean, median, mode, quartile, Standard deviation, variance.

DataFrame operations: Aggregation, group by, Sorting, Deleting and Renaming Index, Pivoting. Handling missing values – dropping and filling.

Importing/Exporting Data between MySQL database and Pandas.

4. **Plotting Data using Matplotlib**

Purpose of plotting; drawing and saving the following types of plots using Matplotlib – line plot, bar graph, histogram, pie chart, frequency polygon, box plot, and scatter plot.

Customizing plots: color, style (dashed, dotted), width; adding label, title, and legend in plots.

5. **Introduction to Computer Networks**

Introduction to Networks, Types of networks: LAN, MAN, WAN.

Network Devices: modem, hub, switch, repeater, router, gateway

Network Topologies: Star, Bus, Tree, Mesh.

Introduction to Internet, URL, WWW, and its applications- Web, email, Chat, VoIP.

Website: Introduction, the difference between a website and webpage, static vs dynamic web page, web server, and hosting of a website.

Web Browsers: Introduction, commonly used browsers, browser settings, add-ons and plug ins, cookies.

6. **Societal Impacts**

Digital footprint, Etiquettes for Net surfing and for communicating through social media, data protection, Intellectual Property Rights (IPR) and their violation, plagiarism licensing and copyrights, Free and Open Source Software (FOSS), Cybercrime and cyber laws, hacking, phishing, cyberbullying, Overview of Indian IT Act, preventing cybercrime.

E-waste its a hazard and management

Awareness about health concerns related to the usage of technology like effect on eyesight, physiological issues, and ergonomic aspects.

7. **Data Communication**

Concept of communication, Types of Data Communication, switching techniques

Communication Media: Wired Technologies – Twisted pair cable, Co-axial cable, Ethernet Cable, Optical Fibre;

Introduction to mobile telecommunication technologies

Wireless Technologies – Bluetooth, WLAN, Infrared, Microwave

Network Protocol: Need for Protocol, Categorization and Examples of protocol, HTTP, FTP, IP, PPP; electronic mail protocol

Concept of Channel, Bandwidth (Hz, KHz, MHz) and Data Transfer rate (bps, Kbps, Mbps, Gbps, Tbps)

8. **Security Aspects**

Threats and prevention: Viruses, Worms, Trojan horse, Spam, Cookies, Adware, Firewall, http vs https

Network Security Concepts: Firewall, Cookies, Hackers and Crackers

Antivirus and their workings

Network security threats: Denial of service, Intrusion problems, Snooping, Eavesdropping

TABLE OF CONTENTS

CH. NO.	PARTICULARS	PAGE NO.
1	Exception and File Handling in Python	1
2	Database Concepts	11
3	Structured Query Language	20
4	Computer Networks	40
5	Stack	53
6	Queue	57
7	Searching	60
8	Sorting	63
9	Understanding Data	67
10	Data Handling using Pandas	71
11	Plotting Data using Matplotlib	81
12	Societal Impacts	85
13	Data Communication	91
14	Security Aspects	97
✔	Mock Test - 1	102
✔	Mock Test - 2	116
✔	Mock Test - 3	128

NUMBER OF QUESTIONS ASKED IN CUET (UG)
COMPUTER SCIENCE - 2022 to 2025

COMPUTER SCIENCE		2022	2023	2024	2025
1	Exception and File Handling in Python	12	8	6	8
2	Database Concepts	6	8	9	9
3	Structured Query Language	23	14	13	13
4	Computer Networks	9	10	15	14
5	Stack	1	3	4	3
6	Queue	1	3	3	2
7	Searching	1	3	3	3
8	Sorting	2	4	4	2
9	Understanding Data	1	6	3	4
10	Data Handling using Pandas	14	6	7	9
11	Plotting Data using Matplotlib	3	4	4	5
12	Societal Impacts	5	6	5	5
13	Data Communication	4	7	5	5
14	Security Aspects	3	3	4	3

CHAPTER 1

EXCEPTION & FILE HANDLING IN PYTHON

PREVIOUS YEAR EXAM QUESTIONS

(2022)

1. **Considering the given statement in Python Print("Hello world")**
What type of error will be generated?
(A) Value Error (B) Logical Error
(C) Name Error (D) Syntax Error

(2022)

2. **Read the following statements and arrange in correct order.**
A. Exception is raised
B. Executes exception
C. Program searches for exception handler
D. Create exception object
E. An error encountered
Choose the correct answer from the options given below:
(A) A→B→C→D→E (B) E→D→C→A→B
(C) E→D→B→C→A (D) E→D→A→C→B

(2022)

3. **In file mode _____, the file offset position is end of the file.**
(A) r (B) w
(C) w^+ (D) a

(2022)

4. **The default reference point for file-object.seek(offset,[reference point]) is:**
(A) 0 (B) -1
(C) 1 (D) 2

(2022)

5. **From a text file "myfile.txt", Kriti will read next line through file object Fl using**
(A) Flreadlines() (B) Flreadline()
(C) F1-readnext() (D) Flread()

(2022)

6. **The file offset position of a file opened in <p> mode is ___.**
(A) End of the file
(B) Begining of the file
(C) Any where in the file
(D) One byte before the end of the file

(2022)

7. **Consider the following python code: def** $myDiv(x, y)$;
if $y == 0$:
raise ZeroDivisionError return x/y
What is the output of the following?
$n = myDiv(4,0)$
print(n)
(A) 0.0 (B) No output
(C) ZeroDivisionError (D) ValueError

(2022)

8. **_____ type is returned by the readlines() method of the file object.**
(A) String (B) Tuple
(C) List of strings (D) Dictionary

(2022)

9. **Which of the following is (are) attribute(s) of file object?**
A. closed
B. mode
C. next
D. name
E. tell
Choose the correct answer from the options given below:
(A) B and D only (B) D only
(C) B, D and E only (D) A, B and D only

(2022)

10. **Find the output:**

```
s = "CuEt\#2022"
f = open("new.Txt","w+")
f.write(s)
f.seek(0)
c = f.read(9)
for i in c:
if i.isupper( ):
print(i.lower( ), end="\#")
elif i.islower( ):
```

```
print(i.upper( ), end="\#")
elif int(i).isdigit() :
print(int(i) + 1, end="\#")
else:
print("§", end ="\#")
f.close( )
```

Option:

(A) c#U#e#T#2#0#2#2#
(B) C#u#E#t##3#1#3#3#
(C) c#U#e#T#$#3#1#3#3#
(D) C#u#e#t##2#0#2#2#

(2022)

11. Consider the given text file 'pledge.txt'

India is my country.
All Indian are my brothers and sisters

```
f = open('pledge.txt', 'r')     #Statement 1

line = f.readlines()            #Statement 2

print(len(line))                #Statement 3

f.close()                       #Statement 4
```

Identify the correct output, will be given by statement 3.

(A) 62 (B) 60
(C) 1 (D) 2

(2022)

12. Which package/software is most suitable to create the CSV file?

(A) Any word processing
(B) Any spreadsheet package
(C) Any Presentation package
(D) Any Database software

(2023)

13. Match List I with List II

LIST I		LIST II	
A.	writelines	I.	module for binary files
B.	pickle	II.	opening and reading a binary file
C.	try-except	III.	writing a sequence of string
D.	Fb	IV.	exception handling

Choose the correct answer from the options given below:

(A) A-III, B-IV, C-II, D-I (B) A-IV, B-I, C-III, D-II
(C) A-III, B-IV, C-I, D-II (D) A-III, B-I, C-IV, D-II

(2023)

14. Which of the following represents mode of both writing and reading in binary format in file?

(A) wb + (B) w
(C) a^+ (D) w^+

(2023)

15. Which of the following is not a valid mode to open a file?

(A) ab (B) rw
(C) r+ (D) w^+

(2023)

16. Which error is generated by pickle.load() function, when you reach end - of - file, while reading from the file.

(A) E0L error
(B) EOF error
(C) File doesn't exist
(D) No error is generated

(2023)

17. The statements inside the _____ block are always executed regardless of whether an exception occured in the _____ block or not. What will be the appropriate clause in above statement respectively.

(A) finally, except (B) except, finally
(C) finally, try (D) try, finally

(2023)

18. Which of the file mode in the following is invalid for a text-file?

(A) a (B) w
(C) r (D) ab

(2023)

19. Which offset of seek() method in the following is not valid?

(A) 0 -is for beginning of file.
(B) 1-the middle position of the file.
(C) 2-for end of file.
(D) 1-for current position of file pointer.

(2023)

20. This exeption occurs wherever a local or global variable name is not defined.

(A) ValueError (B) TypeError
(C) OSError (D) NameError

(2024)

21. Which of the following are used in python exception handling?

A. try
B. except
C. finally
D. seek

Choose the correct answer from the options given below:

(A) A, B and D only (B) A, B and C only
(C) A, B, C and D (D) B, C and D only

(2024)

22. Match List-I with List-II:

List-I	List-II
(A) f.seek(-10,1)	(I) from beginning of file, move 10 bytes forward
(B) f.seek(10,1)	(II) from current position moves 10 bytes backward
(C) f.seek(10)	(III) from current position moves 10 bytes forward
(D) f.seek(-10,2)	(IV) from end of the file, move to the 10 bytes backward

Choose the correct answer from the options given below :

(A) (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
(B) (A) - (II), (B) - (III), (C) - (IV), (D) - (I)
(C) (A) - (III), (B) - (II), (C) - (IV), (D) - (I)
(D) (A) - (II), (B) - (III), (C) - (I), (D) - (IV)

(2024)

23. Arrange the following in correct order of exception handling in python:

A. Write the code that may raise an exception inside a try block
B. Execute some code regardless of whether the exception occurs or not using the finally block
C. Handle the specific exception using the except block
D. Raise the exception using the raise statement if necessary

Choose the correct answer from the options given below:

(A) A, B, C, D (B) A, C, B, D
(C) B, A, D, C (D) C, B, D, A

(2024)

24. Which of the following is not a limitation of file system?

(A) Data Redundancy (B) Data Inconsistency
(C) Data dependence (D) Storing Space

(2024)

25. Consider the following code and specify the correct order of the statements to be written

A. f.write("CUET EXAMINATION")
B. f = open("CUET.TXT", "w")
C. print("Data is Written Successfully")
D. f.close()

Choose the correct answer from the options given below :

(A) A, B, C, D (B) B, A, C, D
(C) B, D, C, A (D) B, D, A,C

(2024)

26. Which method from below will take a file pointer to n^{th} character with respect to r position?

(A) fp.seek(r) (B) fp.seek(n)
(C) fp.seek($\mathbf{n}, \mathbf{r}$) (D) $\text{seek}(n, r) \cdot \text{fp}$

(2025)

27. Arrange the following python code segments in order with respect to exception handling.

A. except ZeroDivisionError:
print("Zero denominator not allowed")
B. finally:
print("Over and Out")
C. try:
n=50
d = int(input("enter denominator")
$q = n/d$
print("division performed")
D. else:
print("Result =",q)

Choose the correct answer from the options given below:

(A) C, A, B, D (B) C, A, D, B
(C) B, A, D, C (D) C, B, D, A

(2025)

28. Identify the correct code to read data from the file notes.dat in a binary file:

(A) import pickle f1=open("notes.dat","r")
data=pickle.load(f1)
print(data)
f1.close()
(B) import pickle f1=open("notes.dat","rb")
data=f1.load()
print(data)
f1.close()
(C) import pickle f1=open("notes.dat","rb")
data=pickle.load(f1)
print(data)
f1.close()
(D) import pickle f1=open("notes.dat","rb")
data=f1.read()
print(data)
f1.close()

(2025)

29. Identify the correct python statement to open a text file "data.txt" in both read and write mode.

(A) file.open("data.txt")
(B) file.open("data.txt","r+")
(C) file.open("data.txt","rw")
(D) file.open("data.txt","rw+")

(2025)

30. Match List-I with List-II

List-I	List-II
(A) SUBSTR()	(I) To find the position of a substring in a string.
(B) TRIMO	(II) To extract a substring from a string.
(C) INSTRO	(III) To extract characters from the left side of the string.
(D) LEFT()	(IV) To remove spaces from both the sides of the string.

Choose the correct answer from the options given below:

(A) (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
(B) (A) - (II), (B) - (IV), (C) - (I), (D) - (III)
(C) (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
(D) (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

(2025)

31. Which of the following is the correct command to display the top 2 records of Series 'Tail'?

(A) print(s1.head(2)) (B) print(tail.head())
(C) print(tail.head()) (D) print(tail.head(2))

(2025)

32. Arrange the following in order in the context of exception handling:

A. Program Termination
B. Exception is raised
C. Error occurs in a program
D. Catching an exception

Choose the correct answer from the options given below:

(A) C, B, D, A (B) A, C, B, D
(C) B, A, D, C (D) C, B, A, D

(2025)

33. Sequence the steps to append data to an existing file and then read the entire file:

A. Open the file in a+ mode.
B. Use the read() method to output the contents.
C. Use the write() or writelines() method to append data.
D. Seek to the beginning of the file.

Choose the correct answer from the options given below:

(A) A, C, D, B (B) A, B, C, D
(C) B, A, D, C (D) C, B, D, A

(2025)

34. Sequence the given process for checking whether a string is a palindrome or not, using a deque:

A. Load the string into the deque.
B. Continuously remove characters from both ends.
C. Compare the characters.
D. Determine if the string is a palindrome based on the comparisons.

Choose the correct answer from the options given below:

(A) A, B, D, C (B) A, B, C, D
(C) B, A, D, C (D) C, B, D, A

Answer Key									
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
(D)	(B)	(D)	(A)	(B)	(B)	(C)	(C)	(C)	(C)
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
(D)	(B)	(D)	(A)	(B)	(B)	(C)	(D)	(B)	(D)
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
(B)	(D)	(B)	(D)	(B)	(C)	(B)	(C)	(B)	(B)
31	**32**	**33**	**34**						
(D)	(A)	(A)	(B)						

EXPLANATION

1. Explanation: (D)

The statement Print("Hello world") in Python will raise a **Syntax Error** because Python is **case-sensitive**. The correct function name is print() (all lowercase), not Print().

So, the corrected statement would be:

print("Hello world")

Here's why the other options are incorrect:

A. Value Error: A ValueError occurs when an operation or function receives an argument with the right type but an inappropriate value (e.g., passing a negative number to a function that expects a positive one).

B. Logical Error: A logical error occurs when the program runs, but the output is not what was expected. It's typically due to a flaw in the logic of the program.

C. Name Error: A NameError occurs when Python cannot find a variable or function with the name you used.

Thus, the correct error generated here is a **Syntax Error** due to the incorrect capitalization of Print().

2. Explanation: (B)

1. **E → An error encountered**: The process begins when an error occurs in the program, causing an exception to be raised.
2. **D → Create exception object**: When an error occurs, an exception object is created to represent the error.

3. **C → Program searches for exception handler**: The program then searches for a handler to deal with the raised exception.
4. **A → Exception is raised**: After the error occurs and the exception object is created, the exception is raised, and the program begins looking for an appropriate exception handler.
5. **B → Executes exception**: Finally, the appropriate exception handler executes, resolving the issue.
   So, the correct sequence is **E → D → C → A → B**.

3. Explanation: (D)

In file mode **a** (append mode), the file offset (the position where the next write will happen) is set to the **end of the file**. This means that when you open a file in append mode, all writes to the file will be added at the end, regardless of the current position in the file.

Here's an explanation of the other options:

A. **r**: This is read mode. The file is opened for reading, and the file offset is set to the beginning of the file.

B. **w**: This is write mode. The file is opened for writing, and if the file exists, it is truncated to zero length (cleared), with the file offset set to the beginning of the file.

C. **w+**: This is read and write mode. The file is opened for both reading and writing, and if the file exists, it is truncated to zero length, with the file offset set to the beginning of the file.

Therefore, the correct answer is **D. a** (append mode).

4. Explanation: (A)

In Python, the file-object.seek(offset, [reference_point]) method is used to change the current file position. The **offset** specifies the number of bytes to move from the **reference_point**, and the **reference_point** specifies where to start counting from.

Here are the possible values for the reference_point:

- **0**: The reference point is the beginning of the file (default if not provided).
- **1**: The reference point is the current file position.
- **2**: The reference point is the end of the file.

If no **reference_point** is specified, it defaults to **0** (the beginning of the file).

So, the correct answer is **A. 0**.

5. Explanation: (B)

In Python, to read the next line from a text file, you use the **readline()** method. This method reads one line at a time from the file.

Here's how it works:

```
Fl = open("myfile.txt", "r")  # Open the file in read mode
line = Fl.readline()  # Read the next line
print(line)  # Print the line
Fl.close()  # Close the file
```

Explanation of the other options:

A. **Fl.readlines()**: This reads **all lines** of the file into a list, not just the next line.

C. **Fl-readnext()**: This is not a valid method in Python.

D. **Fl.read()**: This reads the entire content of the file at once as a string, not just the next line.

Thus, the correct method to read the next line from a file is **readline()**.

So, the correct answer is **B. Fl.readline()**.

6. Explanation: (B)

When a file is opened in <p> mode (which is typically shorthand for "read" mode in many programming languages), the file offset (or cursor position) starts at the **beginning of the file**. The file pointer initially points to the start, and reading operations will proceed from there unless explicitly moved.

So, Correct option is B.

7. Explanation: (C)

- In the given Python code, the function myDiv(x, y) raises a ZeroDivisionError when the value of y is 0.
- The function call myDiv(4, 0) will trigger the exception because y == 0, and the error will be raised before the division (x/y) occurs.
- Since there is no exception handling (like a try-except block), the program will terminate and the ZeroDivisionError will be shown. Therefore, the output will be the exception error message.

So, Correct option is C.

8. Explanation: (C)

- The readlines() method of a file object in Python reads all the lines from a file and returns them as a **list of strings**, where each string represents a line from the file.

For example:

```
with open('file.txt', 'r') as f:
lines = f.readlines()
print(lines)
```

This will print a list of strings, where each string is a line from the file.

Other options:

A. String: Incorrect. readlines() returns a list, not a single string.

B. Tuple: Incorrect. readlines() does not return a tuple.

D. Dictionary: Incorrect. readlines() does not return a dictionary.

So, the correct type returned by readlines() is a **list of strings**.

9. Explanation: (C)

In Python, a **file object** has several attributes that provide information about the file and its state. Here's what each attribute represents:

B. mode: The mode attribute of a file object represents the mode in which the file was opened (e.g., 'r' for reading, 'w' for writing, 'rb' for binary reading, etc.).

D. name: The name attribute gives the name of the file that is associated with the file object.

E. tell: The tell() method of a file object returns the current position of the file pointer within the file (in terms of the number of bytes from the beginning).

Other options:

A. closed: While **closed** is indeed an attribute of a file object (it returns True if the file is closed and False if the file is open), it is not included in **C** because the question specifically asks for attributes related to the file object's state and information about the file, which are generally more relevant to mode, name, and tell.

C. next: **next** is not an attribute of a file object, but it is a method that can be used to iterate over the lines in a file object using the iterator protocol.

Conclusion:

The correct attributes for a file object in this case are **mode**, **name**, and **tell**, making the correct answer **C. B, D, and E only**.

10. Explanation: (C)

1. **String written to file:**
   s = " \"CuEt\#2022\" "
   The actual content:
   "CuEt#2022"
2. **Reading first 9 characters:**
   "CuEt#202
3. **Transform rules:**

- Uppercase → lowercase + #
- Lowercase → uppercase + #
- Digit → add 1 + #
- Others → §#

4. **Character by character:**

Char	Output
"	§#
C	c#
u	U#
E	e#
t	T#
#	§#
2	3#
0	1#
2	3#

Final output: §#c#U#e#T#§#3#1#3#

So the correct choice among the options is **C**.

11. Explanation: (D)

- f.readlines() reads the file **line by line** and returns a **list of lines**.
- pledge.txt has **2 lines**.
- len(line) counts the number of elements in the list → **2**.

So, Correct option is D.

12. Explanation: (B)

- **CSV (Comma-Separated Values)** files are **tabular data files**.
- They are easiest to create and manage using a **spreadsheet package** like **Microsoft Excel, Google Sheets, or LibreOffice Calc**, which can save data directly as .csv.

Answer: B. Any spreadsheet package

13. Explanation: (D)

A. writelines: This is a method used to write a sequence of strings to a file. This matches with **III** (writing a sequence of string).

B. pickle: The pickle module is used to serialize and deserialize objects, often involving binary files. This corresponds with **I** (module for binary files).

C. try-except: This is used for exception handling in Python. It matches with **IV** (exception handling).

D. Fb: This is typically used for opening and reading binary files, matching with **II** (opening and reading a binary file).

Now, matching each:

- **A - III**: writelines → writing a sequence of strings.
- **B - I**: pickle → module for binary files.
- **C - IV**: try-except → exception handling.
- **D - II**: Fb → opening and reading a binary file.

CHAPTER 3

STRUCTURED QUERY LANGUAGE

PREVIOUS YEAR EXAM QUESTIONS

(2022)

1. In SQL, like condition allows you to use wild card characters to perform matching. Which of the following is a valid wild card character?

(A) # (B) $

(C) * (D) %

(2022)

**2. Rohan starting working on MYSQL server. Kindly arrange the following commands in a sequence so that he can create a table, then insert a record into it and display all the records.
**

A. Insert into command

B. Create database <databasename>;

C. Create table command

D. Use <databasename>;

E. Select * from < tablename>; |

Choose the correct answer from the options given below: |

(A) B D C A E (B) B A E D C

(C) A B E D C (D) A C D B E

(2022)

3. Choose the correct output of the following SQL query:

Select MID("SAVE ENVIRONMENT",6,7);

(A) E ENVIR (B) ENVIRO

(C) ENVIRON (D) ENVIRONMENT

(2022)

4. Given the following SQL string functions: middle( ), mid( ), substr( ), substring( ) Find the odd-one out.

(A) mid( ) (B) substr()

(C) middle() (D) substring()

(Question No. 5-9)

ABC fitness centre has computerized their Gym by keeping details of their Trainees in Trainer table and clients in Customer table which are as follows:

Table: Trainer

TId	TName	Activity	Salary	Dt_Appoint
G101	Manish	Kick Boxing	18000	2020-10-12
G102	Sachin	Core	22000	2021-06-09
G103	Aahan	Core	25000	2020-05-30
G104	Aparna	Zumba	15000	2021-11-12
G105	Nitin	Yoga	20000	2022-02-15

Table: Customer

CId	Cust_Name	Gender	TId	Fee	Membership
C1	Sabina	F	G101	10000	12
C2	Rohit	M	G101	9000	10
C3	Asad	M	G102	12000	15
C4	John	M	G103	6000	6
C5	Aastha	F	G104	8000	8
C6	Neha	F	G102	9000	10
C7	Zubain	M	G102	10000	12
C8	Deljeet	F	G104	6000	6

(2022)

5. Answer the questions based on above tables.

Choose correct SQL query to display the details of all male customers having membership more than 10 months.

(A) Select * from Customer
Where Gender- "M" and Membership >10;

(B) Select CId, CName, Fee from Customer
Where Gender="M" and Membership>" 10 ";

(C) Select * from Customer
Where Gender="Male" and Membership<10;

(D) Select * from Customer
Where Gender-"M" or Membership>10;

(2022)

6. Answer the questions based on above tables.
Choose correct SQL query to display total customers under each trainer in the Gym.

(A) Select TId, TName, Count() from Customer
Where Trainer.TId= Customer.TId;

(B) Select TName,count() from Customer
group by TId;

(C) Select TId , count(*) from Customer
group by TId;

(D) Select TId, count(CId) from Customer
Where Trainer.TId= Customer.TId;

(2022)

7. Answer the questions based on above tables.
Choose correct SQL query to display the names of all trainees with their date of appointment in descending order, who are taking core activity.

(A) Select TName, Dt_Appoint from Trainer
Order by Dt Appoint dese
Where Activity="Core";

(B) Select TName, Dt_Appoint from Trainer
Where Activity="Core"
Order by Dt_Appoint desc;

(C) Select TName, Dt_Appoint from Trainer
Order by Dt Appoint dese
Having Activity-"Core";

(D) Select TName, Dt_Appoint from Trainer
Where Activity="Core"
Order by desc Dt_Appoint;

(2022)

8. Answer the questions based on above tables.
Choose correct SQL query to update the membership of all the customers, under Trainer with code G101 and G102, to 12 months.

(A) Update Customer
Set Membership=12
Where TId="G101" or TId="G102";

(B) Alter table Customer
Add Membership=12
Where TId="G101" or TId="G102";

(C) Update Customer
Set Membership=12
Where TId="G101" and TId="G102";

(D) Update Customer
Add Membership- 12
Where TId="G101" or TId="G102";

(2022)

9. Answer the questions based on above tables.
Choose the correct SQL query to display a report showing Trainer name, Salary, Customer name and Fee for all Trainers having salary between 20000 to 25000.

A. Select TName, Salary, Cust_Name, Fee
From Customer C, Trainer T
Where T.TId = C.TId and Salary >= 20000 and Salary <= 25000;

B. Select TName, Salary, Cust_Name, Fee
From Customer, Trainer
Where Customer.TId=Trainer.TId and Salary between 20000 and 25000;

C. Select TName, Salary, C_Name, Fee
From Customer C, Trainer T
Where C.TId- T.TId and Salary between 20000 and 25000;

D. Select TName, Salary, C_Name, Fee
From Customer, Trainer
Where C.TId= T.TId and 20000<=Salary<=25000;

E. Select TName, Salary, Cust Name, Fee
From Customer C, Trainer T
Where T.TId= C.TId and Salary between 20000 and 25000;

Choose the most appropriate answer from the options given below:

(A) A, B and C only (B) A, D and E only
(C) B, C and E only (D) A, B and E only

[Question No. 10-14]
Case study based question
An Educational Institute in Delhi make use of DBMS to store details of students. The institute maintains a database named 'school-record' under which there are two tables.

1. Student table: maintains general details of every student enrolled in the school
2. Stulibrary Table: To store the details of issued books.

- BookID is the unique identification number of each book.

*Minimum issue duration of a book is one day.

Student	
Field	**Type**
StuID	Numeric
StuName.	Varchar(20)
StuAddress	Varchar(50)
StuFatherName	Varchar(20)
StuContact	Numeric
StuAadhar	Numeric
StuClass	Varchar(5)
StuSection	Varchar(1)

Stulibrary	
Field	**Type**
BookID	Numeric
StuID	Numeric
Issued_date	Date
Return_date	Date

(2022)

10. Identify the SQL query which displays the data of table Stulibrary in ascending order of student ID.

(A) Select * from Stulibrary order by BookID;
(B) Select * from Stulibrary order by StuID ascending;
(C) Select * from Stulibrary order by StuID Asc;
(D) Select * from Stulibrary order by StuID DESC;

(2022)

11. The primary key of Stulibrary table is/are:

(A) BookID
(B) BookID, StuID
(C) BookID, Issued date
(D) Issued_date

(2022)

12. Which of the following SQL query will fetch ID of those issued books which have not been returned?

(A) Select BookID from Stulibrary where BookID is NULL;
(B) Select BookID from Stulibrary where StuID is NULL;
(C) Select BookID from Stulibrary where Issued_date is NULL;
(D) Select BookID from Stulibrary where Return_date is NULL;

(2022)

13. The alternate key for Student table will be ____

(A) StuName
(B) StuContact
(C) StuAadhar
(D) StuClass

(2022)

14. Which of the following SQL queries will display dates on which number of issued books is greater than 5?

(A) Select Issued_date from Stulibrary group by Issued_date where count $(*) > 5$;
(B) Select Issued_date from Stulibrary group by Return_date having count $(*) > 5$;
(C) Select Issued_date from Stulibrary group by Issued_date having count $(^*) > 5$;
(D) Select Issued_date from Stulibrary group by Return_date where count(*) > 5;

(2022)

15. Identify primary key in the given table student:

Name	AdmNo	Class	Section
Ankit	101	X	A
Anuj	102	XII	B
Bhanu	103	XII	A
Babita	104	XI	B
	105	XII	C

(A) Name (B) AdmNo
(C) Section (D) Class

(2022)

16. If a table has 5 tuples and 7 attributes, then what will be the degree and cardinality of the table?

(A) Degree =7, Cardinality =5
(B) Degree =7, Cardinality =7
(C) Degree =5, Cardinality =5
(D) Degree =5, Cardinality =7

(2022)

17. Consider the table given below.

Table A

S.No.	Name	Class
1	Mehek	8 A
2	Mahira	6 A
3	Lavanya	7 A
4	Sanjay	7 A
5	Abhay	8 A

Table B

S.No.	Name	Class
1	Aastha	7A
2	Mahira	6A
3	Mohit	7B
4	Sanjay	7A

Output Table

SNo	Name	Class
1	Mehek	8A
3	Lavanya	7A
5	Abhay	8

Identify the operation applied to the given tables to get the given output:

(A) TableA X TableB
(B) TableA U TableB
(C) TableA – TableB
(D) TableA ∩ TableB

(2022)

18. Consider the table given below:

Table: STUDENT

ADM	NAME	CLASS
1	Anshuman	12A
2	Arun Lal	12C
3	Sachin	12A
4	Kapil	12B
5	Sunil	12A
6	Virat	12C

Based on the above table, which command will give the following result:

CLASS No of students

12A 3

12C 2

(A) Select CLASS, Count(*) From STUDENT Group by CLASS;

(B) Select CLASS, Count(*) 'No of students'
From STUDENT
GROUP by CLASS;

(C) SELECT CLASS,COUNT(No of students)
FROM STUDENT
Group By CLASS
Having count(*)>1;

(D) SELECT CLASS,COUNT(*) 'No of students'
FROM STUDENT
Group By CLASS
Having count (^*)>1;

(2022)

19. Consider the table given below:

Table : STUDENT

ADMNO	NAME	CLASS	SCORE
A001	Amit	12A	90
A002	Amit	12B	91
A003	Bhavana	12A	90
A004	Yamini	12 A	89
A005	Ashok	12 B	95

Which of the following command will display all the records according to their names in descending order and their scores in descending order?

(A) SELECT * FROM STUDENT ORDER BY NAME, SCORE DESC;

(B) SELECT * FROM STUDENT ORDER BY NAME AND SCORE DESC;

(C) SELECT * FROM STUDENT ORDER BY NAME DESC, SCORE DESC;

(D) SELECT * FROM STUDENT ORDER BY NAME DESC AND SCORE DESC;

(2022)

20. Give the output for the following query:

select monthname("2003-11-10");

(A) October (B) November

(C) 10 (D) 11

(2022)

21. Assume the given tables Dance and Music.

Dance

SNo	Name	Class
1	Aastha	7 A
2	Mahira	6 A
3	Mohit	7 B
4	Sanjay	7 A

Music

SNo	Name	Class
1	Mehek	8 A
2	Mahira	6 A
3	Lavanya	7 A
4	Sanjay	7 A
5	Abhay	8 A

Which operation should be applied to the table to get the following output?

SNo	Name	Class
1	Aastha	7 A
2	Mahira	6 A
3	Mohit	7 B
4	Sanjay	7 A
1	Mehek	8 A
3	Lavanya	7 A
5	Abhay	8 A

(A) U (B) ∩

(C) – (D) X

(2022)

22. Find output for the following:

Select substr("Every cloud has a silver lining", 7,5);

(A) cloud

(B) cloud has a silver lining

(C) Every c

(D) very

(2022)

23. 'sqlalchemy is a library that is used to interact with MySQL database by providing required credentials' Which of the following statement(s) is/are correct?

A. "pip install sqlalchemy" command is used to install sqlalchemy
B. create engme() enables the connection to he estabiliched between database and pandas.
C. create_engine() does not return any object.
D. create_engine() takes only database name as the parameter for connecting with pandas.
E. String inside create_engine() is known as connection string.

Choose the correct answer from the options given below:

(A) A, B and C only (B) A, B and E only
(C) B, C and D only (D) A, C and E only

(2023)

24. Single row or scalar functions are applied on a single value and return a single value. Which of the following is NOT a Date Function?

(A) DATE() (B) NOW()
(C) THEN() (D) DAY()

(2023)

25. SQL applies conditions on the groups through which clause after groups have been formed?

(A) Group by (B) With
(C) Where (D) Having

(2023)

26. If column "Payment" contains the data set $\{10000, 15000, 25000, 10000, 15000\}$, what will be the output atter the execution of the given query?

SELECT SUM(DISTINCT PAYMENT) FROMEMPLOYEE;

(A) 75000 (B) 25000
(C) 10000 (D) 50000

(2023)

27. Which of the following is not an aggregate function?

(A) max(col)
(B) min(col)
(C) round(n,d)
(D) count(*)

(2023)

28. What is the output of the following SQL query?

mysql > SELECT RIGHT("PRAYGRAJ", 3);
(A) PRA
(B) PRAYAG
(C) RAJ
(D) PRAYAGRAJ

(2023)

29. Which clause amongst the following can be used along with aggregate functions?

(A) Select
(B) Group by
(C) Where
(D) Both Select and Group by

Consider the following EMPLOYEE table:
[FOR QUESTION NO. 30-34]

Emp_No	Ename	Salary	Bonus	DeptId
101	Aaliya	10000	234	D02
102	Kritika	60000	123	D01
103	Shabbir	45000	566	D01
104	Gurpreet	19000	565	D04
105	Joseph	34000	875	D03
106	Sanya	48000	695	D02
107	Vergese	15000	NULL	D01
108	Nachaobi	29000	NULL	D05
109	Daribha	42000	NULL	D04
110	Tanya	50000	467	D05

(2023)

30. What will be the output of the SQL query based on above EMPLOYEE table?

SELECT COUNT(*) FROM EMPLOYEE WHERE BONUS IS NULL ;

(A) 2 (B) 3
(C) 4 (D) 5

(2023)

31. What will be the output of the below SQL query based on above EMPLOYEE table.

SELECT AVG(Salary) FROM EMPLOYEE WHERE Ename like '_anya' ;

(A) 48000 (B) 47000
(C) 49000 (D) 50000

(2023)

32. SELECT SUM(Bonus) FROM EMPLOYEE WHERE Ename LIKE '%a' AND Salary > 45000 ;

(A) 1185 (B) 1265
(C) 1275 (D) 1285

(2023)

33. SELECT MIN(Salary) FROM EMPLOYEE WHERE DeptId = 'D01' ;

(A) 60000 (B) 15000
(C) 30000 (D) 45000

(2023)

34. SELECT MAX(Salary) FROM EMPLOYEE WHERE Bonus IS NOT NULL AND DeptId IN ('D01', 'D02');

(A) 48000 (B) 50000
(C) 60000 (D) 45000

(2023)

35. Match List I with List II

LIST I		LIST II	
A.	SELECT LOWER('COMPUTER');	I.	LOM'
B.	SELECT LEFT('COMPUTER', 3);	II.	UTER'
C.	SELECT RIGHT('COMPUTER', 4);	III.	OMP'
D.	SELECT MID(COMPUTER', 2,3);	IV.	'computer'

Choose the correct answer from the options given below:

(A) A-I, B-II, C-IV, D-III (B) A-IV, B-I, C-III, D-II
(C) A-IV, B-I, C-II, D-III (D) A-IV, B-II, C-I, D-III

(2023)

36. Which SQL function will return the following output:

mysql > Select ___ ?_____(53,10) ;
output __3

(A) Truncate (B) ROUND
(C) MOD (D) POW

(2023)

37. Which of the following is not an aggregate function that can be applied to a DataFrame?

(A) Max() (B) std()
(C) var() (D) sort()

(2024)

38. What is output of the following SQL statement?

SELECT MID('CUET2024',2,5)

(A) UET2 (B) UET20
(C) ET 202 (D) CUET2

(2024)

39. SQL applies conditions on the groups through clause after groups have been formed.

(A) where (B) having
(C) new (D) all

(2024)

40. Consider the following two tables emp1 and emp2

emp1

Id	name
1	amit
2	punita

emp2

Id	name
1	punita
2	anand

What is output of the following query?

SELECT name from emp1 minus SELECT name from emp2

(A) punita (B) amit
(C) anand (D) amit punita

(2024)

41. Consider the following SQL functions.

(A) CURD ATE()
(B) CURRENT_DATE()
(C) CURRENT_DATE
(D) TODAY()

Which of the above function/functions retums current date.

(A) (A), (B) and (D) only (B) (A), (B) and (C) only
(C) (A), (B), (C) and (D) (D) (B), (C) and (D) only

(2024)

42. Which of the following is correct syntax for inserting foreign key constraint in a relation?

(A) ALTER TABLE table_name ADD FOREIGN KEY(attribute name) REFERENCES referenced_table_name(attribute name)
(B) ADD TABLE table_name ADD FOREIGN KEY(attribute name) REFERENCES referenced_table_name(attribute name)
(C) ALTER TABLE table_name REFERENCES referenced_table_name(attribute name) ADD FOREIGN KEY (attribute name)
(D) MODIFY TABLE table_name ADD FOREIGN KEY(attribute name) REFERENCES referenced_table_name(attribute name)

(2024)

43. What is result of following arithmetic operation in SQL?

SELECT 5+NULL AS RESULT

(A) 5 (B) NULL
(C) 0 (D) 5NULL

(2024)

44. Which of the following expression in SQL would calculate the square root of 16?

(A) POWER(16,2) (B) POWER(16,0.5)
(C) POWER(16,1) (D) MOD(16)

(2024)

45. Amit wants to be familiar with SQL. One of his friends Anand suggest him to execute following sql commands.

(A) Create Table Student
(B) Use Database DB
(C) Select * from Student
(D) Insert into Student

In which order Amit needs to run above commands.

(A) (A), (B), (C), (D) (B) (A), (B), (D), (C)
(C) (B), (A), (D), (C) (D) (C), (B), (D), (A)

(2024)

46. The SQL keyword _____ is used with wildcards.

(A) LIKE (B) IN

(C) NOTIN (D) DISTINCT

(2024)

47. Aggregate functions can be used with _____ clause. They can not be used with _____ clause.

(A) WHERE,HAVING (B) HAVING,WHERE

(C) GROUP BY,HAVING (D) SELECT,HAVING

(2024)

48. What is the difference between COUNT(*) *and COUNT(column_name) in a SQL query?*

(A) COUNT (*) counts all rows, while COUNT(column_name) counts only non-null values in the specified column.

(B) COUNT(*) counts only distinct values, while COUNT(column_name) counts all duplicate values.

(C) COUNT (*) is faster than COUNT(column_name).

(D) There is no difference; they both do the same thing.

(2024)

49. A table Student has two text fields defined as below:

firstrame varchar(10)

lastname char(10)

If firstname stores value as 'sachin' and lastname stores value as 'kumar', then firstname will consume ___ characters space and lastname will consume ___ characters space.

(A) 6,5 (B) 6,10

(C) 10,6 (D) 5,6

(2024)

50. ___ function is used to modify values of a dataframe in conjunction with group by.

(A) index() (B) transform()

(C) reindex() (D) import()

(2025)

51. Given:

TableA:

Name	Hobbies
Anu	Dance
Anuj	Music

TableB:

Name	Hobbies
Prannav	Reading
Anuj	Music

Find TableA U TableB?

(A)

Name	Hobbies
Anu	Dance
Anuj	Music
Prannav	Reading

(B)

Name	Hobbies
Anuj	Music
Prannav	Reading

(C)

Name	Hobbies
Prannav	Reading

(D)

Name	Hobbies
Anu	Music
Anuj	Dance
Prannav	Reading

(2025)

52. The SELECT command when combined with DISTINCT clause is used to:

(A) returns records without repetition

(B) returns records with repetition

(C) returns all records with conditions

(D) returns all records without checking

(2025)

53. Give the output of the query:-

SELECT MONTH("2010-03-05");

(A) 3 (B) 5

(C) MARCH (D) MAY

(2025)

54. Match List-I with List-II

List-I	**List-II**
(Aggregate function)	**(Description)**
(A) count(marks)	(I) Count all rows
(B) count(*)	(II) Finding average of non null values of marks
(C) avg(marks)	(III) Count all non null values of marks column
(D) sum(marks)	(IV) Finding sum of all marks

Choose the correct answer from the options given below:

(A) (A) - (III), (B) - (I), (C) - (II), (D) - (IV)
(B) (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
(C) (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
(D) (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

(2025)

55. Given Relation: 'STUDENT'

SNO	SNAME	MARKS
1	Amit	20
2	Karuna	40
3	Kavita	NULL
4	Anuj	30

Find the value of:

SELECT AVG(MARKS) FROM STUDENT;

(A) 30 (B) 22.5
(C) 90 (D) 23

(2025)

56. _____operation is used to get the common tuples from two relations.

(A) Union (B) Intersect
(C) Set Difference (D) Cartesian product

(2025)

57. In SQL table, the set of values which a column can take in each row is called ____ .

(A) Tuple (B) Attribute
(C) Domain (D) Relation

(2025)

58. Single row functions are also known as _____ functions.

(A) Multi row
(B) Group
(C) Mathematical
(D) Scalar

(2025)

59. Ms. Ritika wants to delete the table 'sports' permanently. Help her in selecting the correct SQL command from the following.

(A) DELETE FROM SPORTS;
(B) DROP SPORTS;
(C) DROP TABLE SPORTS;
(D) DELETE * FROM SPORTS;

(2025)

60. State the output of the following query.

SELECT LENGTH(MID('INFORMATICS PRACTICES',5,-5)):

(A) NO OUTPUT (B) 5
(C) 0 (D) ERROR

(2025)

61. Match List-I with List-II

List-I	List-II
(A) group by	(I) math function
(B) mid()	(II) aggregate function
(C) count(0)	(III) having
(D) mod()	(IV) text function

Choose the correct answer from the options given below:

(A) (A) - (III), (B) - (IV), (C) - (II), (D) - (I)
(B) (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
(C) (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
(D) (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

(2025)

62. State the output of the following query:

SELECT ROUND(9873.567,-2);

(A) 9900 (B) 9873
(C) 9800 (D) 9873.5

(2025)

63. Given the following table:

EMPLOYEE

ENO	SALARY
A101	4000
B109	NULL
C508	6000
A305	2000

State the output of the following query based on the above given table.

SELECT COUNT(SALARY) FROM EMPLOYEE;

(A) 4 (B) 2
(C) 3 (D) 1

Answer Key									
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
(D)	(A)	(C)	(C)	(B)	(C)	(B)	(A)	(D)	(B),(C)
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
(B)	(D)	(C)	(C)	(B)	(A)	(C)	(B)	(C)	(B)
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
(A)	(A)	(B)	(C)	(D)	(A)	(C)	(C)	(D)	(B)
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
(C)	(D)	(B)	(C)	(D)	(C)	(D)	(C)	(B)	(B)
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
(B)	(A)	(B)	(B)	(C)	(A)	(B)	(A)	(B)	(B)
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**
(A)	(A)	(A)	(A)	(A)	(B)	(C)	(D)	(C)	(D)
61	**62**	**63**							
(A)	(C)	(C)							

EXPLANATION

1. Explanation: (D)

In SQL, the **LIKE** condition allows you to use wildcard characters for pattern matching. The two most commonly used wildcard characters are:

- **%**: Represents zero, one, or multiple characters. For example, LIKE 'a%' will match any string starting with the letter 'a'.
- **_** (underscore): Represents a single character.

Here's why the other options are incorrect:

A. **#**: The # symbol is not a valid wildcard character in SQL.

B. **$**: The $ symbol is not a valid wildcard character in SQL.

C. ***: The asterisk (*) is not a valid wildcard character in SQL. The correct wildcard character for multiple characters is %.

Thus, the valid wildcard character in SQL for the LIKE condition is **%**.

2. Explanation: (A)

Sequence of commands:

B. Create database;

First, you need to create a database where your table will reside.

D. Use;

After creating the database, you need to select it with the USE command to ensure that you are working within the correct database.

C. Create table command;

Now that you are working in the correct database, you can create a table using the CREATE TABLE statement.

A. Insert into command

After the table is created, you can insert data into the table using the INSERT INTO command.

E. Select * from;

Finally, you can display all the records from the table using the SELECT statement.

Thus, the correct sequence of commands is: **B → D → C → A → E**

3. Explanation: (C)

SELECT MID("SAVE ENVIRONMENT", 6, 7);

- The MID function is used to extract a substring from a string.
- The first argument is the string from which we want to extract a substring ("SAVE ENVIRONMENT").
- The second argument is the starting position from which the substring will begin. In this case, it starts at position **6**, which corresponds to the letter **'E'** in the word "ENVIRONMENT" (counting starts from 1).
- The third argument is the **length** of the substring to extract. Here, it specifies **7 characters**.

The substring starting from position 6 and taking 7 characters is **"ENVIRON"**.

Thus, the correct output is **C. ENVIRON**.

4. Explanation: (C)

- **mid()**, **substr()**, and **substring()** are all valid string functions in SQL, commonly used to extract a part of a string:
  - **mid()**: Extracts a substring starting from a specified position for a specified length (commonly used in MySQL).
  - **substr()**: Similar to mid(), it extracts a substring from a string starting from a specified position and for a specified length (used in several SQL dialects like MySQL, PostgreSQL, and SQLite).
  - **substring()**: Similar to substr(), it extracts a substring from a string (commonly used in SQL Server, PostgreSQL, and other SQL-based databases).
- **middle()**, however, is **not** a valid string function in SQL. It is not used in standard SQL syntax or supported by popular databases like MySQL, PostgreSQL, or SQL Server.

Thus, **middle()** is the odd one out.

5. Explanation: (B)

- You need to select male customers (Gender="M") who have a membership greater than 10 months (Membership>10).
- **Option B** correctly filters the data for male customers with a membership greater than 10 months, and it selects the CId, CName, and Fee columns from the Customer table, which is the most appropriate format based on the question.

Let's look at the other options:

A. **Select * from Customer Where Gender- "M" and Membership >10;**: This query has a syntax issue due to the incorrect use of the minus sign (-) instead of the equal sign (=) for the Gender condition.

C. **Select * from Customer Where Gender="Male" and Membership<10;**: This option is incorrect because the Gender value in the table is stored as "M" for male, not "Male", and the condition should check for Membership >10, not <10.

D. Select * from Customer Where Gender-"M" or Membership>10;: This query uses or between the conditions, which is incorrect because it would return all customers who are male *or* have a membership greater than 10, which is not what the question asks for. We need both conditions to be true at the same time, so and should be used.

Hence, **Option B** is the correct SQL query.

6. Explanation: (C)

- **Option C** correctly counts the total number of customers (count(*)) for each trainer, grouped by the trainer's ID (TId), which is the desired result. The group by TId ensures that the count is calculated for each trainer (TId).

Let's break down the other options:

A. Select TId, TName, Count() from Customer Where Trainer.TId= Customer.TId;: This query is incomplete because the Count() function needs an argument inside the parentheses (like Count(*) or Count(CId)). Also, it references a Trainer table without performing a JOIN, making the query syntactically incorrect.

B. Select TName, count() from Customer group by TId;: This query is incorrect because it doesn't include TId in the SELECT clause, and the count() function should be count(*) or count(CId). Furthermore, grouping by TId should include it in the SELECT clause.

D. Select TId, count(CId) from Customer Where Trainer.TId= Customer.TId;: This query incorrectly references a Trainer table without performing a JOIN. The query also lacks the necessary group by TId clause to group the result by the trainer.

Therefore, **Option C** is the correct SQL query.

7. Explanation: (B)

- **Option B** is the correct SQL query to display the names (TName) and date of appointment (Dt_Appoint) of trainees who are taking the "Core" activity, sorted in descending order of their appointment date.
- The WHERE clause filters the rows where the activity is "Core".
- The ORDER BY Dt_Appoint desc sorts the results by the date of appointment (Dt_Appoint) in descending order.

Let's review the other options:

A. Select TName, Dt_Appoint from Trainer Order by Dt Appoint dese Where Activity="Core";: This query has a syntax error: dese should be desc, and the ORDER BY clause should come after the WHERE clause.

C. Select TName, Dt_Appoint from Trainer Order by Dt Appoint dese Having Activity-"Core";: This query uses the HAVING clause incorrectly. The HAVING clause is used for filtering grouped results, but in this case, the WHERE clause should be used for filtering individual rows before grouping.

D. Select TName, Dt_Appoint from Trainer Where Activity="Core" Order by desc Dt_Appoint;: This query has a syntax error. The ORDER BY clause should specify the column first (Dt_Appoint), followed by desc.

So, the correct choice is **Option B**.

8. Explanation: (A)

- **Option A** correctly uses the UPDATE statement to modify the Membership field in the Customer table for customers who are associated with either TId = "G101" or TId = "G102". The membership is updated to 12 months for those customers.

Let's break down the other options:

B. Alter table Customer Add Membership=12 Where TId="G101" or TId="G102";: The ALTER TABLE statement is used to modify the structure of a table (like adding columns) and is not used for updating data in a column. The correct statement for changing data would be UPDATE, not ALTER.

C. Update Customer Set Membership=12 Where TId="G101" and TId="G102";: This condition is incorrect because a customer cannot have both TId = "G101" and TId = "G102" simultaneously. The AND condition is not appropriate here.

D. Update Customer Add Membership- 12 Where TId="G101" or TId="G102";: This is incorrect because ADD is not used in an UPDATE statement. The correct syntax for updating a column is SET, not ADD.

So, **Option A** is the correct SQL query to update the membership of all customers under Trainer codes G101 and G102 to 12 months.

9. Explanation: (D)

The correct answer is **D. A, B and E only**.

A. Correctly joins the Customer and Trainer tables using T.TId = C.TId, and filters trainers with a salary between 20000 and 25000 using the condition Salary >= 20000 and Salary <= 25000.

B. Also correct. It uses an implicit JOIN and the BETWEEN operator (Salary BETWEEN 20000 AND 25000) to filter the salary, which is a valid and efficient way to filter ranges.

E. Correct, similar to B, with a minor difference in naming (Cust Name vs. Cust_Name). It correctly joins the tables and filters based on the salary range using BETWEEN.

Incorrect options:

C. Incorrect because C.TId - T.TId is a syntax error. The correct join condition should be C.TId = T.TId.

D. Incorrect because 20000<=Salary<=25000 is not valid SQL syntax. The correct way to write this condition is Salary BETWEEN 20000 AND 25000.

So, Correct option is D.

10. Explanation: (B,C)

The task is to display the data from the **Stulibrary** table in **ascending order** of the **student ID** (StuID).

In SQL, the **ORDER BY** clause is used to sort the results, and by default, it sorts in **ascending order** (if not specified otherwise).

Let's evaluate the options:

A. Select * from Stulibrary order by BookID;
This query sorts the records by **BookID**, not by **StuID**, so this is incorrect.

B. Select * from Stulibrary order by StuID ascending;
This query is correct. It explicitly sorts the results by **StuID** in **ascending order**. However, the **ascending** keyword is optional, as it is the default.

C. Select * from Stulibrary order by StuID Asc;
This query is also correct. The keyword **Asc** is simply the shortened form of **ascending**, which is the default sorting order.

D. Select * from Stulibrary order by StuID DESC;
This query sorts the records by **StuID** in **descending order**, so it is incorrect for the requirement of ascending order.

The correct answers are **B** and **C**, both of which will give the data in ascending order of **StuID**.

Thus, the correct answers are:

B. Select * from Stulibrary order by StuID ascending;

C. Select * from Stulibrary order by StuID Asc;

11. Explanation: (B)

The **primary key** in a table uniquely identifies each record. In the context of the **Stulibrary** table, we need to determine which combination of fields ensures uniqueness for each record.

The fields in the Stulibrary table are:

- **BookID**: A unique identifier for each book.
- **StuID**: The ID of the student who has borrowed the book.
- **Issued_date**: The date when the book was issued.
- **Return_date**: The date when the book was returned (could be NULL if not returned yet).

Let's analyze each option:

A. BookID: If only BookID is used as the primary key, it would not be unique enough because a book could be issued to multiple students on different dates. So, **BookID alone cannot be the primary key**.

B. BookID, StuID: Combining BookID and StuID would create a composite key that uniquely identifies each book issued to each student. Since one book can be issued to different students, this combination ensures each row is unique. Therefore, **this is a valid primary key**.

C. BookID, Issued_date: If BookID and Issued_date are used together as the primary key, it could lead to ambiguity, as the same book could be issued to different students on the same date. Hence, **this combination might not uniquely identify each row**.

D. Issued_date: The Issued_date alone cannot serve as a primary key because multiple students can borrow books on the same date. So, **this would not be a valid primary key**.

The most appropriate primary key is **BookID and StuID** as it uniquely identifies each record by combining the book ID and the student who borrowed it.

Thus, the correct answer is: **B: BookID, StuID**

12. Explanation: (D)

The task is to find the **BookID** of books that have been issued but **not returned**. Since the **Return_date** is likely to be NULL for books that haven't been returned, we need to query where Return_date is NULL.

Let's evaluate the options:

A. Select BookID from Stulibrary where BookID is NULL;
This would return results where the BookID itself is NULL, which doesn't make sense in the context of issued books because BookID is a unique identifier for each book and should never be NULL.

B. Select BookID from Stulibrary where StuID is NULL;
This would return books where the StuID is NULL, which doesn't make sense because every issued book should have a corresponding StuID (i.e., a student who borrowed it).

C. Select BookID from Stulibrary where Issued_date is NULL;

This would return books where the Issued_date is NULL, which is unlikely because books are issued on a specific date, and Issued_date should not be NULL.

D. Select BookID from Stulibrary where Return_date is NULL;

This is the correct query because it looks for books where the Return_date is NULL, indicating that the book has been issued but not yet returned.

Thus, the correct answer is: **D. Select BookID from Stulibrary where Return_date is NULL;**

13. Explanation: (C)

An **alternate key** in a database is any candidate key that is not selected as the **primary key** but can still uniquely identify records in a table.

In the **Student** table, we know that **StuID** is likely the **primary key** because it uniquely identifies each student. The other attributes in the table could potentially serve as **alternate keys**, as they might also uniquely identify a student. Let's evaluate the options:

A. StuName: The name of a student is unlikely to be unique across all students, so it cannot be an alternate key.

B. StuContact: Contact numbers could be unique for each student (though it's not guaranteed), and it could be a valid alternate key if it is unique for each student.

C. StuAadhar: The **Aadhar number** is a unique identifier for each Indian citizen, so it would be a valid candidate for an alternate key, provided it is unique for each student.

D. StuClass: The class of a student is not unique, as multiple students can belong to the same class. Therefore, it cannot be an alternate key.

Based on this analysis, the most likely alternate keys are either **StuContact** or **StuAadhar**, both of which can be unique identifiers for students. However, **StuAadhar** is more certain to be unique for each student.

Thus, the correct answer is: **C. StuAadhar**

14. Explanation: (C)

The task is to find the dates on which the number of issued books is greater than 5.

We need to use **GROUP BY** to group the data by Issued_date and then filter it with the **HAVING** clause to count the number of books for each date, showing only those where the count is greater than 5.

Let's evaluate the options:

A. Select Issued_date from Stulibrary group by Issued_date where count (*) > 5;

The WHERE clause is used before grouping, which is incorrect here. The filtering condition should be applied after grouping, so HAVING should be used instead.

B. Select Issued_date from Stulibrary group by Return_date having count (*) > 5;

This is grouping by Return_date, which is not the requirement. The query should group by Issued_date instead.

C. Select Issued_date from Stulibrary group by Issued_date having count (*) > 5;

This query is correctly grouping by Issued_date and using HAVING to filter dates where the count of issued books is greater than 5. This is the correct query.

D. Select Issued_date from Stulibrary group by Return_date where count(*) > 5;

Similar to option B, this is grouping by Return_date and using WHERE instead of HAVING, which is incorrect.

Thus, the correct query is: **C. Select Issued_date from Stulibrary group by Issued_date having count (*) > 5;**

15. Explanation: (B)

In the given table, the **primary key** is the attribute that uniquely identifies each tuple (row).

Let's evaluate the options:

A. **Name**: There could be multiple students with the same name, so it's not a unique identifier.

B. **AdmNo**: This is typically a unique identifier for each student, so it can serve as the primary key.

C. **Section**: Students can be in the same section, so this isn't unique.

D. **Class**: Similarly, multiple students can be in the same class, so this is not a unique identifier either.

Therefore, the **primary key** is: **B. AdmNo**

16. Explanation: (A)

- **Degree** refers to the number of **attributes** (or columns) in a table.
- **Cardinality** refers to the number of **tuples** (or rows) in the table.

Given the table has 7 attributes and 5 tuples, the degree will be 7 (because there are 7 attributes), and the cardinality will be 5 (because there are 5 tuples).

So, the correct answer is:

A. Degree = 7, Cardinality = 5

17. Explanation: (C)

- The **output table** contains rows that are in **Table A but not in Table B**.
- Example:
  Mehek → only in A → included
  Mahira → in both → excluded
  Sanjay → in both → excluded
  Lavanya & Abhay → only in A → included
  This operation is called **set difference**.
  Answer: TableA - TableB (Option C)

18. Explanation: (B)

- To **count students per class**, we use COUNT(*) with GROUP BY CLASS.
- To name the column No of students, we use an **alias**: 'No of students'.
- Option **B** does exactly that:
  SELECT CLASS, COUNT(*) 'No of students'
  FROM STUDENT
  GROUP BY CLASS;
  So, Correct option is B.

19. Explanation: (C)

- To sort by multiple columns, **use commas**, not AND.
- To sort **descending**, use DESC after each column.
- So the correct syntax is:
  ORDER BY NAME DESC, SCORE DESC
  So, Correct option is C.

20. Explanation: (B)

The SQL function MONTHNAME() returns the **name of the month** for a given date.

- Input date: "2003-11-10" → Month is 11 → **November**
  So, Correct option is B.

21. Explanation: (A)

We have two tables: **Dance** and **Music**.
Output table includes:
All rows from **Dance**
Rows from **Music** that are **not in Dance** (i.e., Mehek, Lavanya, Abhay)
This is exactly the **union of two tables** (U), where duplicates are included only once if needed.

- ∩ → intersection → only common rows → incorrect
- **–** → difference → only rows in Dance not in Music → incorrect
- **X** → Cartesian product → incorrect
  So, Correct option is A.

22. Explanation: (A)

- The SQL function **SUBSTR("Every cloud has a silver lining", 7, 5)**
  means: start from the **7th character** and take **5 characters**.
- The 7th character is **'c'** (in *cloud*).
- Taking 5 characters → **cloud**
  Output: cloud
  So, Correct option is A.

23. Explanation: (B)

Let's evaluate each statement:

Statement	True/ False	Explanation
A. "pip install sqlalchemy" command is used to install sqlalchemy	**True**	This is the correct pip command to install the SQLAlchemy library.
B. create_engine() enables the connection to be established between database and pandas.	**True**	The create_engine() function from SQLAlchemy **creates a connection engine** that allows pandas to communicate with a database (for example, using pd.read_sql() or to_sql()).
C. create_engine() does not return any object.	**False**	It **does return an Engine object**, which represents the connection.
D. create_engine() takes only database name as the parameter.	**False**	It takes a **connection string** (which includes the database type, user, password, host, and database name).
E. String inside create_engine() is known as a connection string.	**True**	The string passed defines how to connect (e.g., 'mysql+pymysql:// user:password@localhost/ dbname').

Therefore, correct options are A, B, and E.

24. Explanation: (C)

- **DATE()**, **NOW()**, and **DAY()** → are valid **Date/Time functions** in SQL used to work with dates.

CHAPTER 5

STACK

PREVIOUS YEAR EXAM QUESTIONS

(2022)

1. The postfix form of $A * B + C/D$ is

(A) *AB/CD +
(B) A*BC+/D
(C) $AB^*CD/+$
(D) ABCD+/*

(2023)

2. Evaluate the following postfix expression and find the correct value in the following- $50, 60, +, 20, 10, -$, *

(A) 1100
(B) 1000
(C) 9000
(D) 10

(2023)

3. Which term is used to add an element into a stack?

(A) PUSH
(B) PULL
(C) SEEK
(D) POP

(2023)

4. Match List I with List II

LIST I		LIST II	
A	Stack	I	FIFO
B	EOF	II	Non-linear Data Structure
C	Tree	III	Exception
D	Queue	IV	LIFO

Choose the correct answer from the options given below:

(A) A-IV, B-III, C-II, D-I
(B) A-II, B-III, C-IV, D-I
(C) A-I, B-II, C-III, D-IV
(D) A-IV, B-III, C-I, D-II

(2024)

5. Evaluate the given postfix expression:

$3\ 5 * 6 + 2\ 3 * -$

(A) 39
(B) 15
(C) -9
(D) -17

(2024)

6. Stack works on the principle of ___ .

(A) Mid Element First
(B) First In First Out
(C) Last In First Out
(D) Last In Last Out

(2024)

7. Match List-I with List-II:

List-I Term	List-II Description
(A) Prefix	(I) In this the element entered first will be removed last.
(B) Postfix	(II) In this the element entered first will be removed first.
(C) Queue	(III) In this the operator is placed before the operands.
(D) Stack	(IV) In this the operator is placed after the operands.

Choose the correct answer from the options given below:

(A) (A) - (III), (B) - (IV), (C) - (II), (D) - (I)
(B) (A) - (IV), (B) - (III), (C) - (II), (D) - (I)
(C) (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
(D) (A) - (II), (B) - (I), (C) - (III), (D) - (IV)

(2024)

8. What will be the sequence of elements removed from the stack after performing the following operations

PUSH(10)
PUSH(20)
POP()
POP()
PUSH(30)
PUSH(40)
POP()
POP()
(A) 10
(B) 20
(C) 30
(D) 40

Choose the correct sequence from the options given below:

(A) (A), (B), (C), (D)
(B) (B), (A), (D), (C)
(C) (A), (B), (D), (C)
(D) (B), (A), (C), (D)

(2025)

9. Identify the type of expression where operators are placed before the corresponding operands:

(A) Polish expression
(B) Infix expression
(C) Postfix expression
(D) Reverse polish expression

(2025)

10. Evaluate the postfix expression:

24 5 7 * 5 / +

(A) 29 (B) 30
(C) 31 (D) 0

(2025)

11. STACK follows _____ principle, where insertion and deletion is from _____ end/ends only.

(A) LIFO, two (B) FIFO, two
(C) FIFO, top (D) LIFO, one

Answer Key									
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
(D)	(A)	(A)	(A)	(B)	(C)	(A)	(B)	(A)	(C)
11									
(D)									

EXPLANATION

1. Explanation: (D)

To convert the infix expression **A * B + C / D** into postfix notation, we follow the order of operations (PEMDAS):

Step-by-Step Process:

1. **Operator Precedence**:
- Multiplication (*) and division (/) have higher precedence than addition (+), so we evaluate **A * B** and **C / D** first.
2. **Convert A * B to postfix**:
The postfix form of **A * B** is **AB***.
3. **Convert C / D to postfix**:
The postfix form of **C / D** is **CD/**.
4. **Add the results**:
Now, the addition (+) operation is performed. In postfix, we place the operator after both operands, so the full postfix expression is:
*AB CD/ +**
Final Postfix Expression: *AB CD/ +**
So, Correct option is D.

2. Explanation: (A)

Postfix expression: 50 60 + 20 10 - *
Step-by-Step Evaluation:

1. **50 60 +**:
- Add **50** and **60**:
(50 + 60 = 110)
- The stack is now: **[110]**
2. **20 10 -**:
- Subtract **10** from **20**:
(20 - 10 = 10)
- The stack is now: **[110, 10]**
3. **110 * 10**:
- Multiply the two numbers at the top of the stack:
(110 × 10 = 1100)
- The stack is now: **[1100]**

Final Result: The result of the postfix expression is **1100**.
So, Correct option is 1.

3. Explanation: (A)

- In a **stack**, elements are added and removed in **LIFO (Last In, First Out)** order.
- The operation used to **add (insert)** an element to the top of the stack is called **PUSH**.
- The operation used to **remove** an element from the stack is called **POP**.

Therefore, to add an element into a stack, we use PUSH.
So, Correct option is 1.

4. Explanation: (A)

- **A. Stack → IV (LIFO):**
Stack follows **Last In, First Out** — the last element added is removed first.
- **B. EOF → III (Exception):**
EOF (End Of File) is an **exception** that occurs when a file's end is reached unexpectedly.
- **C. Tree → II (Non-linear Data Structure):**
A **Tree** is a **non-linear** data structure made up of nodes.
- **D. Queue → I (FIFO):**
Queue follows **First In, First Out** — the first element added is removed first.
So, Correct option is 1.

5. Explanation: (B)

Postfix Expression:
3 5 * 6 + 2 3 * -
Step-by-Step Evaluation:

1. **Push 3 and 5 onto the stack.**
Stack: **[3, 5]**

2. **Encounter * (multiplication):**
- Multiply the top two elements: (3 × 5 = 15).
- Push the result (15) back onto the stack.
  Stack: **[15]**
3. **Push 6 onto the stack.**
   Stack: **[15, 6]**
4. **Encounter + (addition):**
- Add the top two elements: (15 + 6 = 21).
- Push the result (21) back onto the stack.
  Stack: **[21]**
5. **Push 2 and 3 onto the stack.**
   Stack: **[21, 2, 3]**
6. **Encounter * (multiplication):**
- Multiply the top two elements: (2 × 3 = 6).
- Push the result (6) back onto the stack.
  Stack: **[21, 6]**
7. **Encounter - (subtraction):**
- Subtract the top two elements: (21 - 6 = 15).
- Push the result (15) back onto the stack.
  Stack: **[15]**
  Final Result: The result of the postfix expression is **15**.
  So, Correct option is 2.

6. Explanation: (C)
A stack always works on the principle: **LIFO — Last In First Out**
So, Correct option is 3.

7. Explanation: (A)
- **(A) Prefix → (III)**
  In prefix, the **operator comes before operands**.
  Example: +AB means A + B.
- **(B) Postfix → (IV)**
  In postfix, the **operator comes after operands**.
  Example: AB+ means A + B.
- **(C) Queue → (II)**
  Queue follows **FIFO (First In, First Out)** — the first element added is removed first.
  Example: like a line of people waiting.
- **(D) Stack → (I)**
  Stack follows **LIFO (Last In, First Out)** — the last element added is removed first.
  Example: like a stack of plates.
  Correct answer: (A) **(A)-(III), (B)-(IV), (C)-(II), (D)-(I)**

8. Explanation: (B)
Operations:
PUSH(10) → Stack: [10]
PUSH(20) → Stack: [10, 20]
POP() → removes **20** → Stack: [10]
POP() → removes **10** → Stack: []
PUSH(30) → Stack: [30]
PUSH(40) → Stack: [30, 40]
POP() → removes **40** → Stack: [30]
POP() → removes **30** → Stack: []
Sequence of elements removed:
20, 10, 40, 30
So, Correct option is B.

9. Explanation: (A)
- A **Polish expression** (also known as **Prefix notation**) is an expression where the operator is placed **before** its operands. For example, in Prefix notation, an addition operation would be written as + 3 4 instead of 3 + 4.
  Here are the other options for clarification:
- **Infix expression**: The operator is placed **between** the operands (e.g., 3 + 4).
- **Postfix expression**: The operator is placed **after** the operands (e.g., 3 4 +).
- **Reverse Polish expression**: This is another term for **Postfix expression**.
  So, the correct choice is **Polish expression**, referring to **Prefix notation**.

10. Explanation: (C)
The expression is: 24 5 7 * 5 / +
Step-by-step evaluation:
1. **24 5 7 * 5 / +**
- The first operation is 5 * 7, which gives **35**.
- Now the expression becomes: 24 35 5 / +.
2. **24 35 5 / +**
- The next operation is 35 / 5, which gives **7**.
- Now the expression becomes: 24 7 +.
3. **24 7 +**
- The final operation is 24 + 7, which gives **31**.
  Final result:
  The value of the expression is **31**.
  So, Correct option is 3.

11. Explanation: (D)
- **LIFO** stands for **Last In, First Out**, meaning the last element inserted into the stack is the first one to be removed.

- **One end** refers to the fact that both insertion (push) and deletion (pop) operations happen at the same end of the stack, which is typically called the **top** of the stack.
  Thus, a **stack** follows the **LIFO** principle, and operations are performed at **one end** (the top of the stack).
  So, Correct option is 4.