



# Delhi Public School, Howrah

PERIODIC TEST – III (2024-2025)

CLASS – XII

*Care must be taken not to write anything on the question paper. All the questions must be attempted in the correct sequence.*

**SUBJECT: COMPUTER SCIENCE (083)**

**THEORY EXAMINATION**

**Time Allowed:- 3 Hours**

**F.M.-70**

### General Instructions:

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

### SECTION - A

1.	Which of the following is an invalid identifier to be used in Python? (a) per%marks (b) _for (c) While (d) true	(1)
2.	What is the correct way to add an element to the end of a list in Python? (a) list.add(element) (b) list.append(element) (c) list.insert(element) (d) list.extend(element)	(1)
3.	What will be the output of print ("Welcome to my blog"[2:6]+ "Welcome to my blog"[5:6]) (a) Lcomme (b) lcomm (c) lcomme To (d) lcomme	(1)
4.	Which of the following statement is false? (a) A try-except block can have more than one except statement (b) One block of except statement cannot handle multiple exceptions (c) The finally block is always executed (d) When 1 == "1" is executed, no exception is raised	(1)
5.	Which of the following statement(s) would give an error during the execution of the following code? R = {'pno': 52, 'pname': 'Virat', 'expert': ['Badminton', 'Tennis'], 'score': (77, 44)} print (R) #Statement 1 R['expert'][0] = 'Cricket' #Statement 2 R['Score'][0] = 50 #Statement 3 R['pno'] = 50 #Statement 4 (a) Statement 1 (b) Statement 2 (c) Statement 3 (d) Statement 4	(1)
6.	Which pickle module method is used to write a content in a Python binary file? (a) save() (b) serialize() (c) store() (d) dump()	(1)
7.	Given the following dictionaries- dict_student = {'rno': '53', 'name': 'Rajbeer Singh'} dict_marks = {'Accts': 87, 'English': 65} Which statement will append the contents of dict_marks in dict_student?	(1)

	(a) dict_student + dict_marks (c) dict_student.merge(dict_marks)	(b) dict_student.add(dict_marks) (d) dict_student.update(dict_marks)	
8.	Which of the following is not a component of the math module in Python? (a) ceil() (b) mean() (c) fabs() (d) pi		(1)
9.	What will be the output of the following code? L = ["One", "Two", "Three", "Four"] print (len(L)/len(L[0])) (a) 6.5 (b) 13 (c) 13.5 (d) 6.0		(1)
10.	Expand the following terms: (i) PPP (ii) VoIP		(1)
11.	Which SQL operator performs pattern matching? (a) BETWEEN (b) LIKE (c) EXISTS (d) =		(1)
12.	Which Python function is used for displaying only one result set from SQL table in a database? (a) fetch1() (b) fetchno() (c) fetchall() (d) fetchone()		(1)
13.	Which of the following file opening mode in Python generates an error if the file does not exist? (a) r (b) a (c) w (d) w+		(1)
14.	The correct syntax of seek() is _____. (a) file_object.seek(offset, [,reference point]) (b) seek(offset, [,reference point]) (c) seek(offset, file_object) (d) seek.file_object(offset)		(1)
15.	Which of the following statement is false? (a) SMTP and POP protocols are used in email communications (b) URL of a page is not always the same as its domain name (c) HTTPS are safer than HTTP (d) Interlinking of collection of webpages is called internet		(1)
16.	_____ protocol provides access to services hosted on a remote computer. (a) Telnet (b) FTP (c) PPP (d) SMTP		(1)
17.	Which of the following is not a DDL command in SQL? (a) DROP (b) CREATE (c) UPDATE (d) ALTER		(1)
18.	The SELECT statement when combined with _____ clause, returns without repetition. (a) DISTINCT (b) DESCRIBE (c) UNIQUE (d) NULL		(1)
19.	Which of the following option is the correct unit of measurement for network bandwidth? (a) KB (b) Bit (c) Hz (d) Km		(1)
<b>Q20 and Q21 are ASSERTION (A) AND REASONING (R) based questions. Mark the correct choice as-</b> <b>(a) Both A and R are true and R is the correct explanation for A.</b> <b>(b) Both A and R are true but R is not the correct explanation for A.</b> <b>(c) A is true but R is false.</b> <b>(d) A is false but R is true.</b>			
20.	<b>Assertion (A):</b> For changes made to a variable defined within a function to be visible outside the function, it should be declared as global. <b>Reason (R):</b> Variables defined within a function are local to that function by default, unless explicitly specified with the global keyword.		(1)
21.	<b>Assertion (A):</b> A binary file in Python is used to store collection objects like lists and dictionaries that can be later retrieved as in their original form using the pickle module. <b>Reason (R):</b> Binary files are just like normal text files and can be read using a text editor like notepad.		(1)
<b>SECTION - B (2 X 7 = 14 Marks)</b>			
22.	Differentiate between Web server and Web browser. Write the names of any two web browsers.		(2)
23.	Raj's brother has written the following code that is encountering some errors. Rewrite the following code in Python after removing all the syntax errors and help Raj's brother regarding the same. Underline each correction done in the code. num1, num2 = 10, 45 While num1% num2 == 0 num1+20		(2)

	<pre>num2 += 30 else:     print('hello')</pre>	
24.	<p>(a) Write a function dispBook(BOOKS) in Python, that takes a dictionary BOOKS as an argument and displays the names in uppercase of those books whose name starts with a consonant. For example, Consider the following dictionary BOOKS = {1:"Python", 2:"Internet Fundamentals", 3:"Networking", 4:"Oracle sets", 5:"Understanding HTML"} The output should be: PYTHON NETWORKING</p> <p style="text-align: center;">OR</p> <p>(b) Write a Python Program containing a function FindWord(STRING, SEARCH), that accepts two arguments: STRING and SEARCH, and prints the count of occurrence of SEARCH in STRING. Write appropriate statements to call the function. For example, if STRING = "Learning history helps to know about history with interest in history" and SEARCH = 'history', the function should display- The word history occurs 3 times.</p>	(2)
25.	<p>What will be the output of the following code? L = [5,10,15,1] G = 4 def Change(X):     global G     N=len(X)     for i in range(N):         X[i] += G Change(L) for i in L:     print(i,end='\$')</p>	(2)
26.	<p>Rishikesh is preparing a test paper for his tuition students on the topic DBMS. He was writing questions on SQL queries that will show the use of COUNT() methods on the table data. He is facing some problem while executing the COUNT() method. Consider the following two commands with reference to the table, named Employee having a column named Department that Rishikesh is working on:</p> <p>(a) Select count(Department) from Employee; (b) Select count(*) from Employee; If these two commands are producing different results, (i) What may be the possible reason? (ii) Which command (a) or (b) might be giving a higher value?</p>	(2)
27.	<p>(a) Differentiate between % (percentage) and _ (underscore) characters used with the LIKE operator in SQL with appropriate examples.</p> <p style="text-align: center;">OR</p> <p>(b) Differentiate between DROP and DELETE commands in SQL with appropriate examples.</p>	(2)
28.	<p>a. Write a suitable Python statement for each of the following tasks using built-in functions/methods only:</p> <p>i. If D = {"Kolkata":70, "Mumbai":50, "Chennai":65} then write the statement to delete the element Mumbai:50 from Dictionary D. ii. Consider the string S = "Computer Science is good". What will be the statement to display the words separately from the string S in the form of a list?</p> <p style="text-align: center;">OR</p> <p>b. Write a Python Program to display alternate characters of a string my_str. For example, if my_str = "Computer Science", the output should be Cmue cec</p>	(2)

**SECTION - C (3 X 3 = 9 Marks)**

29. (a) Consider the table, BOOK and MEMBER given below: (3)

**TABLE: BOOK**

CODE	BNAME	TYPE
F101	The Priest	Fiction
L102	Easy Python	Programming
C101	Juman Ji	Thriller
F102	Untold Story	Fiction
C102	War Stories	Comic

**TABLE: MEMBER**

MNO	MNAME	CODE	ISSUEDATE
M101	SNEH SINHA	L102	2022-10-13
M103	SARTHAK	F102	2021-02-23
M102	SARA KHAN	C101	2022-06-12

(i) What do you understand by Natural Join?

(ii) What will be the output of the following statement?

(a) SELECT \* FROM BOOK NATURAL JOIN MEMBER;

(b) SELECT BNAME, ISSUEDATE FROM BOOK B, MEMBER M WHERE B.CODE=M.CODE;

OR

(b) Write the output of the queries (i) to (iv) based on the table given below:

EID	Name	DOB	DOJ	Salary	Project
E01	Ranjan	1990-07-12	2015-01-21	150000	P01
E02	Akhtar	1992-06-21	2015-02-01	125000	P04
E03	Muneera	1996-11-15	2018-08-19	135000	P01
E04	Alex	1991-10-25	2018-10-19	75000	P02
E05	Satyansh	1993-12-16	2018-10-19	85000	P04

i SELECT NAME, PROJECT FROM EMPLOYEE ORDER BY NAME DESC;

ii SELECT NAME, SALARY FROM EMPLOYEE WHERE NAME LIKE 'A%';

iii SELECT NAME, DOJ FROM EMPLOYEE WHERE SALARY BETWEEN 100000 AND 200000;

30. Topper Institutions Group maintains the following tables FACULTY and COURSES to maintain its working faculty details and course details. Go through the database tables and answer as directed: (3)

**Table: FACULTY**

FID	FNAME	LNAME	JOINDATE	SALARY
F01	Anishma	Garg	2000-12-14	32000
F03	Bhumi	Goel	2001-08-10	15000
F04	Neha	Verma	2000-05-07	27000
F05	Meenu	Sharma	2006-07-11	30000

**Table: COURSES**

C_ID	FID	CNAME	FEES
C11	F01	Grid Computing	40000
C12	F04	Python	17000
C13	F03	C++	8000
C14	F04	Computer Network	15000
C15	F01	HTML	12000
C16	F05	Data Science	NULL

(a) What will be the output of the following statements?

i. SELECT FID, MIN(FEES), MAX(FEES) FROM COURSES GROUP BY FID;

ii. SELECT AVG(SALARY) FROM FACULTY WHERE FNAME LIKE '%a';

iii. SELECT FNAME, CNAME, FEES FROM FACULTY F, COURSES C WHERE F.FID = C.FID AND FEE>15000;

OR

(b) Write SQL command for the following:

(i) To display the structure of a table COURSES in a database.

(ii) To display the FNAME, CNAME and SALARY for the matching FIDs.

	(iii) To display the C_ID, CNAME where the fees is greater than 12000 in descending order.	
31.	<p>Ritwik needs to write a function COUNT() in Python that enable him to read contents from a text file 'Gratitude.txt' and display the count of the letter 'e' in each line. Write the function for Ritwik that will perform the same.</p> <p><b>Example: If the file content is as follows:</b>  Gratitude is a humble heart's radiant glow,  A timeless gift that nurtures and bestows.  It's the appreciation for the love we've shown,  In moments big and small, it's truly known.</p> <p><b>The COUNT() function should display the output as:</b>  Line 1:3  Line 2:4  Line 3:6  Line 4:1</p> <p style="text-align: center;">OR</p> <p>Anaya is trying to write a user defined function in Python named ShowInLines () which reads contents of a text file named STORY. TXT and displays every sentence in a separate line. Assume that a sentence ends with a full stop (.), a question mark (?) or an exclamation mark (!).  <b>For example, if the content of file STORY. TXT is as follows:</b>  Our parents told us that we must eat vegetables to be healthy. And it turns out, our parents were right! So, what else did our parents tell?</p> <p><b>Then the function should display the file's content as follows:</b>  Our parents told us that we must eat vegetables to be healthy.  And it turns out, our parents were right!  So, what else did our parents tell?</p>	(3)
<b>SECTION – D (4 X 4 = 16 Marks)</b>		
32.	<p>i. Define the term constraint with respect to RDBMS. Give a suitable example.</p> <p>ii. Sameera maintains a database named STORE which contains a table named ITEM with the structure given below:</p> <ul style="list-style-type: none"> <li>• Ino(Item number)- integer</li> <li>• Iname(Item Name) - string</li> <li>• Price (Item Price) - float</li> <li>• Discount (Discount) - float</li> </ul> <p>Note the following to establish connectivity between Python and MySQL:</p> <ul style="list-style-type: none"> <li>• Username - root</li> <li>• Password - tiger</li> <li>• Host - localhost</li> </ul> <p>Help her to complete the following code and remove the record from the table ITEM for a particular value of item name input by the user.</p> <pre>import mysql.connector as mysql con1= mysql.connect(host=localhost', user='root', password=_____, database='STORE') #Statement-1 mycursor = _____#Statement-2 item_name = input("Enter the Item name to remove the record: ") query = _____#Statement-3 mycursor.execute(query) con1._____#Statement-4 print('Data Deleted successfully') con1.close()</pre> <p>With reference to the above code, answer the following questions:</p> <ol style="list-style-type: none"> <li>a) Complete statement 1 to establish the connection with the database.</li> <li>b) Write statement 2 to create the cursor object.</li> <li>c) Complete statement 3 to remove the record from the table ITEM based on the item name entered by the user.</li> <li>d) Complete statement 4 to save the changes in the table.</li> </ol>	(4)

OR

- i. Write one difference between the alternate key and the candidate key.
- ii. Considering the above given database and its table structure, complete the code that is given below to fetch the appropriate data as asked.

```
import mysql. _____ #Line 1
conn = mycon.connect(host='localhost', user = 'root', password = 'tiger', database='STORE')
_____ = conn.cursor() #Line 2
query = 'SELECT * FROM ITEM where Price > {}'.format(_____) #Line3
my_cur.execute(query)
data = mycursor. _____ #Line4
for rec in data:
    print(rec)
conn.close()
```

- a. Complete Line 1 to import the appropriate module.
- b. Complete Line 2 to create the cursor object
- c. Complete the query given in Line 3 to display details of all such items from the table ITEMS whose price is more than 5000.
- d. Complete Line 4 to extract all the records.

33. Given is a Dictionary Stu\_dict containing marks of students for three test-series in the form Stu\_ID:(marks of TS1, marks of TS2, marks of TS3) as key-value pairs. Write a Python program with the following user- defined functions to perform the specified operations on a stack named Stu\_Stk.

(i) Push\_elements(Stu\_Stk, Stu\_dict): It allows pushing IDs of those students, from the dictionary Stu\_dict into the stack Stu\_Stk, who have scored more than or equal to 80 marks in the TS3 Test.

(ii) Pop\_elements(Stu\_Stk): It removes all elements present inside the stack in LIFO order and prints them. Also, the function displays 'Stack Empty' when there are no elements in the stack.

Call both functions to execute the tasks..

For example:

If the dictionary Stu\_dict contains the following data: Stu\_dict={5:(87,68,89), 10:(57,54,61), 12:(71,67,90), 14:(66,81,80), 18:(80,48,91)}

After executing Push\_elements(), Stk\_ID should contain [5,12,14,18]

After executing Pop\_elements(), The output should be:

18  
14  
12  
5  
Stack Empty

34. Navdeep creates a table RESULT with a set of records to maintain the marks secured by students in Sem1, Sem2 and their divisions. After the creation of the table, he entered data of 7 students in the table.

**Table: RESULT**

ADNO	ROLLNO	SNAME	SEM1	SEM2	DIVISION
123	101	KARAN	366	410	I
245	102	NAMAN	300	350	I
128	103	ISHA	400	410	I
129	104	RENU	350	357	I
234	105	ARPIT	100	75	IV
187	106	SABINA	100	205	II
181	107	NEELAM	470	150	I

Based on the data given above answer the following questions:

- i. Identify the columns which can be considered as candidate keys.
- ii. If 2 more columns are added and 3 rows are deleted from the table result, what will be the new degree and cardinality of the above table?
- iii. Write a statement to increase the SEM2 marks by 3% for the students securing marks between 70 to 100.
- iv. a. Write a statement to update the division to 'III' where ADNO is 234.

OR

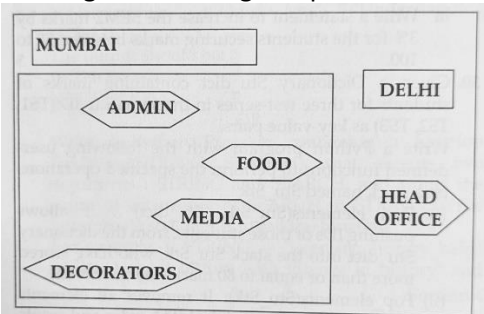
b. Considering that none of the table fields are set as primary key, write the statement to set ADNO as primary key.

35. Mukesh has created a binary file 'INVENTORY.DAT' that stores information about products using tuple with the structure (ProductID, ProductName, Quantity, Price). Write a Python function ExpensiveProducts() that will help Mukesh to read the contents of 'INVENTORY.DAT' and display the Product ID of products with a price higher than Rs. 1000. Additionally, calculate and display the total count of such expensive products.
- For example: If the file stores the following data in binary format-
- (1, 'ABC', 100, 5000)
  - (2, 'DEF', 250, 1000)
  - (3, 'GHI', 300, 2000)
- then the function should display
- Product ID: 1
  - Product ID: 3
  - Total expensive products: 2
- (4)

**SECTION - E (5 X 2 = 10 Marks)**

36. Create a function maxsalary() in Python to read all the records from an already existing file record.csv which stores the records of various employees working in a department. Data is stored under various fields as shown below:
- | E_code | E_name       | Scale | Salary |
|--------|--------------|-------|--------|
| A02    | Bijesh Mehra | S4    | 65400  |
| B02    | Vikram Goel  | S3    | 60000  |
| C09    | Suraj Mehta  | S2    | 45300  |
- Write a function that should display the row where the salary is maximum.  
Note: Assume that all employees have distinct salary.
- (5)

37. Fun Media Services Ltd is an event planning organization. It is planning to set up its India campus in Mumbai with its head office in Delhi. The Mumbai campus will have four blocks/buildings - ADMIN, DECORATORS, FOOD, and MEDIA.
- You as a network expert need to suggest the best network-related solutions for them to resolve the issues/problems mentioned in points (i) to (v), keeping in mind the distances between various blocks/buildings and other given parameters.



Shortest distance between various buildings:

FROM-TO	DISTANCE(METERS)
ADMIN TO DECORATIONS	90
ADMIN TO MEDIA	75
ADMIN TO FOOD	50
DECORATORS TO FOOD	65
DECORATORS TO MEDIA	50
FOOD TO MEDIA	45
DELHI Head Office to MUMBAI Head Office	1475 (Km)

The number of computers at various buildings is as follows:

BUILDING	NUMBER OF COMPUTERS
ADMIN	110
DECORATORS	75
MEDIA	12
FOOD	20

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>i. Suggest the most appropriate location of the server inside the MUMBAI campus (out of the 4 buildings). Justify your answer.</li><li>ii. Draw the cable layout to efficiently connect various buildings within the MUMBAI campus.</li><li>iii. Which hardware device will you suggest to connect all the computers within each building?</li><li>iv. Which of the following will you suggest to establish online face-to-face communication between the people in the Admin Office of the MUMBAI campus and the DELHI Head Office?<ul style="list-style-type: none"><li>a. Cable TV</li><li>b. Email</li><li>c. Video Conferencing</li><li>d. Text Chat</li></ul></li><li>v. What type of network (out of PAN, LAN, MAN, WAN) will be set up in each of the following cases?<ul style="list-style-type: none"><li>a. The Mumbai campus gets connected with the Head Quarter in Delhi.</li><li>b. The computers connected in the MUMBAI campus.</li></ul></li></ul> |  |
|--|--|