विद्या सर्वार्थि साधिका

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PERIODIC TEST-2

Class : XII

Subject: Computer Science (083). MM :70

Date : 24-09-2025 Time: 3 Hrs.

General Instructions:

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

SECTION A

1. What will be the output of the following Python code? (1)

```
import math
print(math.ceil(4.3) + math.floor(7.8))
```

2. What will be the output of the following code? (1)

```
data = [["Python", "Java"], ["C++", "JavaScript"]]
print(data[0][1] + data[1][0])
```

(A) JavaC++ (B) PythonJava (C) C++Java (D) PythonC++

3. What will be the output of the following code? (1)

```
print(not (25 > 30) or (15 < 20) and (10 == 10))
```

(A) True (A) (B) False (C) None (D) Error

4. Which SQL constraint ensures that no duplicate values can be inserted in a column? (1)

(A) Primary Key (B) Unique
(C) Check (D) Both (A) and (B)

5. What will be the output of the following Python code? (1)

```
text = "Data Science"
print(text[::2])
```

(A) DtSine (B) Dt cec (C) Data (D) Dtacec

6. Write the output of the following Python code: (1)

```
for num in range(2, 15, 4):
    print(num * 2, end=" ")
```

(A) 4 8 12 16 (B) 4 12 20 28 (C) 4 12 20 (D) 2 6 10 14

7. What will be the output of the following Python expression: (1)

```
print(2**3**2 - 15//4 + 20%7)
```

(A) 511 (B) 512 (C) 515 (D)510

8. What will be the output of the following Python code?

```
student = {"name": "Rohit", "marks": [85, 90, 78]}
print(student.get("grade", "Not Available"))
```

(A) Rohit (B) [85, 90, 78] (C) None (D) Not Available

9. Identify the error in the following SQL query: (1)

```
SELECT name, age FROM students WHERE age > 18 ORDER BY name GROUP BY age;
```

(A) The GROUP BY clause must come before the ORDER BY clause.
(B) The ORDER BY clause must come before the GROUP BY clause.
(C) You cannot use both GROUP BY and ORDER BY in the same query.
(D) The WHERE clause must come after the GROUP BY clause.

10. What will be the output of the following Python code? (1)

```
try:
    result = "10" + 5
except TypeError:
    print("Type Error Caught!")
except ValueError:
    print("Value Error Caught!")
else:
    print("No Error!")
```

(A) Type Error Caught! (B) Value Error Caught!
(C) No Error! (D) 105

11. What is the possible output range for the following Python code? (1)

```
import random
colors = ["Red", "Blue", "Green", "Yellow"]
start = random.randint(1, 2)
end = random.randint(2, 3)
for i in range(start, end + 1):
    print(colors[i], end="-")
```

(A) Blue-Green- or Blue-Green-Yellow- (B) Red-Blue- or Red-Blue-Green-
(C) Green-Yellow- only (D) All colors will printed

12. What will be the output of the following Python code? (1)

```
x = 10
print(x, end="##")
def modify():
    global x
    x += 5
    print(x, end="@@")
modify()
print(x)
```

(A) 10##15@@15 (B) 10##10@@15 (C) 15##15@@15 (D) 10##15@@10

13. Which SQL function is used to count the number of rows in a table? (1)
(A) SUM() (B) COUNT() (C) MAX() (D) AVG()

14. What is the output of the given Python code? (1)

```
phrase = "Machine Learning is Amazing"
print(phrase.split(" ", 2))
```

(A) ['Machine', 'Learning', 'is Amazing'] (B) ['Machine', 'Learning', 'is', 'Amazing']
(C) ['Machine', 'Learning is Amazing'] (D) Error

15. A database table has 8 attributes and 15 tuples, After adding 3 more attributes and removing 5 tuples, what will be the new degree and cardinality? (1)
(A) Degree: 11, Cardinality: 10 (B) Degree: 8, Cardinality: 10
(C) Degree: 11, Cardinality: 20 (D) Degree: 5, Cardinality: 18

16. Which MySQL command is used to add a new column to an existing table? (1)
(A) ADD COLUMN (B) ALTER TABLE ... ADD
(C) INSERT COLUMN (D) CREATE COLUMN

17. Which of the following statements about *PRIMARY KEY* is correct? (1)
(A) A table can have multiple PRIMARY KEYs
(B) PRIMARY KEY allows NULL values
(C) table can have only one PRIMARY KEY, but it can consist of multiple columns
(D) PRIMARY KEY is the same as UNIQUE without any differences

18. Which SQL statement is used to remove all records from a table but keep its structure? (1)
(A) DELETE (B) DROP (C) TRUNCATE (D) REMOVE

19. In a relational database, which concept ensures that foreign key values in one table match primary key values in another table? (1)
(A) Entity Integrity (B)Referential Integrity (C) Domain Integrity (D) Transaction Integrity

Q20 and Q21 are Assertion(A) and Reason(R) based questions. Mark the correct choice as:
(A) Both A and R are True and R is the correct explanation for A.
(B) Both A and R are True and R is not the correct explanation for A.
(C) A is True but R is False.
(D) A is False but R is True.

20. Assertion(A): A tuple in Python is immutable, so we cannot change its elements after creation. (1)
Reason (R) : Immutable objects in Python cannot be modified in place, they create new objects when "changed".

21. Assertion (A) : Foreign Key constraint maintains referential integrity in a database. (1)
Reasoning (R): Foreign Key ensures that values in one table correspond to valid values in the referenced table.

SECTION B

22. Explain the difference between mutable and immutable data types in Python with examples. (2)

OR

Differentiate between local and global variables in Python with suitable examples.

23. The following code is meant to calculate the area of a rectangle, but contains errors. Rewrite the corrected code and underline all corrections made. (2)

```
def calculate_area(length, width
   if length > 0 and width > 0
      area = length * width
      return area
   else
      return "Invalid dimensions"
result = calculate_area(10, 5
print "Area is:", result
```

24. Answer using Python built-in methods/functions only: (2)

I. Write a statement to convert all characters of string 'message' to uppercase.
II. Write a statement to remove all whitespaces from the beginning and end of string 'text'.

OR

Predict the output of the following Python code:

```
sentence = "Python programming is fun and rewarding"
print(sentence.replace("and", "&"))
print(sentence.find("fun"))
```

25. Write a function find_maximum() in Python that accepts a list of numbers and returns the largest number. If the list is empty, return None. (2)

OR

Write a Python function update_inventory() that accepts a dictionary inventory, an item name, and a quantity. The function should update the quantity if the item exists, otherwise add the new item with given quantity.

26. Predict the output of the Python code given below: (2)

```
scores = {"Math": 85, "Science": 92, "English": 78, "History": 88}
high_scores = []
for subject in scores:
    if scores[subject] >= 85:
        high_scores.append(subject)
print(sorted(high_scores))
```

27. Write suitable MySQL commands for the following: (2)
    1. Display all databases available in MySQL server.
    2. Create a table named PRODUCTS with columns: id (INT), name (VARCHAR), price(FLOAT).

OR

Differentiate between TRUNCATE and DELETE commands in SQL with examples.

28. Define the following database terms: (1)
    1. Primary Key
    2. Foreign Key

OR

Define the following database terms:
    1. Expand: DDL and DML
    2. Differentiate between CHAR and VARCHAR in MySQL.

SECTION C

29. Write a Python function that reads a text file named "Marks.txt" and counts the number of lines containing the word "PASS". (3)

OR

Write and call a Python function to read a text file POEMS.TXT and display only those lines that end with a consonant (ignoring case).

30. Consider a list of book records: (3)

```
books = [ ("Python Guide", 299), ("Java Basics", 399),
          ("Web Design", 199), ("Data Structures", 599) ]
```

Write user-defined functions for stack operations named BookStack:

I. push_books() – Push books with price greater than 250 into the stack.
   Expected Output: [('Python Guide', 299), ('Java Basics', 399), ('Data Structures', 599)]

II. pop_books() – Pop and display all books from the stack. Show "No more books" when stack is empty.
   Expected Output:

```
('Data Structures', 599)
('Java Basics', 399)
('Python Guide', 299)
No more books
```

31. Predict the output of the following Python code: (3)

```
text = "CBSE2025"
result = ""
for i in range(len(text)):
    char = text[i]
    if char.isdigit():
        result += str(int(char) + 1)
    elif char.isupper():
        result += char.lower()
    else:
        result += "#"
print(result)
```

OR

Predict the output of the following Python code:

```
fruits = ["apple", "banana", "orange", "grape", "kiwi"]
vowel_fruits = []
for fruit in fruits:
    if fruit[0].lower() in "aeiou":
        vowel_fruits.append(fruit.title())
print(vowel_fruits)
```

SECTION D

32. Consider the table PRODUCTS as given below: (4)

Table: PRODUCTS

PRODUCT_ID	PRODUCT_NAME	CATEGORY	PRICE	STOCK
P001	iPhone 15	Mobile	89999	25
P002	MacBook Air	Laptop	99999	15
P003	Samsung TV	Television	45999	8
P004	OnePlus 12	Mobile	64999	30
P005	Dell XPS	Laptop	85999	12

A. Write SQL queries for the following:

I. Display category-wise total stock where total stock is more than 20.
II. Display all product details sorted by price in ascending order.
III. Display unique categories available in the store.
IV. Display products whose names contain the word 'Air'.

OR

B. Predict the output of the following SQL queries:

I. SELECT * FROM PRODUCTS WHERE category = 'Mobile';
II. SELECT product_name, price FROM PRODUCTS WHERE price BETWEEN 50000 AND 90000;
III. SELECT COUNT(*) FROM PRODUCTS WHERE category = 'Laptop';
IV. SELECT MAX(price) FROM PRODUCTS;

33. Priya manages a library and maintains book records in a CSV file named Library.csv with columns: Book_ID, Title, Author, and Genre. (4)

Help her create the following user-defined functions:

- add_book() – Accept book details from user and append to Library.csv file.
- search_by_genre() – Read the CSV file and display all books of a specific genre entered by the user.

34. Arjun is developing a Student Management System using two tables. Help him write SQL queries for the following requirements: (4)

Table: STUDENTS

STUDENT_ID	NAME	CLASS	AGE
S001	Rahul	XII	17
S002	Priya	XI	16
S003	Amit	XII	18
S004	Neha	X	15

Table: MARKS

STUDENT_ID	SUBJECT	MARKS_OBTAINED
S001	Math	95
S001	Science	88
S002	Math	82
S003	Science	91

I. Display names of all students who are in class XII.
II. Display student details for those whose Math marks is available in Marks Table.
III. Update the age of student with STUDENT_ID 'S004' to 16.
IV. Display all possible combinations of students and their marks

OR

IV. Display student names along with their subject and marks obtained.

35. A MySQL database named SchoolDB contains a table student_records with the following structure: (4)

- Roll_No: Student roll number (Integer)
- Student_Name: Name of student (String)
- Class: Student's class (String)
- Marks: Marks obtained (Integer)

Database connection parameters:

- Username: school_admin
- Password: school123
- Host: localhost

Write a Python program to update the marks to 95 for the student with Roll_No 101 in the student_records table.

SECTION E

36. Mr. Verma runs a bookstore and wants to maintain inventory records. Each record contains: Book_ID**,** Title**,** Author**,** and Price**.** (2+3)

Write Python functions to:

I. Accept book data and write it to a binary file named "books.dat".

II. Read the binary file and increase the Price of all books written by "R.K. Narayan" by 10%.

37. Mrs. Kapoor manages a gym and needs to store member details. Each record contains: Member_ID**,** Member_Name**,** Membership_Type, and Fee_Paid. (2+3)

Write Python functions to:

I. Accept member data and write it to a binary file named "members.dat".

II. Read the binary file and update the Fee_Paid to 3000 for all members whose Membership_Type is "Annual".