PMSHRI KV ALIPURDUAR JN

Class: XII

Session: 2024-25

Computer Science (083) – Theory

SAMPLE QUESTION PAPER

Time allowed: 1.5 Hours **Maximum Marks: 40**

General Instructions:

- The question paper contains 18 questions.
- The paper is divided into 4 Sections: A, B, C, D, and E.
- Section A consists of 8 questions (1 to 8). Each question carries 1 mark.
- Section B consists of 3 questions (9 to 11). Each question carries 2 marks.
- Section C consists of 4 questions (12 to 15). Each question carries 3 marks.
- Section D consists of 1 question (16). The question carries 4 marks.
- Section E consists of 2 questions (17 to 18). Each question carries 5 marks.
- All programming questions must be answered using Python only.

Section A (1 mark each)

1. What is the purpose of the `GROUP BY` clause in SQL?

   a) To filter rows

   b) To order results

   c) To group rows by one or more columns

   d) To join tables

2. True or False: `Primary Key` columns can have duplicate values.

3. What is the use of the `HAVING` clause in SQL?

   a) To filter results after grouping

   b) To filter before grouping

   c) To join tables

   d) To update records

4. Mention one key feature of the Python programming language.

5. What will be the output of the following code in Python?

   ```python code
   print(2  3 + 5//2)
   ```

6. What does the term "Referential Integrity" mean in the context of databases?

   a) Ensuring that all foreign key values exist in the referenced table

   b) Making sure all primary key values are unique

   c) Restricting null values in a table

   d) None of the above

7. Consider the following SQL query:

Table Name- employees		
emp_id	Employee name	salary
1001	Sahil	40,000
1002	Amir	30,000
1003	Raj	50,000

```sql
SELECT AVG(salary) FROM employees;
```

What will the above query return and what will be the output?

a) The minimum salary of employees

b) The avg of all salaries

c) The maximum salary of employees

d) None of the above

8. Correct the errors in the following Python code snippet:

```python code
def greet(name)
    print("Hello", name)
```

Section B (2 marks each)

9. Write a Python program to calculate the sum of three given numbers.

10. What is a `Foreign Key`? Give an example to support your answer.

11. Predict the output of the following Python expression:

```python code
print(18 % 4 * 3 + 6 // 2)
```

Section C (3 marks each)

12. Correct the following Python code to reverse a string and underline the corrections made:

```python code
def reverse_string(str):
    reversed_str = ""
    for char in str:
        reversed_str = reversed_str + char
    return reversed_str
```

13. What is a nested loop in Python? Write a program using nested loops to print a 3x3 grid of numbers (1 to 9).

14. The following code contains syntax errors. Rewrite the correct code and underline the corrections:

```python code
def is_even(num)
    if num % 2 = 0:
        print("Number is even")
    else
        print("Number is odd")
```

15. Identify the **error and predict the output** of the given code:

```python code
def sum_diff(a, b):
    if a > b:
        return a + b
    return b - a
result = sum_diff(10, 5)
print(result)
```

Section D (4 marks)

16. Imagine you have a table named `**Students**` with columns `**StudentID**`, `**Name**`, and `**Marks**`. Now, write the following SQL queries:

a) **Add** a new column `**Grade**` to the `**Students**` table.

b) **Update** the marks of the student with `**StudentID**` 101 to 95.

c) **Delete** the record of the student with the **lowest marks**.

Section E (5 marks each)

17. Consider the following tables Books and Authors :

Books	Authors
BookID (PK)	AuthorID (PK)
Title	Name
AuthorID (FK)	Nationality
Price	Born
Rating	

Write SQL queries for the following:

a) Display the title and price of all books written by authors born after 1980.

b) Show the average rating of books written by a specific author (e.g., 'J.K. Rowling').

c) List the book titles along with their respective author names, ordered by price in ascending order.

18. You are given the following table **Employees** :

EmpID (PK)	Name	Salary	Department
1001	Raj	50000	IT
1002	Priya	55000	HR
1003	Sunil	60000	Finance
1004	Meena	48000	IT

Based on the table, answer the following:

a) Identify the most appropriate column to be **a Primary Key** .

b) Write a SQL query to **increase the salary of employees** in the **IT department by 10%.**

c) Write a SQL query to **delete the record** of the employee with the **lowest salary.**

OR

c) Add a column **Joining_Date** to the `Employees` table.