B.K. BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
A CBSE DAY-CUM-BOYS' RESIDENTIAL SCHOOL

MID-APRIL EXAMINATION 2025

INFORMATION TECHNOLOGY (802)

Class : XII A/B/C (SUBJECT-04) **Duration : 1 Hrs**
Date : 16-04-2025 **Max. Marks : 25**
Admission No.: **Roll No.:**

General Instructions:

Try to attempt all questions as per given order.

All questions are compulsory.

The Question Paper is divided into Three sections Section A to C.

- *Section A has 10 questions attempt only 9 and carry 1 mark each.*
- *Section B has 8 questions attempt only 5 and carry 2 marks each.*
- *Section C has 4 questions attempt only 2 and carry 3 marks each.*

MARKING SCHEME

Section-A

1. Which constraint is used when it is mandatory for a column to have a value? 1
   A. Data type constraint B. Check constraint
   C. not null constant * D. default constraint

2. Which user interacts with end user to understand the requirement and then create the specifications accordingly? 1
   A. Database administrator B. Application programmers
   C. End user D. System Analyst *

3. Who brought the concept of relational database? 1
   A. E.F. Codd * B. Charles Babbage
   C. Mark Henry D. None of these

4. Which key is a set of one or more columns that can be used to uniquely identify rows within a table. 1
   A. Primary Key B. Unique Key
   C. Foreign Key D. Super Key *

5. The number of attributes in a relation is called its _____. 1
   A. Degree * B. Domain C. Cardinality D. Attribute

6. What is the purpose of the ALTER TABLE command? 1
   A. To add or remove a database
   B. To modify the structure of an existing table *
   C. To delete an existing table
   D. To create a new table

7. What does the COUNT() function do in MySQL? 1
A. Returns the sum of numeric values
B. Returns the number of rows that match a condition *
C. Returns the maximum value in a column
D. Returns the minimum value in a column

8. What will happen if you try to insert a NULL value into a column defined as a PRIMARY KEY? 1
A. The NULL value will be accepted
B. An error will occur *
C. The NULL value will be replaced by zero
D. The table will be deleted

9. Which of the following is NOT an aggregate function? 1
A. SUM()
B. AVG()
C. MAX()
D. UPDATE() *

10. How do you add a PRIMARY KEY constraint to an existing table? 1
A. ALTER TABLE table_name ADD PRIMARY KEY (column_name); *
B. MODIFY TABLE table_name SET PRIMARY KEY (column_name);
C. UPDATE TABLE table_name ADD PRIMARY KEY (column_name);
D. SET PRIMARY KEY ON table_name (column_name);

SECTION - B

11. What is Data? 2
Answer: Data refers to raw facts and figures that have no meaning until they are processed. It can be in the form of numbers, text, images, or symbols. For example, a student's marks, name, and roll number are data.

12. What are the advantages of using a database? 2
Answer: (0.5 marks each)
The advantages of using a database include:
Data Consistency – Ensures uniformity of data across multiple users.
Data Security – Provides controlled access to data using authentication and permissions.
Elimination of Redundancy – Prevents duplication by storing data efficiently.
Data Integrity – Ensures accuracy and reliability of data.

13. What is a Relational Database? 2
Answer: A relational database is a type of database that stores data in tables with rows and columns, where relationships exist between different tables using keys (Primary Key, Foreign Key). Example: MySQL, PostgreSQL.

14. Give an example to explain Referential Integrity. 2

Answer: Suppose we have two tables:

Student Table

Student_ID (Primary Key)	Name
101	John
102	Alice

Course Table

Course_ID	Student_ID (Foreign Key)	Course_Name
C1	101	Math
C2	102	Science

Referential Integrity ensures that the Student_ID in the **Course Table** always exists in the **Student Table**. If a student is deleted from the Student Table, either their courses must also be deleted, or the deletion should be restricted.

15. What is the purpose of the CHECK constraint in SQL? 2

Answer:

The **CHECK** constraint ensures that column values meet a specific condition before being inserted or updated. It helps maintain data integrity.

16. Write an SQL query to increase the salary in the Emp table for the employee with EmployeeID 101 by 5000. 2

Answer:

```
UPDATE Employees
SET Salary = Salary + 5000
WHERE EmployeeID = 101;
```

1 mark for command & 1 for logic+ condition

17. Write an SQL query to create a table named Employees with the following columns: 2

EmployeeID (Integer, Primary Key)
Name (Varchar, 100)
Department (Varchar, 50)
Salary (Decimal, 10,2)

Answer:

```
CREATE TABLE Employees (
   EmployeeID INT PRIMARY KEY,
   Name VARCHAR(100),
   Department VARCHAR(50),
   Salary DECIMAL(10,2)
);
```

-----> 1 mark (opening & closing)

1 mark

18. Suggest the datatype for the following columns of salary table to be created: 2

Emp_ID, Name, Basic_Sal, Date_of_Join

Answer: (0.5 mark each)

Emp_ID: varchar,
Name: varchar,
Basic_Sal: Integer,
Date_of_Join: Date

SECTION – C

19. **Write three points why databases are better than traditional file system?** 3

Answer:

In traditional file systems, the same data might be stored in **multiple files**, leading to duplication.
Databases use **normalization** and a centralized structure to **avoid unnecessary repetition** of data, saving storage and ensuring efficiency.
Due to redundancy in file systems, updating data in one file but not in others can lead to **data inconsistency**.
Databases ensure **data integrity and synchronization** across related tables through keys, constraints, and relationships.
File systems lack advanced querying and indexing, making data retrieval **slow and manual**.
Databases provide **structured storage**, indexing, and query languages like **SQL** for **faster and more reliable data access**.

20. **Define : a. Primary key b. Foreign key** 3

Answer:

A **Primary Key** is a column (or a set of columns) in a table that **uniquely identifies each row** in that table. Cannot contain NULL values. Must contain **unique** values. Each table can have **only one** primary key (can be composite).

A **Foreign Key** is a column (or set of columns) in a table that is used to **reference the Primary Key** in another table. Creates a **relationship between two tables**. Ensures **referential integrity**. Values in a foreign key column must **match existing values** in the referenced primary key column.

21. Write the Sql Query:

Given Table: **employees**

emp_id	name	department	salary	join_date	email
101	Alice Smith	HR	50000	2020-05-10	alice@example.com
102	Bob Johnson	IT	70000	2019-08-15	bob@example.com
103	Charlie Lee	Finance	60000	2021-02-20	charlie@example.com
104	David Brown	IT	80000	2018-11-30	david@example.com

a. Write an SQL query to add a new column bonus INT to the employees table.
b. Insert a new employee with the following details:
emp_id: 105
name: Emma Davis
department: Marketing
salary: 55000
join_date: 2022-09-10
email: emma@example.com

c. Write an SQL query to **increase the salary** of all employees in the **IT department** by **10%** 3

Answer: (One mark each)

a. ALTER TABLE employees ADD COLUMN bonus INT;

b. INSERT INTO employees (emp_id, name, department, salary, join_date, email, bonus) VALUES (105, 'Emma Davis', 'Marketing', 55000, '2022-09-10', 'emma@example.com', NULL);

c. UPDATE employees SET salary = salary * 1.10 WHERE department = 'IT';

22. **Write a short note:** 3

a. COUNT( ) b. AVG ( ) c. MAX( )

Answer: (one mark each)

Count: counts the number of rows in a specified table or the number of non null values in a particular column.

Avg: calculates the average or mean value of a numeric column.

Max: returns the maximum value in a column.