**Database Management Systems (CS- 107)**

**Mid Semester Exam**

**Total Marks - 20**

**Note – Attempt any four questions. Each question has equal weightage (5 marks).**

**Ques1.** Explain the following terms – Databases, DBMS and Relational Database. What is data independence and why is that necessary?

**Ques2.** Consider the below tables – runners and races.

sql> SELECT \* FROM runners;

+----+--------------+

| id | name |

+----+--------------+

| 1 | John Doe |

| 2 | Jane Doe |

| 3 | Alice Jones |

| 4 | Bobby Louis |

| 5 | Lisa Romero |

+----+--------------+

sql> SELECT \* FROM races;

+----+----------------+-----------+

| id | event | winner\_id |

+----+----------------+-----------+

| 1 | 100 meter dash | 2 |

| 2 | 500 meter dash | 3 |

| 3 | cross-country | 2 |

| 4 | triathalon | NULL |

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1. Let’s assume, we run the below query on top of these two tables,

SELECT \* FROM runners WHERE id NOT IN (SELECT winner\_id FROM races)

Write the output of this query. Is there any issue with this query? If yes, how would you approach to fix that issue?

1. What happens if set resulting from NOT IN condition has null value in it?

**Ques3.** Let us assume that we have an employee table with more than 10 records. Write a SQL query to find the 10th highest employee salary from an employee table. Explain your answer.

**Ques4.** Table Name: - Employee

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Empid** | **EmpName** | **Department** | **ContactNo** | **EmailId** | **EmpHeadId** |
| 101 | Isha | E-101 | 1234567890 | isha@gmail.com | 105 |
| 102 | Priya | E-104 | 1234567890 | priya@yahoo.com | 103 |
| 103 | Neha | E-101 | 1234567890 | neha@gmail.com | 101 |
| 104 | Rahul | E-102 | 1234567890 | rahul@yahoo.com | 105 |
| 105 | Abhishek | E-101 | 1234567890 | abhishek@gmail.com | 102 |

Write schema for the above table. Write a query to fetch the record of all the employees whose name starts with ‘P’.

**Ques5.** What is ER diagram? Draw the ER diagram for BHU Cultural Events Database. Ensure that you must have different types of attribute and entities in it. Specifically mention which attribute you will consider as primary key.