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| <br><b>PES</b><br><small>UNIVERSITY</small>                              | <b>PES University, Bengaluru</b><br><small>(Established under Karnataka Act No. 16 of 2013)</small> | <b>UE20CS903</b> |
| <b>August 2023: END SEMESTER ASSESSMENT (ESA)</b><br><b>M TECH DATA SCIENCE AND MACHINE LEARNING_SEMESTER I</b><br><b>UE20CS903 – Databases &amp; SQL</b> |   |                  |
| Time: 3 Hrs   | Answer All Questions  | Max Marks: 100   |

#### INSTRUCTIONS

- All questions are compulsory.
- Section B and C are coding questions which have to be answered in the system.
- **Execute provided ‘.sql’ files in MySQL Workbench to create required database and tables.**
- Section A should be handwritten in the answer script provided.

#### SECTION A – 20 MARKS

|   |   |   |   |
|---|---|---|---|
| 1 | a | What is the difference between primary key and unique key?                            | 2 |
| 1 | b | What is the difference between the DELETE TABLE and TRUNCATE TABLE commands in MySQL? | 2 |
| 1 | c | What is meant by transaction? What are ACID properties?                               | 2 |
| 1 | d | Which MySQL function is used to concatenate string?                                   | 2 |
| 1 | e | How can you change the name of any existing table by using the SQL statement?         | 2 |

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| 2 | a | What is the view? How can you create and drop view in MySQL?  | 2 |
| 2 | b | What are the functions of commit and rollback statements?   | 2 |
| 2 | c | What's wrong with this query?<br>SELECT department_id, count(*) FROM department WHERE count(*) > 5<br>GROUP BY department_id; | 2 |
| 2 | d | What is a “cross join”?   | 2 |
| 2 | e | Explain different types of Normalization.   | 2 |

#### SECTION B – 40 MARKS

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|---|--|---|
|   | <b>Use warehouse_employees schema for answering questions 3a to 3j</b> |   |
| 3 | a  | Write a Query to Select the code of each box, along with the name of the city the box is located in.  |
| 3 | b  | Write a Query to Select the warehouse codes, along with the number of boxes in each warehouse.  |
| 3 | c  | Write a Query to Select the codes of all warehouses that are saturated (a warehouse is saturated if the number of boxes in it is larger than the warehouse's capacity). |

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| 3 | d | Write a Query to Select the codes of all the boxes located in Chicago. (Use Subquery)   | 4 |
| 3 | e | Write a Query to Select all the data of employees, including each employee's department's data.   | 4 |
| 3 | f | Write a Query to Select the name and last name of each employee, along with the name and budget of the employee's department.               | 4 |
| 3 | g | Write a Query to Select the name and last name of employees working for departments with a budget greater than \$60,000.                    | 4 |
| 3 | h | Write a Query to Select the names of departments with more than two employees (use subquery)  | 4 |
| 3 | i | Write a Query to Select the name and last name of employees working for departments with second lowest budget.                              | 4 |
| 3 | j | Write a Query to Select the number of employees in each department (you only need to show the department code and the number of employees). | 4 |

### SECTION C – 40 MARKS

|   |   |  |   |
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|   |   | <b>Use sales schema for answering questions 4a to 4f</b>   |   |
| 4 | a | Write a Query to display the customers who have similar first name. (USE TABLES: track, artist, customer)  | 8 |
| 4 | b | Write a Query to find the customer name, invoice date and previous invoice dates for every customer.(USE TABLES: invoice)  | 5 |
| 4 | c | Write a Query to find the total tracks for each genre, which has unit price more than 0.9 and genre name starts with 's'. (USE TABLES: track, genre)   | 5 |
| 4 | d | Consumer behaviour analysis is the study of how people make purchase decisions with regard to a product, service or organisation. And a Quantitative analysis is to be performed to understand the number of unique items bought by customer. Using the Media database, write a query to rank customers based on number of unique albums purchased by them in the lifetime. (USE TABLES: track, invoiceline, invoice)  | 8 |
| 4 | e | The popularity of Music, irrespective of the quality of the song or the talent involved in composing and playing it, it is nearly impossible to know what makes a song popular. As a musician, people have always been curious about what really makes a song likeable to the masses. To analyse this, the data about the number of tracks billed per composer is needed (invoice raised). Write a Query to get the details of total number of tracks billed per composer. Sort the result in the descending order of the total tracks billed. (Use Tables: track , invoiceline) . | 6 |
| 4 | f | Consumer behaviour analysis is the study of how people make purchase decisions with regard to a product, service or organisation. And a Quantitative analysis is to be performed to understand the number of items bought by customers in every order. Using the Media database, write a query to Create a virtual table to display the details like customerid, billing city and customer city and the number of albums billed in each order placed(invoice raised). (9 Marks) (USE TABLES: track, invoiceline, invoice, customer)  | 8 |