**Unit 7 - Module 5 - Fundamentals of battery pack design**

**Week 6 - Assignment**

For this week's assignment, you are required to design a battery pack for a specified electric vehicle. The vehicle's specifications are as follows:

- **Vehicle Type:** Electric Car
- **Battery Capacity:** 70 kWh
- **Vehicle Weight:** 2 tons
- **Top Speed:** 120 km/h
- **Range:** 400 km
- **Operating Environment:** Urban and suburban

You are required to:

1. **Select a suitable battery pack configuration**
2. **Design the battery management system**
3. **Create a layout diagram**
4. **Calculate the energy storage requirements**
5. **Prepare a detailed report**

**Analytical Formulas and boundary conditions**

- **Series connection:** \( V_{total} = V_1 + V_2 + \ldots + V_n \)
- **Parallel connection:** \( I_{total} = I_1 + I_2 + \ldots + I_n \)

**Assignment Instructions**

- **Due Date:** [Insert Date]
- **Grading Criteria:**
  - **Design Layout:** 30%
  - **Energy Storage Calculation:** 40%
  - **Battery Management System Design:** 30%

**Low Voltage**

- **Task 1:** (Insert detailed task instructions)
- **Task 2:** (Insert detailed task instructions)

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**Image Description**

- **Diagram 1:** Battery pack configuration with series connection.
- **Diagram 2:** Battery management system schematic.
- **Diagram 3:** Energy storage requirements chart.
- **Diagram 4:** Vehicle performance graph.

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**Note to Students:**

- Please submit your assignment via the online portal by the due date.
- Ensure all calculations are shown in your report.
- Collaboration is encouraged, but all work must be original and properly referenced.