Problem Statements (Hardware Section)

Participants may choose any one of the following problem statement themes for Hardware Section:

1. **Smart Resource Optimization System**
   Design a hardware-based system to monitor and optimize the usage of energy, water, materials, or fuel in industrial, institutional, or domestic applications.

2. **Affordable Automation for Small-Scale Industries**
   Develop a low-cost automated or semi-automated hardware solution to improve productivity, quality, or safety in small-scale or cottage industries.

3. **Smart Safety and Monitoring Device**
   Create a hardware solution that enhances safety, security, or hazard detection in workplaces, laboratories, construction sites, or public environments.

4. **Sustainable and Green Technology Solution**
   Design an eco-friendly hardware prototype focusing on renewable energy, waste reduction, recycling, or environmental monitoring.

5. **Smart Infrastructure and Built Environment**
   Develop a hardware-enabled system for smart buildings, smart campuses, roads, or infrastructure monitoring.

6. **Assistive Technology for Health and Accessibility**
   Build a hardware-based assistive device supporting healthcare, elderly care, or differently-abled individuals.

7. **Smart Agriculture and Food Processing System**
   Design a hardware solution to enhance agricultural productivity, food processing efficiency, quality control, or storage.

8. **Predictive Maintenance and Fault Detection**
   Develop a system capable of detecting faults or predicting maintenance requirements in machines, structures, or equipment.

9. **Smart Mobility and Transportation Solution**
   Create an innovative hardware model to improve transportation safety, efficiency, or monitoring in ground or aerial systems.

10. **Digital-Physical Integration for Business Applications**
    Design a hardware–software integrated solution for inventory management, logistics, operational tracking, or business process optimization.