Robotic Billiards Challenge – FINALE ROUND

Overview

In a futuristic world where robots have transformed sports, a new challenge has emerged—**Robotic Billiards**.
Teams must design and operate a robot that can skillfully transport and pocket cubes (power balls) into scoring areas while following strict navigation rules.
Your mission in the **Finale Round** is to design **one manual robot (Striker)** capable of completing all tasks within the given time limit.

Robot Criteria – Finale Round

The Striker Robot must meet the following technical rules:

1. Control & Navigation

- The robot must be wirelessly controlled using the **RoboQuest Controller**.
- Only mobile phones be used for control (RC remotes are not allowed).
- The robot must be **fully manual**, with **no autonomous features**.
- Only **1 RoboQuest controller** is allowed per team.
- Only **one Bluetooth module** is permitted for communication.

2. Motion & Mobility

- Only **BO motors** with maximum **150 RPM** (checked on tachometer).
- Robots must drag, guide, or strike cubes without damaging the arena.
- The robot must remain safe and must not damage props or the track.

3. Size, Weight & Electrical Constraints

- No specific rules for Robot dimensions
- Only battery supply allowed (No AC power).

- Battery limit: **Maximum 12V**.
- Wheel restrictions:
    - Max diameter: **8 cm** | Max width: **2.5 cm**
    - **Omni wheels NOT allowed**

Finale–Specific Game Rules

1. Mandatory Track Movement

- Every cube MUST travel **only through the designated track path** in the arena.
- Robots **cannot directly hit cubes** from Storage Zone to Scoring Pocket.
- Cubes must be **dragged fully through the track** until they reach the **Power Pocket Zone**.

2. Drag–Then–Hit Rule

- The robot must drag each cube along the track until the **Power Pocket**.
- From the Power Pocket:
    - The robot must **HIT** the cube into the Scoring Pocket for full points.
    - Only cubes **hit from the Power Pocket** qualify for **bonus points**.

3. Alternative Scoring (If Hitter Fails)

- If the hitting mechanism fails or malfunction, the robot may **drag** the cube from Power Pocket to Scoring Pocket.
- **No bonus points** awarded in this case.

4. Robot Touch Rule

- Teams may touch or pick up their robot **only 5 times** during the entire game.
- After 5 touches, any additional touch may result in penalties or disqualification (as per judges).

5. Track Violation

- If a cube moves **outside the track**, it will be returned to the **storage area**.

- A penalty will be applied (see scoring).

6. Judge Authority

- Any final decisions, design uniqueness bonus, rule interpretations, or changes are solely at judges' discretion.

Arena Details – Finale

- Arena size: **240 cm × 340 cm**
- Robot starts in the **Manual Control Zone**
- Cubes start in the **Storage Zone**
- Cube size: **2.5 inches**
- Each cube must be completely inside the **Scoring Pocket** for points.

Finale Scoring System

1. Race Against Time

Completion Time	Points
Under 2 minutes	**100 points**
Under 3 minutes	**80 points**
Under 4 minutes	**60 points**
Under 5 minutes	**50 points**

2. Cube Scoring

Cube Result	Points
Perfect Goal (cube fully in scoring pocket)	**20 points per cube**
Missed goal	**0 points**

3. Hitter Bonus

Action	Bonus Points
Cube hit from Power Pocket → Scoring Pocket using hitter	**+10 points per cube**
Cube dragged into scoring pocket	**0 bonus points**

4. Penalties

Violation	Deduction
Cube moved outside track	**–3 points per instance**
Intentional cube ejection (if any)	**–2 points**
Intentional robot collision	**–5 points**

5. Special Design Bonus

Criteria	Points
Unique robot design (judge's decision)	**+10 points**

Winning Criteria

- The team with the **highest total score** wins.
- Teams must optimize:
    - Mechanical design
    - Manual control
    - Strategy
    - Precision
    - Time management

Arena

KR8IVITY LEAGUE
2025
ROBOTIC BILLIARDS
STORAGE ZONE
STORAGE ZONE
MANUAL CONTROL ZONE
MANUAL CONTROL ZONE
SCORING POCKET
SCORING POCKET
SCORING POCKET
SCORING POCKET
POWER POCKET
POWER POCKET
POWER POCKET
POWER POCKET