

# THE ROYAL RUMBLE

## **Team Specification:**

A team may consist of a maximum of 4 participants, all from the same institute or may be from different institutes.

## **General Rules:**

The competition will be played on a knock-out basis consisting of 4 players at a time.

The maximum duration of each round will be 5 minutes. Any team that is not ready at the time specified will be disqualified from the competition automatically.

1. The machine would be checked for its safety before the competition and would be discarded if found unsafe for other participants and spectators.
2. The organizers reserve the rights to change any or all of the above rules as they deem fit. Change in rules, if any will be highlighted on the website and notified to the registered teams.
3. Violation of any the above rules will lead to disqualification.
4. Judges' decision shall be treated as final and binding on all.

## **Criteria for Triumph:**

1. A robot is declared victorious if its opponent is immobilized or out of the arena.
2. A robot will be declared immobile if it cannot display linear motion of at least one inch in a timed period of 30 seconds. A robot with one side of its drive train disabled will not be counted out if it can demonstrate some degree of controlled movement.
3. If both robots survive the five minutes at that point, the robot with the higher hit points wins.
4. The winner moves on, the loser is eliminated from the tournament.

## **Safety Rules:**

1. Compliance with all event rules is mandatory. It is expected that competitors stay within the rules and procedures of their own accord and do not require constant policing.
2. No weapon attachment is allowed. Attaching any weapon for damaging the other robot will lead to instant disqualification.

## **Problem statement:**

Design and construct a remote or wired controlled robot capable of fighting a one on one tournament without attaching any weapon.

## **Dimensions and Fabrications:**

- The robot should fit in a box of dimension 35cm x 35 cm x 35 cm (lxbxh) **(inclusive of tolerance)** with all mechanisms fully executing motions (Maximum allowance  $\pm 10\%$ ). The external device used to control the robot is not included in the size constraint. Maximum allowed weight of the entire robot is 7 KG **(inclusive of tolerance)**.

**Mobility:**

All bots must have easily visible and controlled mobility in order to compete. Methods of mobility include:

- Rolling (wheels, tracks or the whole robot).
- Jumping and hopping is not allowed.
- Flying (using airfoil, helium balloons, ornithopters, etc.) is not allowed.

**Robot Control Requirements:**

- If the robot is wired then the wire should remain slack under all circumstances during the competition. All the wires coming out of the robot should be stacked as a single unit. The wires should be properly insulated. Teams are suggested to use only rated wires such as ISI marked. Loose connections or improper wiring may lead to direct disqualification even before the event.
- If the robot is controlled wirelessly, the robot must at least have a four frequency remote control circuit or two dual control circuits which may be interchanged before the start of the race to avoid frequency interference with other teams. The case of any interference in the wireless systems will not be considered for rematch or results.
- Remote control systems from toys might be used. Remote control systems available in the market may also be used.

**Battery and Power:**

- The machine can be powered electrically only. Batteries must be sealed, immobilized- electrolyte types (such as Li-ion, NiCd, NiMH or dry cells).
- Working voltages must not exceed 24V DC (mean voltage) at any point of time.
- All power connections must be of an adequate grade and adequately insulated. Cables must be routed to minimize the chances of being cut.
- All efforts must be made to protect battery terminals from a direct short and causing a battery fire, failure to do so will cause direct disqualification.
- Battery Eliminators are allowed and power source would be available at the venue for the eliminators.

**Motors:**

The robot should move as fast as possible around the arena with the help of motors.

- DC motors and stepper motors (12V-24V) can be used as per the design of bots.

**The Arena:**

The size of the arena will only be disclosed on the day of the event itself.

**Event Coordinators**

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