



# NITRO RALLY PROBLEM STATEMENT

---

## INTRODUCTION:

For all those who believe in setting the place on fire! Here's a live experience of a racing tournament. Build your own remote controlled IC engine car and come on board! The operator will be given a ramp to stand on, giving visibility of the track and another team member will be allowed to assist him during the operation.

## SPECIFICATIONS:

- SIZE:

Machine should fit in a box of dimensions 600mmx500mmx500mm at any moment of time during the race. The external device which is used to control the machine is not included in the size constraint.

- CONTROLLING:

Participants must use a remote with frequency of band spectrum 2.4 GHz to control the machine. Also make sure the car can operate on more than two frequencies.

- ENGINE:

The machine must be propelled forward using IC engines (Max power of 4.6 CC). But use of any other chemicals, compressed gas, rocket powered systems, DC motors or any other means as found dangerous by the organizers will not be allowed.

Start control mechanism: The start control mechanism must not provide any thrust to the vehicle along direction of motion of track.

Those participants using IC engines must note that their starting mechanism must be removable and not interfere with the race.

Any machine which uses DC Motors for propulsion will be disqualified. However DC motors and servos can be used for steering mechanisms or any other control mechanisms apart from propulsion.

- STEERING:



Steering mechanism have to be built by the participants themselves. Judging for the same will be strict and the participant will be immediately disqualified if any of the above structural components is found to be ready made. The machine must have an on-board power supply to run any mechanism requiring electric power for steering. The electric voltage anywhere in the machine should not exceed 12V at any point of time.

- FUNCTIONAL PARTS:

Gears, differential gear shift, engine with clutch, pulley and pulley belt, springs, motors and servos (non-propulsion purposes only), batteries, wheels and suspensions are allowed to be used as available in the market.

- TIRES:

The tires must have a minimum diameter of 3 inch. You are advised to use tires of good width for better performance on dirt tracks.

- WHEEL HUB:

Any part rigidly attached to the wheel hub will be considered as a part of it and hence can be ready-made. An example here is that of the ball stud :

- Providing a clutch mechanism between the engine and the wheel would prove useful, as it would prevent the engine from dying out at any stage of the race.
- Participants are advised to use a proper cooling mechanism to prevent overheating of the engine.
- Participants are advised to use sway bars for better control and stability.
- The participants are advised to use proper air filters as dirt might cause serious problems to the engine.
- The machine will be inspected and if found to be dangerous, the team will be disqualified. This decision rests solely with the judges and the organizers.
- The body cover should be detachable so that the interior can be inspected.



## TEAM SPECIFICATIONS:

- A team may have a maximum of 4 members.
- Participants from different educational institutions may also form a team.
- Each participant can be a part of one team only. If same participant is found as a member of more than one team, will lead to disqualification of both teams.

## ABSTRACT SUBMISSION:

- Every Team has to submit a written abstract about the following parts of their race car: The steering mechanism, suspension mechanism, braking mechanism, the chassis layout, must be explained in detail along with the proper diagrams. These have to be fabricated by the participants themselves (excluding shock absorbers and springs in the suspension mechanism). Ready-made kits are not allowed. Pictures showing all the three should be attached.
- Photographs of empty chassis have to be attached. The chassis has to be built by the participants themselves. If participants have already proceeded building their chassis, they are requested to take photographs of their machine in current state. These photographs are required for verifying that the machine has been indigenously built.
- Description of any unique/ advantageous mechanism used. The specifications of ALL the components used, including engine, suspension springs, remote controller etc. have to be mentioned.
- Each team is allowed to make online submission only by email. In case of multiple submissions, only the first submission will be used for judging purposes.
- All submissions must be made online before the deadline.(10th August, 2019)
- The submissions have to be made to [robotics.techniche@gmail.com](mailto:robotics.techniche@gmail.com)



## GENERAL RULES:

- The participants must place their RC cars at the start line before start of the race. Any RC car starting beforehand will be given a warning and will be allowed to restart. However if they repeat the false start again then the run will be disqualified.
- Only the operator shall stand on the controlling ramp.
- Only One Member/Team shall be present in the arena.
- Every time the vehicle needs to be lifted or reset either due to its stalling, tumbling or running off the track, it shall be placed at nearest previous checkpoint.
- If the RC car is unable to complete the obstacle for the second time the RC car can skip the course with 45 sec penalty.
- The vehicle cannot be touched for any other reason barring those stated above. The vehicle must remain intact throughout the race.
- The team will be disqualified if any damage to the track is observed.
- No power supply will be given on the track.
- Teams are not allowed to intentionally damage the opponent's machine. If found doing so on track (while racing), the concerned team will be disqualified. Execution of this rule will be subjective and relies completely on judge's discretion.
- The machines are not allowed to leave any loose parts on any part of the arena. Any machine disintegrating during the race will be disqualified.
- If the timelines are not strictly followed, the organizers shall decide the consequences and the decision shall be final and binding to all teams.

**THE ORGANIZERS RESERVE THE RIGHTS TO CHANGE ANY OF THE ABOVE MENTIONED RULES AS THEY DEEM FIT.**

## JUDGING CRITERIA:

- There will be two stages in total. First stage is a Time Trial round and second stage is Knockout round.



- Teams will be ranked according to their individual timings in the first round. Pairing for the second stage will be done based on these ranks.
- Number of laps in
  - First stage : 4
  - Second stage :3

## Contact Us:

[Sreenidhi](tel:9483231948) (9483231948)

[Umang](tel:8402023123) (8402023123)

[Akash](tel:8342000285) (8342000285)

Register at: <https://techniche.org/robotics>

For more details, mail us: [robotics.techniche@gmail.com](mailto:robotics.techniche@gmail.com)