

## NITTRO

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### EVENT DESCRIPTION :

NITTRO is an RC Car racing event held during Pragyan that tests the participant's fabrication, driving and management skills. An RC Car that conforms to the NITTRO standards is required for participation by each team.

### FORMAT :

2 Events: 1 Main race & A Free style session with events like slalom, fastest to return, sudden drag etc. (Subject to Change)

#### Nitro '15- Abstract

Guidelines for the submission of the abstract are as follows:

- Rename the .doc file as "Team name.doc" (example: cody.doc) and email the file to [nitro@pragyan.org](mailto:nitro@pragyan.org).
- Please fill in the information in the sections mentioned below.
- The abstract of your machine will be helpful everywhere in the future as an evidence of your hard-work. So please pay adequate attention to it.

Team Name:

Sl No.	PID NO:	Name of Member	College Name	Contact No.	Email ID.
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## Technical Aspects

- Original maker/model of the car:
- Length of car (end to end):
- Width of Car (wheel rim to wheel rim):
- Height of the Car:
- Diameter of wheels:
- Engine capacity:
- Remote type (pistol type or other type):
- Briefly explain the Chassis and general design of your car:
- Briefly explain the steering mechanism of your car:
- What is unique about your car?

Youtube Video Link :

Deadline for abstract submission: **10th February**

## RULES :

- Results will be based on point system for both events. The event grading is independent of one another.
- Inspection Round will be considered while assigning points. If the specified fabrication is not done, points will be deducted accordingly.
- Only Two persons from a team are allowed inside the Track arena.
- If two tyres of the car go out of the track, the car should be restored back to the previous check point.
- Failure to do the restoration of car on the call of organisers will be disqualified.
- Marshal man (from each team) should be conscious not to damage the track while assisting; Damage of the track will lead to disqualification of the team.
- Marshal man should assist if and only if the car goes out of the track or the organiser says so.
- During the race your car should not touch or be an obstacle to the other car. In case of collision of cars, both the cars should be taken to the nearest check point.
- Organiser's decision is final.
- Fixtures will be made based on the outcomes of time trial and no change will be encouraged.
- In the event of unexpected power cut during the race, the race will be restarted. Care is taken by the organisers to not to start the race during the obvious timings of power cut.
- 1 second will be added to the participant's time if one of the wheels crosses the boundary.
- Participants meeting fabrication requirements will be awarded 10 points and those who don't meet the criteria may not be allowed for main race however they can compete in the free style event.

## General Rules

- If the machine is found unsafe to run on the track, the team would be disqualified from the race. The organizers' decision would be final and binding in this respect.
- The vehicles are not allowed to leave any loose parts on any part of the arena. Any vehicle disintegrating during the race would be disqualified.
- Teams are not allowed to purposefully damage the machine of the opponent's team. If found doing so on track (while racing), the concerned team will be disqualified.
- The teams must adhere to the spirit of healthy competition. The coordinators reserve the right to disqualify any team indulged in misbehaviour.
- If any of the machines starts off before the flag is waved, the counter would be restarted and the machines will get a second chance. However, if any machine starts off before the waving of flag (or countdown) for a second time, it will be disqualified. No rematch will be held for the second time.

## Track Specifications

- The race track will be an off-road dirt track with left & right turns, hairpins, S-shaped curves, bumps and puddles.
- Participants are advised to use proper suspension systems for their machines to endure the bumps.
- A lap is deemed to be completed when the machine completes the entire track & comes back to the starting point.
- The track will have check points at regular intervals. If a machine tumbles, or halts, or goes off the arena at any point on the track, one of the team members is allowed to lift it up and place it at the nearest checkpoint behind that point. The time shall still be running in the meantime.
- Team members are not permitted to touch either their machines or those of their opponents once the race begins (unless there is need to lift the machine as stated in the previous point). The penalty for doing so is disqualification.
- Details about the track will be updated soon.

## Technical Specifications

### Engine:

- The maximum allowed capacity of IC engine to be used is 4.6 cc (i.e. Participants can also use 2.5 cc, 3 cc, 3.5 cc or any other IC engine lower in capacity)..
- There is no restriction on the type of IC engine (either glow or diesel cycle engine), but the engine must have throttle control.

**Fuel:**

- The percentage of nitro methane should not exceed 20% by volume in the fuel.

**Vehicle dimensions:**

- Machine should fit in a box of dimensions 800mm x 600mm x 600mm (l x b x h) 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.

The machine may be roughly classified into structural and functional parts:

Functional parts - Gears, differential gear, engine, springs, shock absorbers, servo motors (non-propulsion purposes only), batteries, wheels, wheel hub are allowed to be used as available in the market.

Structural parts - Chassis, steering mechanism, shock towers, suspension (excluding upper suspension arm, suspension spring and shock absorbers), have to be built by the participants themselves.

**Power supply:**

- The machine must have an on-board power supply to provide power to any mechanism requiring electric power not exceeding 12V.

**Radio controllers:**

- The machine has to be necessarily controlled by a wireless remote control system.
- Participants are required to use a remote control of frequency of band spectrum 2.4 GHz. The above rule is to ensure that there is no frequency clash during the competition and participants are not allowed to use any other remotes with frequency other than 2.4 GHz. (In case of unavailability of remote control (i.e. 2.4 GHz) the participants are required to submit their remote in organizers desk and it will be returned during respected practise slots and race only, in order to avoid frequency clash)

**Control Space:**

- An elevated podium will be provided for the control of the machine. The podium will ensure good visibility for the controller.

**Team Specifications:**

- A team can consist of a maximum of 5 members. Students from different educational institutes can form a team.

**Eligibility:**

- All students with a valid identity card of their respective educational institutes are eligible to participate in NITTro at Pragyan 2015.

**JUDGING CRITERIA :**

**Inspection:**

- Participants report to the venue with their machines.
- Strict inspection of the machine is carried out according to the guidelines & regulations set by the organizers.
- All selected teams will be given practice slots of 15 minutes each, after the inspection is completed.

**Race Event:**

**Prelims:**

- All selected teams will now have to compete in a time trial.
- Each team will be given a run of 2 individual laps & the best lap time will be considered.

**Final Rounds:**

- This will be primarily a knock out round.
- Head to head knock out races would be held to determine the Winner.

**Free Style**

- All selected teams will perform a series of tasks (i.e maneuvering a football on to goal post. etc.) which will be informed half an hour prior to the event.
- Points will be given based on execution of the tasks given.
- The team with the highest points wins the event.

\*\*\*Note: In case of any technical or organizational difficulties format of event may be changed during the event depending upon the situation. Organizers decision would be final and no argument is encouraged.

## PROBLEM STATEMENT :

Make a wireless remote controlled machine, powered ONLY by an IC Engine which can complete and compete with other opponents on an off-road dirt track with many obstacles in least possible time.

- Race Event
- Free Style

Stages of the event

- Abstract Submission
- Inspection
- Race Event
  - o Prelims
  - o Final rounds
- Free Style

Conduction of each stage of the event

Abstract Submission: Format of the abstract is available for download from the website. Edit the same file and send your abstracts to [nitro@pragyan.org](mailto:nitro@pragyan.org).

Abstracts can also be sent after registration.

o A video of the working model. Upload the video on YouTube and include the link in your abstract.

o Photos of the chassis, steering and suspension system fabricated. Zip the videos and upload in the appropriate column while registering.

Deadline: Deadline for submitting the abstracts are **10th February, 2015**.

Note: The abstract is non-eliminative and is intended to give us an idea about the effort put in by the participants.

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