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## Robotic Car Race

you love F1 racing? Always want to experience the noise of the acceleration of engines? Want to show your handling skills? So this is the place for you. Build your beast to compete against the opponents and win huge prize money. This event gives you a chance to come and show your skills. We invite all the enthused champs out there.

### TEAM SPECIFICATION

A team may consist of a maximum of 4 participants. Participants in a team can be from different batches.

### TASK

Make a wireless or wired remote-controlled car, powered only by an electrical motor, which will have to race against other opponents on an off-road dirt track with many obstacles.

### SPECIFICATIONS

1. Cars must be powered by an electrical motor. IC engines of any kind are not allowed.
2. The teams must design a wired or wireless remote-controlled machine.
3. The machine should fit in a box of dimensions 300mm x 200mm x 200mm throughout the race, excluding the external device which is used to control the machine.
4. The machine parts can be roughly classified into structural and functional parts: Functional parts – Readymade versions of gears, differential gear, electrical motors, springs, shock absorbers, servo motors (non-propulsion purposes only), batteries and wheels can be used. Structural Parts – Chassis, steering mechanism, shock towers and suspension (excluding the upper suspension arm, suspension spring and shock absorbers) have to be built by the participants themselves.
5. Judging for the same will be strict. The functional parts can be ready made off the self but structural parts should be strictly self-designed and made. After a thorough inspection, machines which seem dangerous or not meeting the criteria will be disqualified. This decision of the judges and the organizers will be ultimate
6. Maximum thickness of tyres should be 1.5 inch. Selection of a tyre with right width will ensure better performance in dirt tracks.
7. Brake Mechanism: It is not compulsory to incorporate a braking mechanism in the car. Participants have to fabricate the brake pad as a part of the braking mechanism. Any other part used in the braking mechanism (including the brake disk) can be readymade. Fabrication is not compulsory.
8. Wheel Hub: Any part rigidly attached to the wheel hub will be considered as a part of it and hence can be readymade. An example here is that of the ball stud.
9. Steering Mechanism: The crank or steering rod or any gears used in steering mechanism can be ready made but the circuit controlling the steering mechanism should be self-made.
10. Suspension Mechanism: Any part rigidly connected to suspension arms or one with no degrees of freedom with respect to suspension arm will be considered as its part.
11. The maximum allowed voltage used to run electric motors is 12 V.
12. The electric voltage anywhere in the machine should not exceed 12V at any point in time.

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### CONDUCT RULES: -

1. The competition will be divided into different domains like best controlling mechanism, best looking car, best technical design and above all Circuit Racing.

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2. There can be a maximum of only two of a team controlling the car at a time.
3. In the scenario where the car tumbles, halts or goes off the arena, only controlling members for that round is allowed to lift it and place it at the nearest checkpoint behind that point.
4. Until and unless there is a need to touch the vehicle as stated above, they will have to be fully remote (either wired or wireless) controlled throughout the race.
5. Every time the machine needs to be lifted by the controlling members; a time penalty will be imposed. There will also be a time-penalty for reverse gearing (all the details regarding the time-penalties will be disclosed on the day of the event).
6. Any vehicle is not allowed to leave any disintegrated part on the race track amidst the race. In case this happens, controlling members have to stop the car and then clear the debris from the track first.
7. The members of a team are also not allowed to damage the opponent's vehicle deliberately. If found guilty, the accused team will be disqualified.
8. Participants are advised to have multi-channel radio controllers to prevent frequency clashes, in case of wireless remotes being used. We will not be responsible for any interference in frequencies.
9. Controlling members are not allowed to cross the track at any point of time.
10. Any participant can use any engine or parts from any other car or participant, during, before and after the event/race. With any exchange being irreversible.
11. Teams for preliminary round will be randomly selected. After that each team will progress according to performance.
12. Many of parts as described in specifications given above can be purchased readymade. However extra points will be awarded for customization, fabrication and performance enhancement as per organizer's decision for design competition. The points system will be disclosed on the day itself.
13. Blocking the competitor's car accidentally will result in a re-race from the previous checkpoints crossed. The accused team may be disqualified after a review.
14. Other rules related to the event will be disclosed on the day of the event itself.
15. Teams creating issues or not complying with the rules and regulations will be disqualified immediately.

## TRACK

1. The track will be an off-road dirt track with sharp turns and big jumps that will be designed in a way to test both the speed and control of the machine.
2. Many parts of the track will be made up of soil; however, at few places, pebble-like materials and bumps, water bodies may be used to create obstacles.
3. The track will have checkpoints at regular intervals.
4. A car successfully completes a lap when it reaches the starting/finishing point.
5. A race can have multiple cars running on the track at the same time.
6. The design of the track will be disclosed before the day of the event itself. you will have to follow the schedule. Trying to manipulate the organizer for your gain can result in disqualification.

## SCORING RULES: -

1. The winner of race will be the team for which the overall time, i.e. total time taken in the race adjusted for time penalty and rewards is the least.
2. Time penalty is in form of a percentage of total time taken which is to be added to overall time.
3. Between the race if the car is stuck at any point or otherwise cannot continue forward but it remains within the boundary of track during this, it can be manually lifted and placed at previous checkpoint completed. It will also lead to a time penalty of 5 percentage point and clock will not be stopped during this time.

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4. If battery pack needs to be changed in between the race or any wiring comes loose in the car, change of batteries and repairs of connection is allowed but clock is not stopped during this time and maximum time allowed is 30 seconds. if this happens more than once then that is allowed provided cumulative time does not exceed 30 seconds.
5. If more than one tyre of car goes outside the boundary of track at any time car will lose one life and next life will start from last checkpoint and only three lives will be there for each car.
6. If at any point of time car or any wiring connected between car and remote or any team member damages the track it will be disqualified and sole arbiter for this is the organizers and no appeal is allowed.
7. If any car climbs on the walls to the extent less than one complete tyre than it will remain in the race but earns a penalty equal to 3 percent of total time taken.
8. Time taken will be exact time between the start of race or any mechanical damage is there in the car in between the race then change of battery is allowed
9. End of the race can happen due to any of following reasons: -
  - a) Track is completed by the team.
  - b) Team seems to be unable to complete the track in the reasonable time interval, its journey can be stopped there only and sole arbiter for this is the organizer.
  - c) Its all three chances are exhausted.
  - d) If the car or any team member damages the track.



#### REGISTRATION: -

Initial registration can be done by submitting the names to Wahid sir.

#### ABSTRACT SUBMISSION: -

Teams have to send the abstract of their car with the following information a week before the competition: 1. Name of the team. 2. Name of the captain. 3. Number of members in the team. 4. Length of the car. 5. Width of the car. 6. The diameter of the tyres. 7. Height of the car from top to ground. 8. Ground clearance. 9. Pictures of the car are compulsory and video if possible. Note: The abstract will not be judged and is intended to give us an idea about the effort put in by the participants. THE ORGANIZERS RESERVE THE RIGHT TO CHANGE ANY OF THE ABOVE RULES AS THEY DEEM FIT.

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