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# Exodia 2k18

## RC NITRO CAR RACING

### Live Life at Full Throttle



#### **TASK :**

Construct a wireless remote controlled machine, powered only by an internally combustible (IC) engine, which can race against other opponents on an offroad dirt track with many hurdles.

## TEAM SPECIFICATION :

- A team may consist of a maximum of 5 participants.
- Students from different educational institutes can form a team.
- All students with a valid identity card of their respective educational institutes are eligible to participate.

## MACHINE SPECIFICATION :

1. Machine should fit in a box of dimensions 600 mmx 400mmx 400mm at any moment of time during the race. Control system for the machine is not included in the size constraint.
2. The machine parts may be roughly classified into structural and functional parts:  
Functional parts - Engine, Shock absorbers, Springs, Gears, Differential gear, Fuel tank, igniter, servo motors (non- propulsion purposes only), batteries, wheel hub and wheels can be directly used as available in the market.  
Structural parts - Chassis, Steering mechanism, Suspensions (excluding shock absorbers, suspension spring and upper suspension arm), Shock towers have to be built by the participants themselves.
3. Participants will be disqualified if any of the above structural components are found to be ready-made.
4. **Tires** : Tires of 8cm diameter are advised for better performance on dirt tracks.
5. **Wheel Hub** : Any part rigidly attached to the wheel hub will be considered as a part of it and hence can be readymade.
6. **Brake Mechanism** : It is compulsory to have braking mechanism in the car. Any part used in the braking mechanism can be readymade.
7. **Suspension Mechanism** : Any part rigidly connected to suspension arms or one with no degree of freedom with respect to suspension arm will be considered as its part.
8. **Steering Mechanism** : Any part which is connected to steering rod rigidly or one with no degree of freedom with respect to steering rod will be considered as part of steering rod.

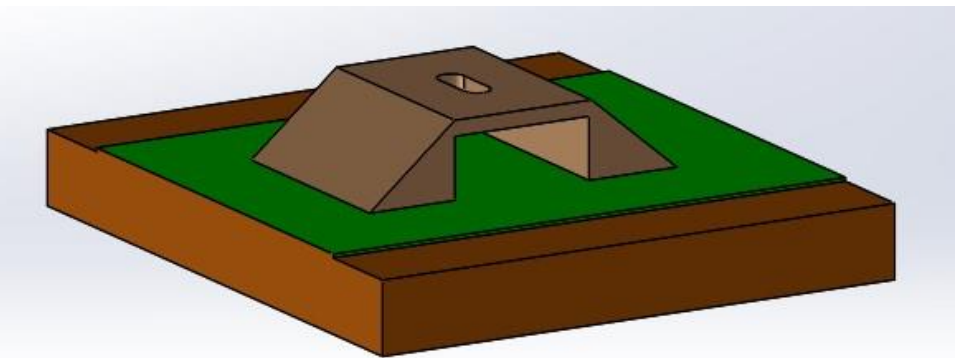
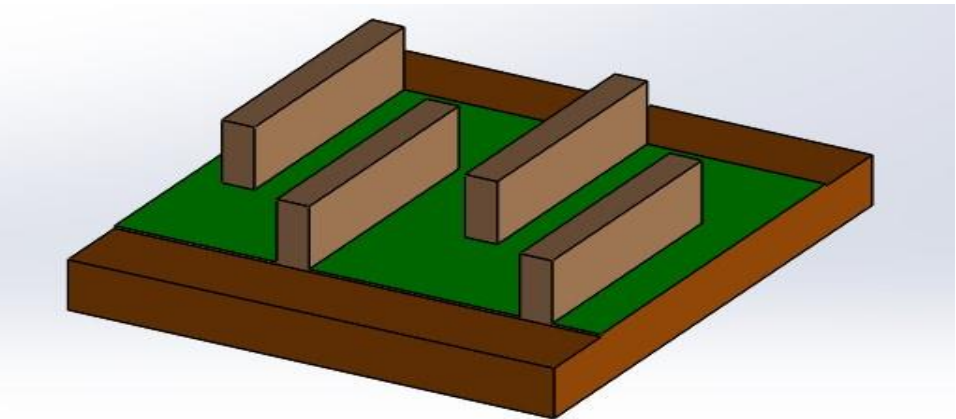
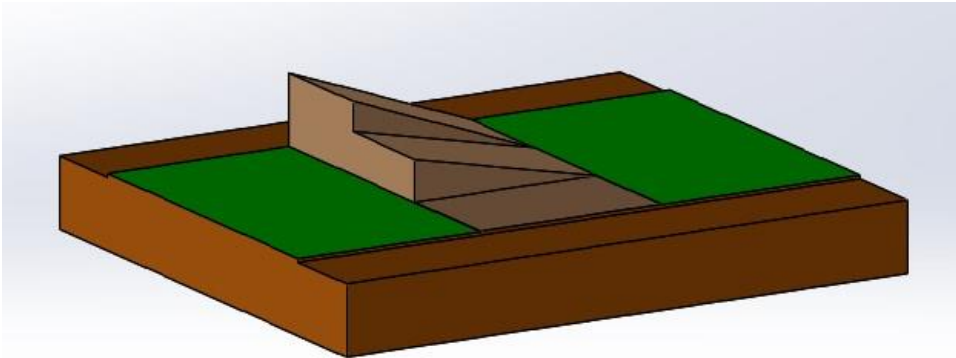
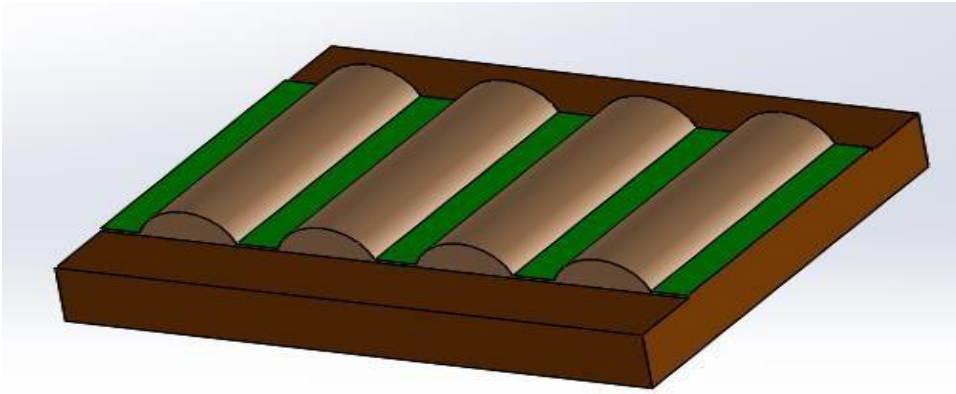
## PROPULSION AND STEERING :

1. The machine must use only mechanical power generated by an IC engine for propulsion. Only one IC engine can be used in the machine. Use of any other sources such as rockets, compressed gas etc. Is not allowed.
2. Any machine which uses DC Motors for propulsion will be disqualified. However servos and DC Motors can be used for steering mechanisms or any other control mechanism apart from propulsion.
3. The maximum allowed capacity of IC engine to be used is 4.6 cc (i.e. Participants can also use any other IC engine lower in capacity)
4. The electrical voltage anywhere in the machine should not exceed 12V at any point of time and machine must have an on-board power supply to run any mechanism requiring electric power.
5. The participant must use a remote with frequency of band spectrum 2.4 GHz.
6. It is advised to use a proper cooling mechanism to prevent overheating of the engine.
7. It is advised to use proper air filters as dirt might cause serious problems to the engine.
8. The machine will be inspected and if found to be dangerous, the team will be disqualified.

## ARENA :

The track will be an all-terrain track with sharp turn and jump. The car should be able to cross bumps, rough patches on the track and outdo opponent's car while maintaining its stability and not compromising with its pace.

1. The width of the track will be around 1 m for most of the part.
2. A control stand will be provided for the driver to position himself to control his vehicle during the run.
3. The changes in obstacles, if any, will be duly addressed through mail.
4. Track will consist of following obstacles.



## GAMEPLAY :

### Round 1 :

1. In the first round, the machine has to traverse the track solely.

Each team getting 2 laps out of which faster lap will be considered. Note that these laps will have to be taken successively.

2. The track will have check points at regular intervals. If a machine tumbles, halts or goes off the arena at any point on the track, one team member is allowed to lift it up and place it at the nearest checkpoint behind the point. The time shall still be running in the meantime.
3. If the machine is not able to cross any particular obstacle then the machine can be lifted and placed by passing through the obstacle but 30s (for each obstacle) will be deducted from whole time as penalty. (maximum 2 obstacle can be passed)
4. Selection of teams for next round will be on the basis of time taken by them for traversing the arena and those who will be not able to complete the track number of check points covered will be taken in consideration for next round.

## Round 2 :

1. In the second round, two machines will compete against each other according to the playoffs.
2. If a machine tumbles, halts or goes off the arena at any point on the track, one team member is allowed to lift it up and place it at the nearest checkpoint behind the point. The time shall still be running in the meantime.
3. If the machine is not able to cross any particular obstacle then the machine can be lifted and placed by passing through the obstacle but 30s (for each obstacle) will be deducted from whole time as penalty. (maximum 1 obstacle can be passed)

## PLAYOFFS :

QUALIFIER 1 - Rank-1 vs. Rank-2 of Round 1

ELIMINATOR - Rank-3 vs. Rank-4 of Round 1

QUALIFIER 2 - LOSER of QUALIFIER 1 vs. WINNER of ELIMINATOR

FINALS :

Qualifying Teams will contest for the first position.

## GENERAL RULES :

1. A team should submit a video showing the machine running at least 10-15 meters and performing a U turn on an off-road dirt area. The video should be unedited clip, at least 1-minute long. The clip should be preferably in AVI format. The link of submission of video will be provided after the registration. The last date of submitting the video is 20th March, 2018.
2. A team will be disqualified if it is not present with its machine on the allotted time during competition.
3. The team will be penalised if its machine fails to fulfil the given machine specifications.
4. Only one member of the teams is allowed to handle the machine.
5. The team will be disqualified if its machine is found to be purposefully damaging the opponent team's machine or the arena.
6. Organizers reserve the right to change the rules as they deem fit.
7. Teams misbehaving with any organizers can be disqualified.

## **COORDINATORS:**

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