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STEPCONE-2025
STANDARD OPERATING PROCEDURE

EVENT NAME: Robo Race
DEPARTMENT NAME: ECE
EVENT TYPE: Flagship Event
EVENT DESCRIPTION:

A. TASK

Design and construct a remote-controlled robot capable of Racing a tournament Between robots.

B.DESIGN SPECIFICATION

B.1. Specifications:

- The dimensions of the bot should not exceed the measurements 25 cm x25 cm x15cm.
- The weight of the machine should be between 2.5kg. All batteries should be on board. The weight of the remote controller will not be counted.
- Each bot must meet the requirements described in this problem statement. The total weight of all the bots and the dimensions of the combination of bots must satisfy the above two points.

B.2. Mobility:

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

- Rolling (wheels, tracks or the whole robot).

Mobility methods that are NOT allowed:

- Flying (using airfoil, helium balloons, ornithopters, etc.) is not allowed.
- The robots should not secure itself on the ring surface by using suction cups, diaphragms, sticky treads, glue or other such devices

B.3. Robot Control Requirements:

- The robot must be controlled only through a wireless remote (Bluetooth or Wi-Fi module), while all power supply must be on board.
- Control must be exhibited over all of its functions and positions. Although autonomous functions within the bot are acceptable, the controller must be able to remotely disable or override these functions at any time. Note that any damage due to this function is the responsibility of the team, and there must compulsorily be a manual emergency stop (E-

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stop) function that can be controlled from the radio controller to manually override this autonomous function in case of emergency.

- There should be binding capability between transmitters and receivers and they must be able to connect between polycarbonate (20mm), metal bars and barriers. Only the remotes with such facility will be allowed.
- The team must have an at least four-frequency wireless 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. Cases of any interference in the wireless systems will not be considered for rematch or results.
- Remote control systems from toys may be used. Remote control systems available in the market may also be used, while nonstandard or self-made remote-control systems can be used.
- The team should pair up the wireless remote with the machine before putting it into the arena. No extra time will be provided for this once the machines are put inside the arena.

B.4. Battery and Power:

- The machine must be powered electrically. Use of an IC engine in any form is not allowed. Onboard batteries must be sealed, immobilized-electrolyte types (such as gel cells, lithium, NiCad, NiMH, or dry cells).
- The electric voltage between any 2 points on the machine should not exceed 30V DC at any point in time. Participants will have to bring their own converters for standard power supply.
- Participants must protect the battery terminals from a direct short and causing a battery fire, failure to do so will cause direct disqualification.
- Use of damaged, non-leak-proof batteries may lead to disqualification.
- Special care should be taken to protect the onboard batteries. If the judges find that the battery is insufficiently protected, the team will be disqualified immediately.
- Change of battery will not be allowed during the match.
- Only bots with onboard batteries will be allowed.
- The supply from the battery to power systems should qualify the following fail-safes:
- Manual emergency stop that can be triggered through the radio controller. The teams are suggested to have at least one extra battery ready and charged up during competition so that on advancing to the next level, they won't have to wait or suffer due to the uncharged battery. If teams do not show up during their allotted slot, they will be disqualified.

C. COMPETITION RULES AND SPECIFICATIONS

C.1. Team Specifications:

- Any team can participate in the Robo Race. A team should consist of 3-4 participants.
- Team Name: Every team must have a unique name. The organizers reserve the right to reject entries from any team whose name it deems inappropriate, offensive or conflicting. Organizers must be notified if a team's name has been changed.
- Team Representative: Each team must specify their team representative (leader) at the time of registration on the website. All the important communications between Organizers and the registered teams will be done through their team representative. The team representative must submit valid contact details (phone no., email ID etc.) at the time of registration.

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C.2.Match Duration and Type:

Matches will be contains 2 rounds.

Round – 1: It is the basic round for the bots testing based on the constrains. Checking the accuracy of the bot.

Round – 2: It will be conduct inside the race track Which includes different levels of traps. The bot should cross all the traps and move towards destination point in least time.

C.3. Certificate Policy:

- Certificate of Excellence will be given to all the winners.
- Certificates of Participation will be given to all the teams who qualify first round of the competition.
- The teams which get disqualified due to disobeying any of the competition rules will not be considered for the certificate
- A cash prizes will be given for winning, best design, and other subjective criteria which the organizers seem fit.

Team Size/No of Participants per team: 4 members

PLAN OF ACTION: - (day-shift)

Registration fee- 1000/- per team