ROBOTRON

BY

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1. GENERAL RULES:

- If a team is found exchanging their robot with any robot with any of the participating teams, both teams would be immediately disqualified.
- Maximum of 4 team members are allowed.
- Disqualification will be made on the spot if any of the team members are found arguing (using slang words or physical contact) with the organising team or the members of another team.
- The organising team has the right to amend the competition rules (Like duration of any competition at any time etc.)
- The decision of the judges will be final.
- The spelling of your name should be correct because it will be used for your Certificate.
- If a team is not able to come to the arena when their match is announced, the team will be disqualified from the competition.

2. SPEED CODING :

SCRATCH:

In this competition participants have to complete the challenge shown on the event day using scratch software in the given time

- The given task should be up and running according to the requirements.
- The task should be completed in as less time as possible, to advance into the next round.
- Programming Language will be **Scratch.**
- Each round will be of a max of 20-30 minutes.
- The competition is only for students below the age of 13.
- Only 2 participant allowed

PYTHON:

In this competition participants have to complete the challenge shown on the event day using scratch software in the given time

- The given task should be up and running according to the requirements.
- The task should be completed in as less time as possible, to advance into the next round.
- Programming Language will be **Python.**
- Each round will be of a max of 30-40 minutes.
- The competition is only for School students.
- Only 2 participant allowed

3. LINE FOLLOWING:

In this competition the robot must follow the black line on the white floor, the robot operation must be autonomous, once on the starting point it should complete the track automatically. In this competition there will be two sub-categories based on robotic kit as follows:

○ MODULAR

In this category only LEGO EV3 and LEGO Spike Prime robotic kits will be allowed.No sensor, motor, battery and wheels can be used apart from the LEGO kits.

○ INDIGENOUS:

In this category only Arduino kits will be allowed, all types of sensor like IR, camera, will be allowed to detect the line, any kind of motors can be used to build the robot

○ GAME RULES

- Robots will follow a line from a starting location to a finish line autonomously.
- The maximum size of the robot should be 8x8x8 inches.
- Once a robot has crossed the starting point it must remain fully autonomous.
- Once the Robot moves, team members will not be allowed to touch the robot.
- Each team will be allowed a maximum of 3 minutes to complete the course.
- 2 minutes to set up the robot on the arena once the team name announces failure leads to disqualification.
- The winner will be decided on the completion of the course, points taken by the team and least time taken by the robot.

- ARENA
  - Competition arena will be made of panaflex with printed black lines.
  - The line width will be 1.5” with +/- 0.5” for the course of line following track
  - The track will be a black line on a white surface in the qualifying rounds.
  - The arena would be revealed on the day of competition.
  - Students would be given at least 20 minutes to practice on the arena before the match starts

- ALLOCATION OF POINTS:
  - Passing each milestone would give you Ten points (Total three milestones)
  - Finishing the whole arena would provide you with Extra Twenty points making a Total of Fifty Points.
  - Participants can touch the robot if it leads out of the track and the position of the robot will be reset to the starting point .
  - If both teams would end up with the same points, a decision would be taken on time basis.

- RETRIES:
  - If the robot strayed due to some reason, retries are allowed. There are three retries allowed for a team within the three minutes duration of the match.
  - The position of the robot will be reset to the starting position from wherever it will be.
  - Every touch would add +5 seconds to the final time

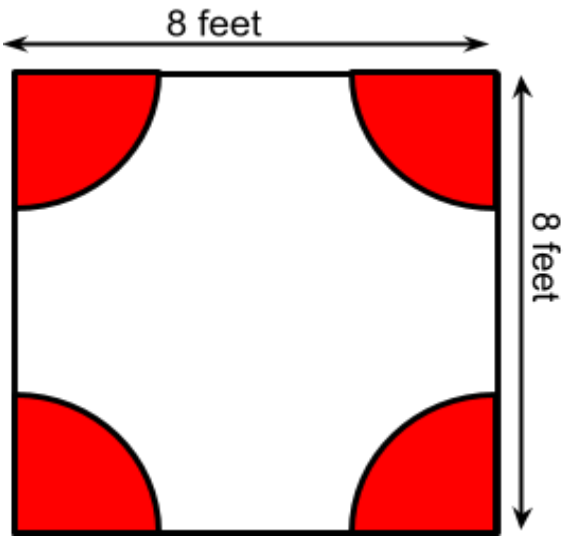
4. ROBO SUMO

- Once turned on, the robot will compete with another robot and the last standing one would be the winner.
- The robot must be autonomous. Any type of sensor like IR, camera, will be allowed to detect the border
- The maximum size of the robot should be 12x12x14 inches. Every extra inch would cause a reduction of (-5) points each.
- The weight limit is 3 kg. Every extra 0.25Kg will cause a reduction of -10 points.
- Once the Robot moves, team members will not be allowed to touch the robot.
- The robot must have a switch for on/off.
- No restriction on battery voltages but if a power supply is considered dangerous, the judge can decide not to allow the robot to participate.
- Teams would be given a maximum time of 2 minutes to set up their robot with a -5 points per 30 seconds.
- Every match would have a duration of 3 minutes.
- If a robot is pushed out of the arena or falls off the arena intentionally,the opposite team would gain 5 points whereas if the robot is pushed out of the red semi circle the opposite team will gain a total point of 10.

- POINTS DISTRIBUTION:

Extra inch (size)	-5
Extra 0.25 Kg (weight)	-10
Extra time of 30 seconds (setting up the robot)	-5
Pushed out of the arena	+5
Pushed out from the arena (red quarter circle)	+10

- ARENA:



5. ROBO RACE

- The robot must be remote-controlled.
- Once turned on, the robot will complete the track from start to finish.
- The maximum size of the robot should be 10x10x10 inches.
- The voltage of the robot's electrical power source must not exceed 12-volt DC.
- The track would have bridges with an incline angle, bumps made out of straws/Wooden sticks and can also contain sand and stones.
- The track would be revealed on the day of competition.
- The winner would be decided on the basis of total checkpoints passed in respect to time.
- Passing each milestone would give you Ten points (Total two milestones)
- Finishing the whole arena would provide you with Extra Thirty points making a Total of Fifty Points.

6. MODULAR MISSION

This year, ROBOTRON introduces the importation problem for the **modular** category. For this challenge, your robot must be able to identify and pick the imported goods then place it in its designated spot. The goods will be different colours cube and destination point will be marked with the same colour as of the good Your robot must be able to perform the task autonomously.

- Once turned on, the robot will complete the track from start to finish.
- The robot must be autonomous.
- The maximum size of the robot should be 8x8x8 inches.
- The line width on the arena will be 1.5” with +/- 0.5”
- The track would have a black line pattern that will have four different colours boxes i.e. Red and Yellow along with pick and drop points, Bot should pick the cube from picking colour location and drop at its colour destination.
- The choice is on the user to follow the line or map the arena at preparation time.
- If the robot moves away from track 1 point will be deducted.
- If target 1 is moved first to the dropoint 3 points will be added for pickup and 3 point will be added for drop off
- If target 2 is moved first to the dropoint 2 points will be added for pickup and 2 point will be added for drop off
- Passing through the tunnel is plus 2 points. The dimensions of the tunnel in 8x8 inches
- For going over the water is -2 points and dover the rocks is -1 point
- Students will have a preparation time of one hour to practice for qualifiers/next rounds.
- The winner would be decided on the basis of total checkpoints passed in respect to time.
- Passing each milestone(picking and potting cubes) would give you Ten points (Total two milestones) whereas clearing the obstacle would earn you 5 points.
- Finishing the whole arena would provide you with Extra Thirty points making a total of fifty five Points.

7. INDIGENOUS MISSION

This year, ROBOTRON is unveiling the Agrobot challenge for the **indigenous modular** category . For this challenge your robot must be able to identify and pick weeds from the field then place it in the trash. The weed will be, different colours cube and the destination point will be marked with the same colour as the weed. Your robot must be able to perform the task autonomously.

- Once turned on, the robot will complete the track from start to finish.
- The robot must be autonomous.
- The maximum size of the robot should be 10x10x10 inches.
- The line width on the arena will be 1.5” with +/- 0.5”
- The track would have a black line pattern that will have four different colours boxes i.e. Red and Yellow along with pick and drop points, Bot should pick the cube from picking colour location and drop at its colour destination.
- The choice is on the user to follow the line or map the arena at preparation time.
- Students will have a preparation time of one hour to practice for qualifiers/next rounds.
- The winner would be decided on the basis of total checkpoints passed in respect to time.
- Passing each milestone(picking and potting cubes) would give you Ten points (Total two milestones) whereas clearing the obstacle would earn you 5 points.
- Finishing the whole arena would provide you with Extra Thirty points making a total of fifty five Points.

8. GAME OF DRONES

- Once in air, the drone will complete the track from start to finish.
- The drone must be remote-controlled.
- The maximum size of the drone should be 14x14x14 inches.
- The voltage of the drone's electrical power source must not exceed 18-volt DC.
- The track would contain obstacles made out of wood, thread and can also contain metal rods and rings.
- The course would be revealed on the day of competition.
- The winner would be decided on the basis of total checkpoints passed in respect to time.
- Passing a milestone would give you Ten points (Total four milestones)
- Finishing the whole arena would provide you with Extra Thirty points and landing on the helipad will give you an Extra Thirty points making a Total of Hundred Points.