Innovative robot

GAME RULES

Section 1 Participants

Article 1

1.1 There are 1 or 2 participants per team.

1.2 The competition has 2 age category;

Junior (ages 10 to 14)

Senior (ages 15 to 19)

1.3 Every team may or may not have teacher/mentor by each team must have only 1 person (1 teacher or mentor can supervise multiple team).

1.4 Each participant can play only one team.

1.5 Each team retains the flexibility to submit an unrestricted number of robots for the contest but all of it will be count as one work.

Section 2 Robot requirements

Article 2 : Size and number of the robot

2.1 The number of the robot is no limit. The referee will count as one project per team.

2.2 The robot can be any size.

Article 3 : Equipment

3.1 **For Junior**

    3.1.1 any type of robot is allowed. For microcontroller rules, the sole decision rests with the individual country representative or the committee in the absence of a country representative. Please contact your individual country representative/committee for more information.

    3.1.2 The number of movement motor maximum is 4.

    3.1.3 The number of sensor maximum is 4 and no limit of any sensor type.

3.2 **For Senior**

    3.2.1 any type of robot is allowed. For microcontroller rules, the sole decision rests with the individual country representative or the committee in the absence of a country representative. Please contact your individual country representative/committee for more information.

    3.2.2 No limit the number and type of motor.

    3.2.3 No limit the number and type of sensor type.

3.3 Allows to use forceps, breadboard, general purpose printed circuit board and electrical connection materials.

3.4 Allows to use one or more of the controller board to work together.

3.5 The number of control boards from 3.1 and 3.2 is no limit.

3.6 The power supply is unrestricted, but the builder must be mindful of the limitations concerning the capacity of the control circuit board and the detector to endure such power.

3.7 Not limited to the type of peripheral equipment but must not operate as a main controller.

3.8 No limit of type and number of unelectric material that use for decorating the robot.

3.9 Competitors can use unlimited plastic model pieces or toys that do not require electricity to decorate or build the construction of the robot.

3.10 Participants must prepare materials, equipment, and tools to build, decorate, fix, or adapt the robot for the contest themselves. (Only lightweight tools are allowed, such as a soldering iron, pliers, screwdriver, small battery-operated hand drill, cutter, and scissors.)

Article 4 Building the robot

4.1 Participants can build the robot in advance.

4.2 The competing robots can operate in either automatic mode, manual mode, or a combination of both.

4.3 Participants are permitted to build their robots in the designated area provided by the competition management. However, it is essential to note that the available space is limited, and it will be allocated on a first-come-first-served basis. Consequently, there is no guarantee of ensuring optimal comfort during the build process.

4.4 Participants are permitted to display the sponsor's logo on their robots. However, it is imperative to adhere to the guidelines that prohibit the use of symbols associated with the monarchy, politics, and religion.

4.5 The robot must perform actions that align with the theme of the competition.

4.6 Participants are encouraged to build the robot that embodies positive creativity and imagination.

4.7 The robot should be designed to be compatible with installation in a presentation area measuring 110 x 60 cm, which comprises a flat floor surface.

4.8 If Participants choose to present their robot in a mobile manner, moving to different points instead of remaining stationary, they may do so. However, it is essential to consider the potential for causing disturbances or inconveniences to other competitors. The referees reserve the right to adjust or reduce scores based on this factor without prior notice.

Article 5 Basic operation of the robot

5.1 The robot must demonstrate the operation to perform tasks and move continuously without any constraints on any movement.

5.2 The robots should be able to operate throughout their presentation to the judges.

Section 3 The competition

Article 6 Schedule

6.1 Team can access to the game area for installation and test run since the practice day. Team can spend the entire day preparing, testing, and decorating your robot.

Article 7 Criteria for Project Evaluation

7.1 Criteria 1: **Significance of the project to the situation (40%)**
(Participants should present this in their VIDEO presentation)

7.1.1 Participants should be knowledgeable of the current findings and projects existing related to the current theme. They should know what the existing efforts are and what the needs are; thus clearly defining the need that their solution addresses are important.

7.1.2 The proposed solution should be responsive to the problem. Problems are often complex and comprehensive while students have the tendency to oversimplify. This will be the challenge they have to overcome. Knowing the limitations and strengths of their solution in relation to all factors concerned.

7.1.3 The solution should also prove itself to be doable, practical and even cost effective.

7.2 Criteria 2: **Robot/Device (30%)**

7.2.1 Did the robot/device function properly or as promised (in the VIDEO presentation and during the contest)? Sometimes, technical problems arise and a failure occurs during the actual contest. It will be up to the judge to decide on how to grade it. Having clear test results and test videos to back up the testing can help. **(10%)**

7.2.2 What is the level of complexity of each of the robot? **(20%)** The level of complexity can be defined using the criteria below. But they must not be measured as equal elements but as a guide. We believe the whole is larger than its parts.

   7.2.2.1 Mechanical Advantage. Often seen in the use of simple machines

   7.2.2.2 Electronic Advantage. Often seen in how the combination of sensors are used

   7.2.2.3 Programming Advantage. A program can be a simple "reactive switch" or can be (complex) analyzing multiple information in making decisions.

   7.2.2.4 *The Video Presentation will give an idea on these criteria before the day of the contest. Consulting with other judges is also suggested.*

7.3 Criteria 3: **Actual Presentation (30%)**

7.3.1 Actual presentation during the day of the contest (focused on the robot demo). **(10%)**
How was the conduct of the presentation? On time? Organized? Good Visuals? Robot demo?

7.3.2 Answers to Questions **(20%)**

Judges provide 2 questions for each of the teams after they have seen the video. Participants will Answer these questions and write their answers on paper on the day of the contest. How well they answer will be subjective to the judges asking the question. It is important to answer with precision. Answers that require "follow-up questions" will have a lower score.

Note: Originality is not a criterion. What will be evaluated is the DIRECT work of the students only.

Article 8 Theme

Theme of this WRG 2023 is **Robotics for Sustainable Development Goals**.

It is about making society better and following the United Nations' goals for a sustainable future. Participants must create and build the robotics project to support at least two of SDGs. Remember to display the SDG symbol for the chosen topic so the referees can easily recognize it.

The logo of SDGs can be download via this link:

https://thailand.un.org/en/sdgs

or

https://www.un.org/sustainabledevelopment/news/communications-material/

INNOVATIVE EXPERIMENT