Annex
to the Regulations on the X International Festival of Robotics,
Programming and Innovative Technologies "RoboLand 2025"

REGULATIONS OF THE ROBOT COMPETITION "LABYRINTH OF WATER ROBOT"

Age of participants: 14-18 years.

Team: 1-2 people.

Robots: autonomous robots.

Equipment used: no restrictions.

Programming language: no restrictions.

Description of the task: Overcoming a labyrinth in an aquatic environment by an autonomous robot.

1. Requirements for the robot

1. Any parts may be used in the robot's design, including those made by yourself.

2. The robot must be autonomous.

3. The robot must be brought to the competition day in assembled form.

4. Overall dimensions at the time of launch: the length and width of the robot should not exceed 250×250 mm, the height of the underwater part should not exceed 150 mm.

5. The robot's design may change autonomously (without operator participation) during the competition; the size of the change is not regulated, but the robot must perform its task in accordance with the purpose of the competition, within the labyrinth.

6. *The robot's body must have elements that the judge can use to grab (fishing rod) and pull out the sunken robot.*

7. The robot body must not damage the surface of the competition area in any way, otherwise the team may be removed from the competition and disqualified.

2. Requirements for the landfill

2.1. The polygon is a labyrinth made of waterproof material with a corridor width of 30 cm. The height of the side of the labyrinth is not less than 50 cm. The minimum height of the water column is 30 cm.

2.2. Polygon parameters.

2.3. Start and finish signs are installed on the bottom or side wall of the labyrinth, for example, green and red squares, respectively.

2.4. A measuring scale of the distance traveled is applied to the side of the labyrinth.

2.5. The appearance of the labyrinth and its size can be changed (with the width of the corridor and the height of the water column remaining unchanged).

2.6. Materials from which the labyrinth can be made.

2.6.1. An inflatable pool can be used as a container for placing the labyrinth.

2.6.2. Tubes and crosses made using 3D printing can be used as load-bearing elements for the walls of the labyrinth, between which the walls are then installed.

2.6.3. It is permissible to change the corridor width from 5 to 25 mm (due to supporting structures).

2.7. Examples of the polygon are given in Appendix No. 1.

3. Procedure for holding the competition

3.1. The team is given 1 hour to draw up the program.

3.2. Before the start of the competition, all participants hand over their robots to an area inaccessible to them (quarantine). If during the inspection a violation in the robot's design is found, the judge gives 3 minutes to correct the violation.

3.3. If it is impossible to correct the robot, the team is not allowed to attempt.

3.4. During the competition, participants may take robots only from the quarantine zone and only at the command of the judge.

3.5. At the start, the robot must be immersed in water and its projection must be completely above the starting area.

3.6. After the judge’s command, one of the operators starts the engine (turns on the motors using any sensor) – this is agreed upon by the judge with the participants before the start of the competition.

3.7. Calibration of the robot is allowed before the start of the race for 1 minute with the permission of the judge.

3.8. The maximum time to complete the test site is 3 minutes.

3.9. After the start of the attempt, the robot must move towards the red “Finish” zone.

3.10. The end of an attempt is recorded in one of the following cases:

3.10.1. Passing the entire trajectory to the red zone "Finish".

3.10.2. After 3 minutes from the start of the attempt.

3.10.3. The participant prematurely interrupted the attempt by saying the word “Stop”.

3.10.4. The participant touched the robot.

3.10.5 If the robot remains within one section of the maze for more than 1 minute.

3.11. The competition is held in two runs. Each team makes one attempt in two runs. After the first attempt, the team quarantines the robot until all participants have completed the test. 30 minutes are given to prepare for the second attempt.

4. Counting points and determining winners

4.1 The team with the highest number of points will be declared the winner.

4.2. The attempt with the maximum number of points is counted.

4.3. If the teams score the same number of points, the team that spends the least amount of time on completing the task is declared the winner.

4.4. A section is considered completed if the robot's projection is completely inside the section.

4.5. The finish is counted if the robot's projection is completely located in the finish zone.

4.6. Accrual of points:

Criterion	Points
The robot has completely visited a section belonging to the optimal path* (each section is counted once)	5
The robot has finished, its projection is completely in the area marked in red	15

Note: * – The optimal path is the shortest path from start to finish.

5. Permissible simplifications when conducting selection stages

5.1. No restrictions on the overall dimensions of the robot

5.2. The number of sections at the regional selection may be reduced in size, but not less than 6 sections.

Example of a polygon configuration[1]

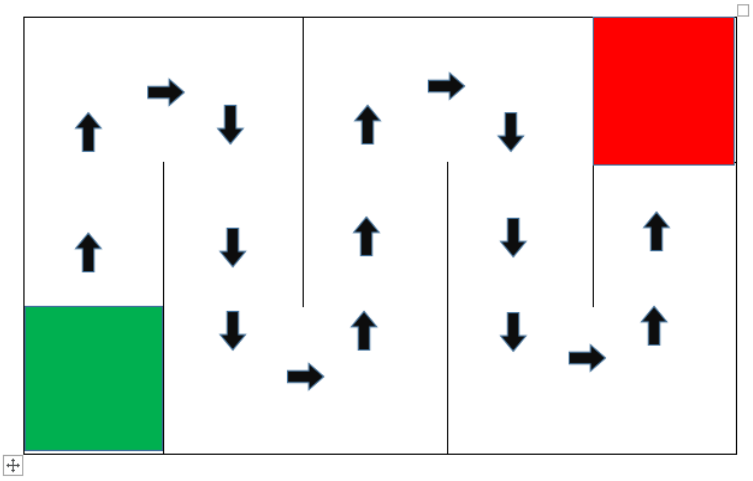

Fig. 1. **Example of a possible configuration of the polygon. The width of the labyrinth corridor is 30 cm**.

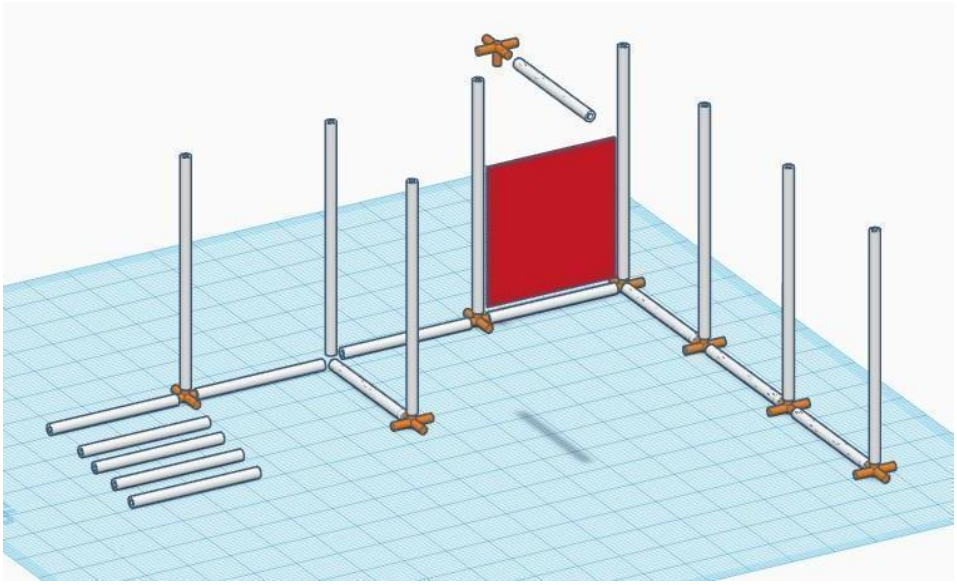

Fig. 3. **Example of labyrinth assembly**

[1]* – The final configuration of the labyrinth may differ from that shown.

Appendix No. 2

Recommendations for judges

1. The configuration of the training ground is determined on the day of the event and remains unchanged throughout the day.

2. Time is recorded in the testing area using a timer.

3. If the robot's projection remains in place in one of the sections for more than one minute, the judge must stop the attempt.

4. If the attempt was interrupted by agreement with the judge or by the judge himself, the last successfully completed section “cell” is recorded in the protocol; the maximum time for the team is 3 minutes.

Appendix No. 3

Recommendations for organizers

1. Each team is provided with a work space (table, 2 chairs).

2. Prepare time-keeping tools in advance (phone timer, electronic scoreboard, stopwatch)

3. The field is placed in a place accessible to spectators.

4. Team leaders are not allowed to participate in the competition.