

ROBORACE PROBLEM STATEMENT

PROBLEM STATEMENT-

Build a manually controlled robot capable of traversing over irregular terrains with deep gaps in between, by crossing and bridging them and pick up the objects from accident zone and place back at safe zone.

ROUND 1-

The robot has to traverse over irregular terrains by crossing the different types of bridges and building a bridge.

THE TASK-

The arena will consist of of four platforms (with different types of terrains) with three crevasses in between.

There are three type of joints in between the terrains. The 1st joint is a fixed bridge the 2nd is the rotating bridge and the robot has to make a bridge to traverse to the last terrain.

RULE-

1. The robot will start run from the start zone.
2. A robot can cross the crevasse only by bridging it using the joint provided.
3. Time bonus is awarded at the end of the run, only if the robot reaches the safe zone before the completion of allotted time.
4. Points are awarded for crossing the crevasse. However, the crevasse will be considered to be crossed only when the robot lies completely on the next terrain.
5. If the robot/joint falls off the track, the back at the point from where it had fallen.
6. If a robot, while traversing over a joint, gets stuck in middle of crevasse due to the joint being improperly placed, it will be considered as the team faces a similar penalty.
7. If the robot falls off the arena more than once, the team will be disqualified.

TIME OUTS AND RESTART-

A maximum of 2 timeout of 1 min. and 2 restart can be taken.
A penalty is imposed for each timeout and restart.

SCORING:

POSITIVE POINTS:

1. For every successful bridging(placing the joint and traversing over it):**150 points**
2. Robot in safe zone: **100 points**
3. Time bonus: **Total time for the round(in seconds)- Time taken(in sec)**

PENALTIES:

1. Timeout- **50 points**
2. Restart- **100 points**
3. Dropping a joint- **30 points**
4. Falling of robot in crevasse- **50 points**

SCORING FORMULA:

$150 * (\text{number of crevasses crossed}) + 100 * (\text{if robots is in safe zone}) + \text{Time bonus} - \text{penalties}$

SECOND ROUND/ FINAL ROUND-

The rule is as same as the first round.

When the robot traverse to the last terrain the robot has to pick the object(**A CUBE**).

The dimension of the cube is 5cm x 5cm x5cm.

The cube contain a loop over it. The bot can use a loop to lift it or use a griper.

After picking up the cube the robot has to bring it to the safe zone.

RED BLOCKS -60

YELLOW BLOCKS- 40

GREEN BLOCKS-20

PENALTY FOR DROPPING-

BLOCKS-20

BRIDGE-50

