Problem statement for hydronoid : level 2.0

Objective

Make a manually controlled machine, which can travel the specified obstacle course using Hydraulic mechanisms only.

Machine Specifications

1. Machine should fit into a box of dimension 35 cm X 35 cm(excluding gripper mechanism) at the time of start. There is no restriction on the height of the machine. The extensions used to control the machine are excluded while measuring the machine dimensions.

2. Machine can expand or compress during the run.

3. Locomotion of any part of the machine should be governed completely by hydraulic force.

4. Use of batteries or any other source of stored energy is prohibited.

5. Use of any type of electrical motors is prohibited.

6. Use of springs is prohibited.

Materials allowed

Syringes , tubes, wood, metallic frames, metallic pins, rubber bands, plastic, water, ready-made tyres,
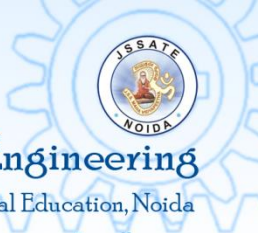
Task

Level 1-

In this level there will be two checkpoints. Each checkpoint will be around 35-50 cm distance. At both the checkpoints the objects will be kept within a radius of 17.5 cm at angles ranging from 0 to 30 degrees w.r.t. straight path on both sides of path. You have to use rotation mechanism or lifting mechanism(if required) for picking up the objects kept at a platform of height 10 or 12 cm(of your choice) and drop at next cavity(hole) (shown in figure).Point distribution and qualification criteria is discussed in next heading.

Level 2

Any two of all teams which will win the first round will be selected randomly . At the start of the race you have to pick an object which will be kept at a platform of height 10 or 12 cm. After picking up you have to travel a straight path of 50 cm and drop the object you picked up at the beginning. The fixtures and procedure of final event(level 2) will be given on spot and will be fair.

Point distribution(level 1) and ranking-Arena of level 1 is as shown in figure. When you reach checkpoints, the score awarded on reaching 1st checkpoint- 50 points and on reaching 2nd checkpoint- 100 points. Picking of object placed on straight path on checkpoint 1will fetch you 50 points and on checkpoint

2 will fetch you 70 points. Picking of objects placed at an angle of 30 degrees on both sides on checkpoint 1 will fetch you 70 points and on checkpoint 2 will fetch you 90 points.Dropoff of the object picked after checkpoint 1 in cavity will fetch you 25 points and after checkpoint 2 will fetch you 50 points. All the points you get will summed up and top 5 teams will be sorted out which will go in level 2. In case of tie time taken to complete the task will be considered and the team which takes lesser amount of time will be given preference.

Rules-

- Maximum allowed time for each team is 20 minutes.
- The machine must travel in a straight line only. After start of the time if in case there occurs a problem then the team is allowed to touch the machine maximum 3 times in level 1 and 2 times in level 2.
- Teams are not allowed to move out their machine during their gameplay. Once there machine is removed from arena team will be disqualified.

Finish

Checkpoint 2

100 points

Checkpoint 1

50 points

Start