AQUA-BOTICS

"LET US NOT PRAY TO BE SHELTERED FROM DANGERS BUT TO BE FEARLESS WHEN FACING THEM"

- Rabindranath Tagore

INTRODUCTION:-

Evolution is not just confined to all that is living but technology as well. Science & technology has always helped us to accomplish our task with least effort. But on the other hand it is also giving birth to serious issues like terrorism. From a long time Terrorism continues to inflict pain & suffering on people all over the world.

Like 26/11 Mumbai attack ,terrorists are again planning to invade the Indian defence, this time through The Indian Ocean .They have hijacked Indian cargo ships & are approaching Indian coast.

The Indian Navy has asked its best engineers to build an aqua robot that can traverse through the Indian ocean , rescue the cargo ships & burst the terrorist's ships & their weapon tanks.

"It requires bravery to do something no one else around you is doing"

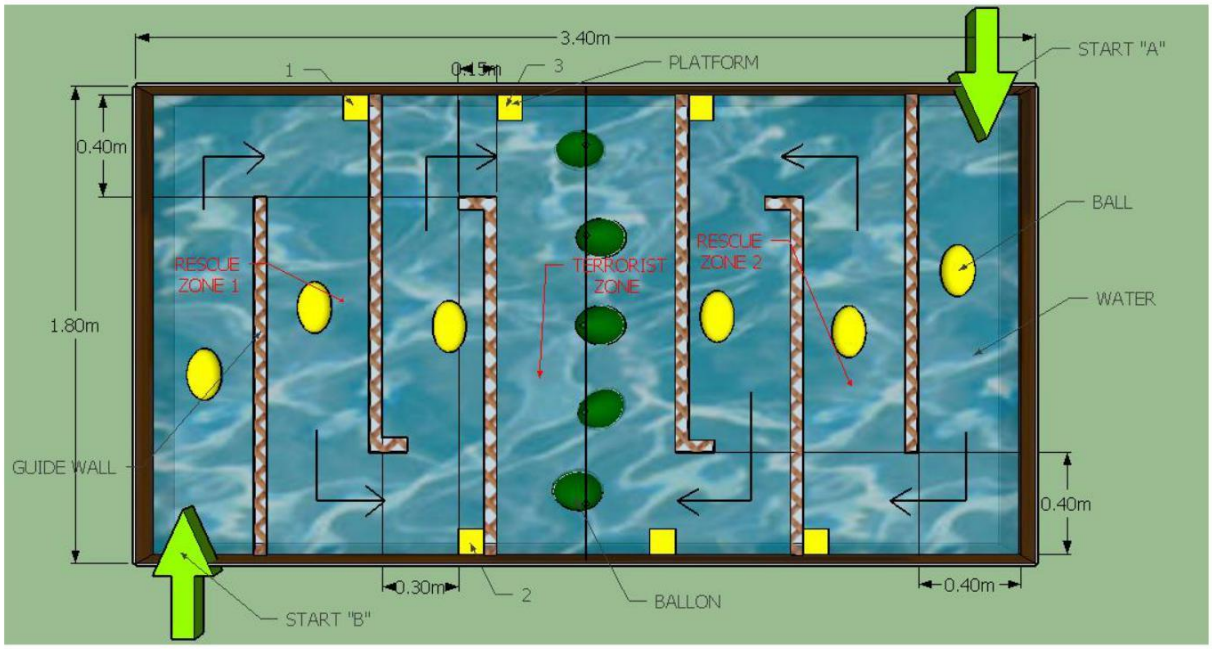
PROBLEM STATEMENT:-

Design a Wired or Wireless manually controlled Robot capable of navigating by floating on water and complete specified task within provided time.

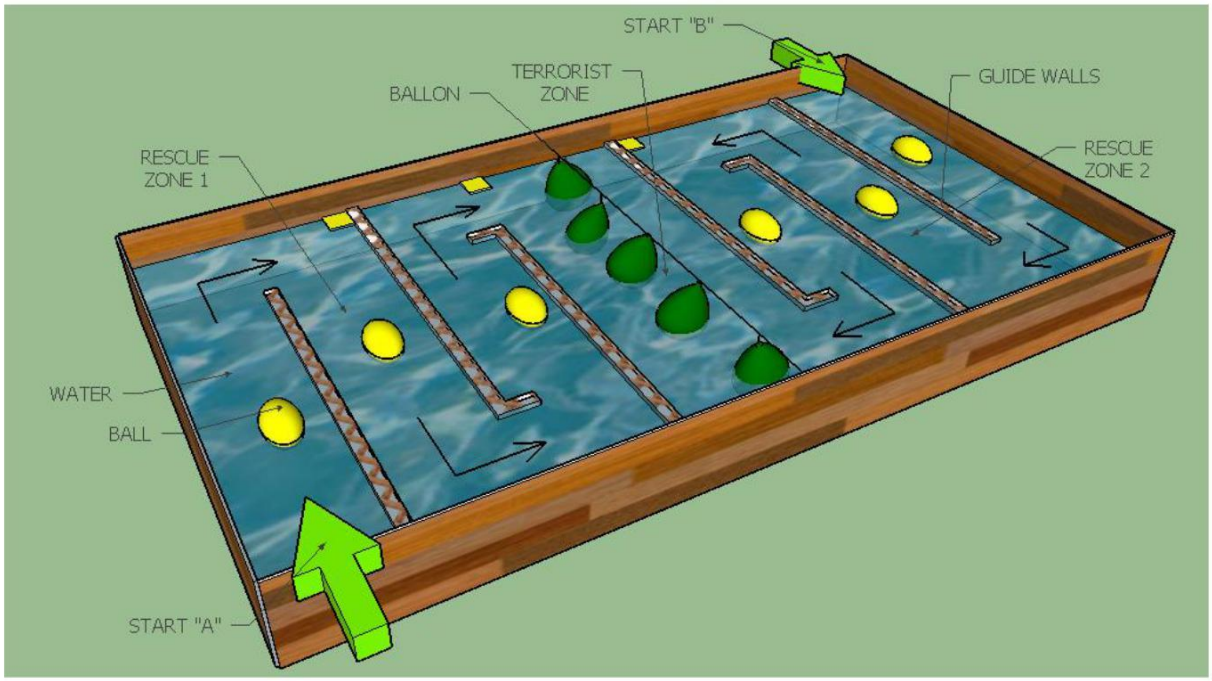
ARENA:-

Arena is rectangular in cross-section of size (340cm x 180cm) and consists of water up to a height of 25cm. The arena is divided into two parts so as to allow two teams to compete against each other simultaneously. The yellow balls which represent the cargo ship to be rescued are of diameter 5 cm (approx). The balls are to be carried to the platforms immediately following their way .The balloons representing the terrorist ships & tanks are hanged in a row on a long stick placed at mid of arena.

- TOP VIEW OF ARENA :



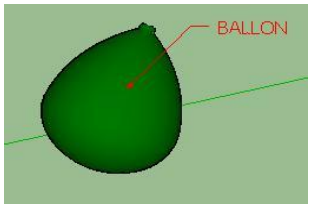
- ISOMETRIC VIEW OF ARENA:



BALLS:

These represent hijacked Indian cargo ships to be rescued .

- BALLOONS:
  These represent terrorist's ships & weapon tanks to be destroyed by the bot .



GAMEPLAY:-

PRELIMS :

- Two bots A and B have to start simultaneously from their respective starting points specified in the arena.
- Each bot has to traverse by floating on the water through rescue zone where 3 balls (which represent Indian cargo ships) are placed in between the guide walls at different positions.
- Balls are to be carried to the different platforms immediately following their way by pushing, dragging or any suitable means without touching guide walls; i.e. 1st ball is to be carried to 1st platform and so on. A maximum of 3 touches with guide walls are allowed without penalty.
- Finally bots have to enter the terrorist zone which is common for both bots.
- This zone contains balloons (which represent terrorist's ships &weapon tanks) hanging in a row, which are to be burst by the bots.
- The top 10 teams on the basis of score will be short listed for 2nd round.

FINALS :

- Like the prelims two bots have to start simultaneously from their respective starting points but after completing tasks in terrorist zone they have to further traverse by floating on water and reach the opposite starting point.
- Balls are to be carried to their respective platforms only by drag or push is allowed. Penalty is applicable, when the bot touches the guide walls.
- All other processes are same as prelims, some obstacles may be introduced in the path to increase difficulty in floatation.

TIMING:-

A maximum of 8 minutes in the Prelims and 6 minutes in the Finals are allowed to complete the task.

SCORING:-

- Initially 200 points will be awarded to every team.
- Total time taken (in seconds) to complete the task will be deducted from the final score.
- For carrying each ball to its respective platform 40 points will be awarded.
- For bursting each balloon 60 points will be awarded.
- For crossing each lane of guide wall 20 points will be awarded.
- 10 points will be deducted for touching the guide walls (if touching limit is crossed).
- 20 points will be deducted for every manual touching.
- 30 points will be deducted for each restart taken.
- 100 points will be awarded for successfully completing the task within stipulated time.

SCORING FORMULA :

Total Score = 200 - T + 40*B + 20*G + 60*L - 20*M - 10*W - 30*R

T = Time in seconds

B = Number of Balls carried to the platform

G = Number of lanes of guide wall crossed

L= Number of Balloons burst

M = Manual Touching.

W =Touching the guide wall (touching limit crossed)

R = Number of restart.

ROBOT SPECIFICATIONS:-

- Bot should fit in a box of 25cm x 25cm x 25 cm (L*B*H) at the time of start; however it may expand during its move. (Maximum 10% tolerance is allowed.)
- Robot must not contain any readymade kits or any such assembly. However readymade gear and shafts may be used.
- The voltage difference between any two points on bot must not exceed 24 volts.

TECHNICAL DETAILS:-

- Team members will not be allowed to touch any part of arena, only organizer are allowed to handle the arena in any situation, the team will be disqualified whose member found touching arena.

- Teams will not be allowed to change bot's mechanism and parts once the game started.
- Participants are not allowed to keep anything inside arena other than the bot.
- The time measured by organizers will be final and will be used for scoring. Time measured by participants is not acceptable for scoring.
- Organizing team will not be responsible for any kind of damage to your bot.
- Organizers decision will be final and binding in case of any dispute.
- Organizers reserve the right to change any of the above rules they deem to be fit.
- The participants will be provided with 220 Volts, 50Hz standard AC supply. Participants will have to themselves arrange for any other power supply required for their robot.
- There may be slight variation in dimension of the arena & number of balls and balloon are liable to change.

TEAM RULES:-

- A maximum of four participants are allowed per team.
- An individual cannot be part of more than one team.
- Participants must bring the valid identity card of their institute.
- There is no restriction to the number of teams participating from same educational institute.

CONTACT:-

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