TERRAIN TREADER 3.0

Venue: New gallery

Time: Two days event-

   1. First day for prelims.

     2. Second day for finale.

Task/Problem statement:

To construct a manual bot capable of grabbing, lifting and pushing blocks as well as crossing different kinds of adverse terrains.

Bot Specifications:-

- The dimensions of the bot should be 25cm X 20cm (the wheels can bulge out slightly from the base of the bot).
- The bot may be wired or wireless.
- The bot must have an arm which is capable to hold, lift and rotate objects of dimensions 5 cm at maximum.
- The bot must not be made of lego kits or readymade assembly kits.
- A power supply of 12V dc will be supplied for the bot.
- The maximum RPM of motors is limited to 150.

Arena specifications:
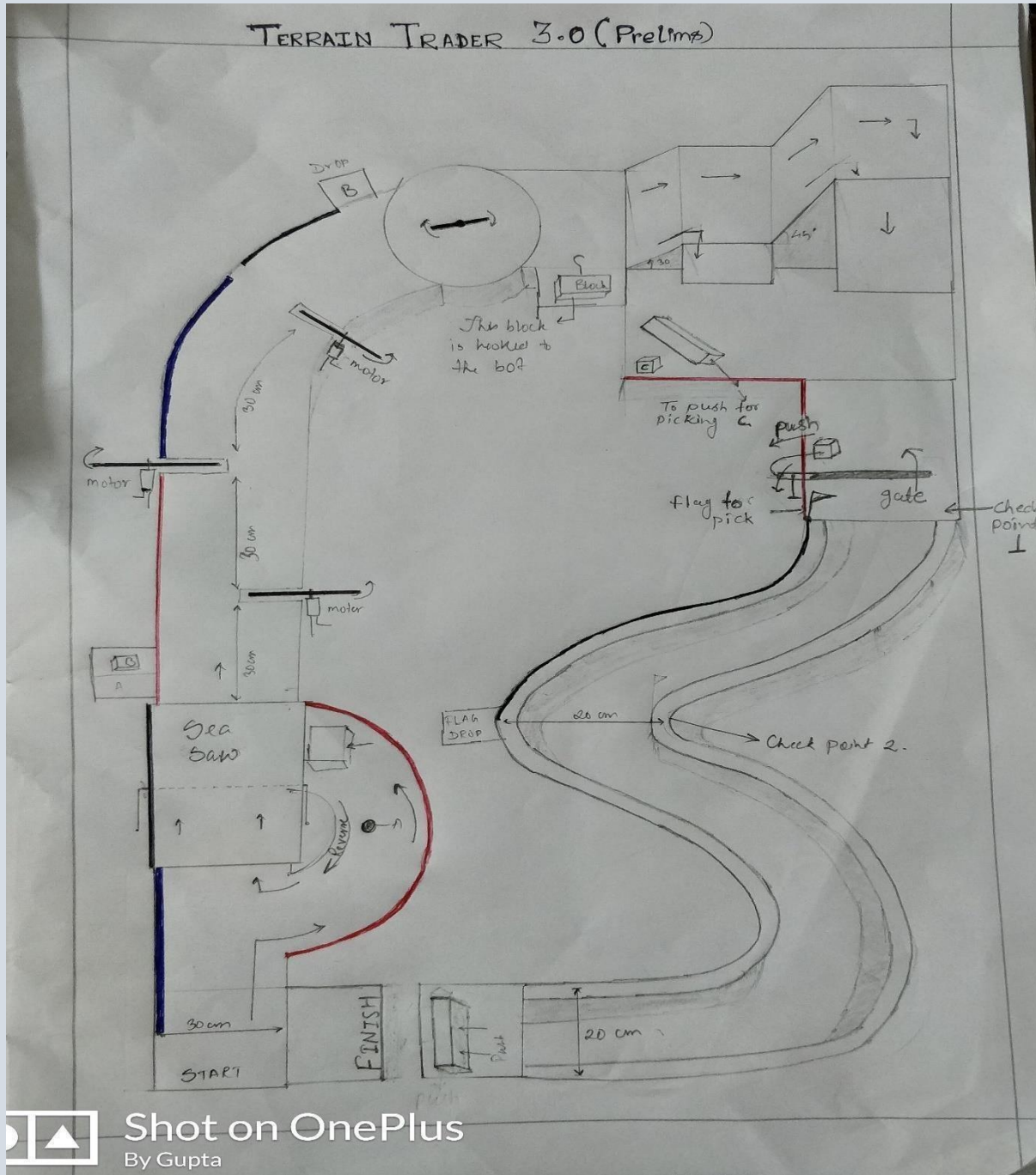
(The dimensions shown in the arena diagram may change by 5cm to 10cm)
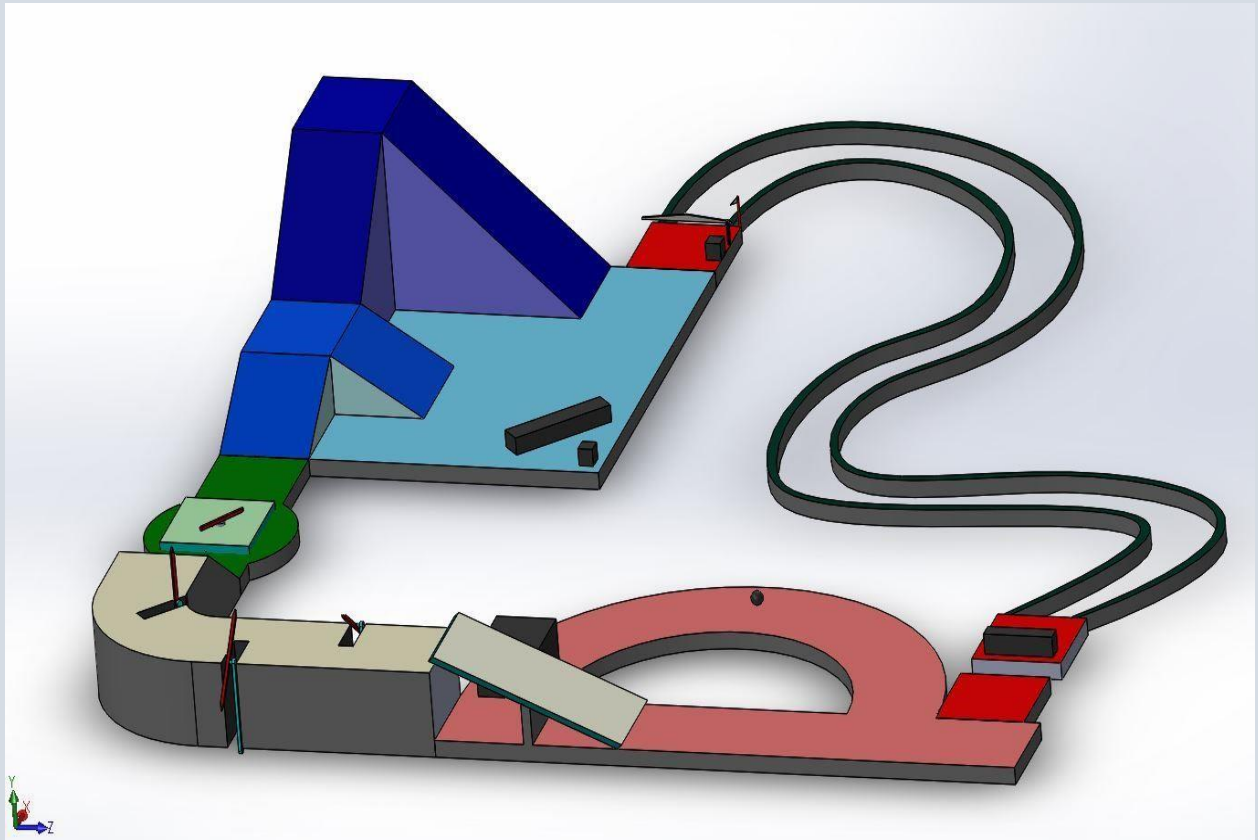
Gameplay and Reward points:-

1. The bot should be placed in the start position before the timer starts.

2. As the timer starts, the participants are allowed to begin with their task.

3. The entire arena has been painted in 4 different colours **(Red, Green, Yellow, Blue)** based on the level of difficulty.

4. The individual sections of the arena include different tasks like pushing blocks to complete a path, lifting up blocks and carrying them successfully to their destination, moving up inclinations of 30 degrees and 45 degrees, timing the movement of the bot

5. The participants will be awarded with demerit points in case their bot fails to hold on to the block till it reaches it's destination or the bot moves out from the track by any means whatsoever or the bot fails to clear the obstacle without touching it.

6. The demerit points are as follows:
   - (for dropping the block)-

      Red: **-20**

      Green: **-15**

      Yellow: **-10**

- Touching the obstacle: **-10**
- Moving out from the track: **-5**

ARENA:

7. The first section that the bot has to clear is a see-saw bridge. There are two paths in this section. If the bot follows the straight path, it encounters a see-saw which it will fail to clear as soon it moves towards the latter part of the see-saw. In order to clear this, the bot has to place a block under the latter part of the see-saw so that it can easily move up the see-saw. The block is to be found on the secondary path which is a curved path with a block placed at the end. The bot will have to lift up a ball placed in the middle of the curved path and then move forward towards the block. The bot has to push the block underneath the see-saw (the straight path is now complete) and then move back to the initial position in reverse gear. There will a box placed at the end of the see-saw where the ball has to be placed, hereby completing this section and getting **60** points. The curved path will be painted **RED,** straight path **Yellow** and see-saw **Green**.

8. After the see-saw, bot has to lift up a small block B and then move forward, there are vertical rotating rods at three junctions on a slightly curved path. The rotating rods will obstruct the path of the bot at regular intervals (depending upon the rpm). The bot has to time it's movement in order to clear these three obstructions. Clearing this section has **100** points. Any contact with the arm will lead to **-10** points and they will have to start from the very beginning of this section. Each block(B) drop will lead **-10** points. Any bot being able to clear to the three junctions without a single contact and single drop will be awarded **20** bonus points.

9. After this the bot has to clear a circular platform where there is a horizontal rotating rod in the center. Again the bot has to time it's move in order to avoid contact between the rod and it's wheels. Maximum 3 attempts will be provided in order to clear this section. The points gained are as follows-

    1 attempt- 40 points

    2 attempts-30 points

    3 attempts-20 points

10. After this the bot has to drag a block along with it via hook and then clear two inclinations of 30 degrees and 45 degrees respectively. Clearing the 1st inclination gets them **30** points and for the next one **60** points. As soon as the bot reaches the top, the hook will be removed. The inclinations will be painted green and yellow respectively. After this the bot has to get down a slope with potholes in it, dodging any obstruction.

11. After this, there is small block C, bot will have to lift up this block. Before lifting up C bot have to push a heavy box out of arena. For pushing successfully **30** points will rewarded.

12. After this, there is a toll gate which can be opened by just pushing a block off the track and the thread attached to the block will open the gate as soon as the thread is taut. Block C is dropped here. For this task **40** points.

13. The next section is a curved path with hollow space in the middle. The bot has to carefully pick up a flag from the very beginning of this section (1st check point), carefully move forward till it reaches the center of the track (2nd check point) and then it has to place the flag in a box. For successfully flag drop **40** points and After that the track becomes more adverse as it has sharp turns. The bot has to complete this and then finally push a block into an empty space on the track and finally reach the finish line where the time stops.

Points:

From check point 1 to 2: **50**

From 2nd check point onwards: **80**

(points for dropping of box or ball, cut according to colour zone)

Game Rules:

1. Each team will given a maximum of **five** minutes as technical timeouts.

2. A maximum of **20** minute will be given to a team to complete the whole arena.

3. In case of tie among teams on the basis of point earned, the time is the second priority.

4. If bot damages the arena, **-20** points would be awarded each time.

5. If teammates damages arena the team would be disqualified.

Team Specifications:-

- A team can contain a maximum of **5 members**.
- Each team must have a team leader.

General Rules:

1. The organizers reserve the right to disqualify any team indulging in misbehavior or violating any rules.

2. Any team that is not ready at the specified time will be disqualified automatically.

3. Time and points measured by the organizers would be final.

4. In case of any discrepancies/disputes the organizer's, decision will be final and binding.

5. **The organizers deserves the right to change any rule if they want. Change in rules will be highlighted in the website and will be notified to the registered teams.**

Organizers:

1) Rohit Lohia (contact no. 7035691091)
2) Vijay Gupta (contact no. 7413899928)
3) Rahul Jain (contact no. 7340128412)
4) Atul Shukla (contact no. 8249970253)
5) Gaurav Harlalka (contact no. 8638977185)
6) Ritika Dubey.