MOMENTUM

***Introduction*:**

"**MOMENTUM"** One of the heavily participation filled with enthusiasm of Technex recorded over the years. Momentum has recorded huge participation every year in TECHNEX.

The enthusiasm for this event is spreading and this is your chance to get involved. Over the past years this event is seen as the day built for fun, team building and much exciting things in its box.

Technex'20 brings to you a thrilling opportunity to make your own water rockets and see them fly high. Hope to See You with Great Enthusiasm, Zeal & Passion to participate and Win in the most ***THRILLED & EXCITING*** event of **TECHNEX '20.**

***TASK*:**

Design and construct a water propelled rocket pressurized with air to complete against various constraints in separate rounds to encounter your enemies.

The event consists of two rounds:-

1. ***Time Heist***

2. ***Hypnotizing Rings***

Time Heist:

- This round measures accuracy of the rocket.
- There is a Space centre with different zones behind a wall of 4.5m height which is at a distance of 10m from launching point. Cross the wall and reach the centre to prepare for journey in the second round.
- There will be only one attempt for each team for this round.

- **Points distribution :-**

(a) Lands before the wall:

Points (P1) = 1 x range (in meters)

Points (P2)= 1.5xTime of flight
Total points P(3) = P(1)+P(2)

NOTE: Range is measured from launching zone.

(b) Lands after the wall:

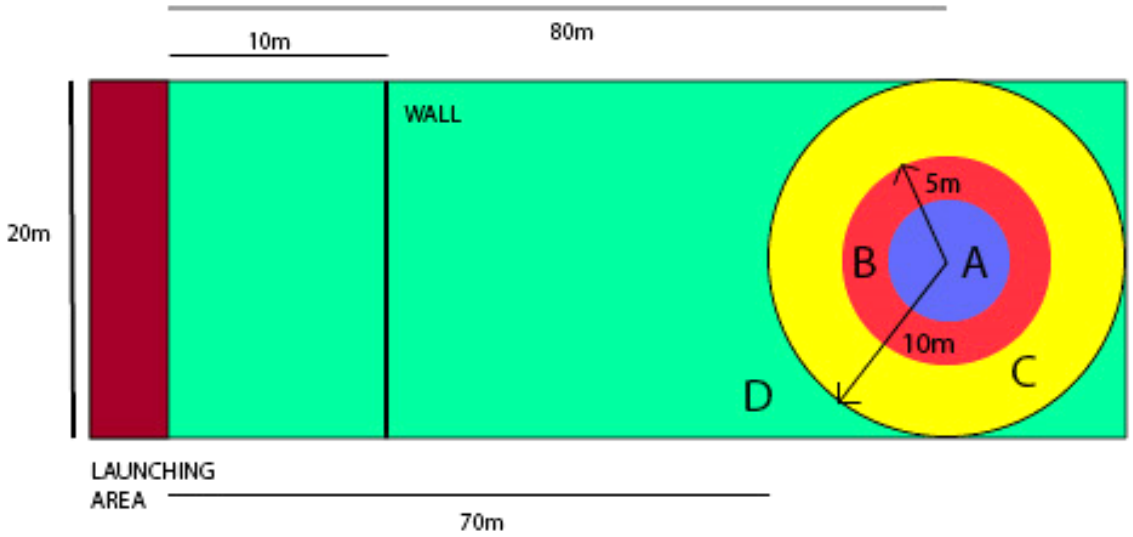
Points (P1) = 1 x range (in meters)

Points (P2) = 1xTime of flight + Landing Zone Point value

Total points P(3) = P(1)+P(2)

A: 80, C: 40,

B: 60, D: 20



[NOTE: Timer is started as the rocket launch and stops when it landed on the surface.]

Hypnotizing Rings:

(i) This round tests the accuracy of rocket as well as precision flying.

(ii) There are three circular rings at a distance of 5m with each other. Their names are as R(1)-PAST,R(2)-PRESENT ,R(3)-FUTURE.

(iii) The radius of each ring are as : R(1)-1.5m, R(2)-1m, R(3)-0.5m respectively with distances 76m ,77m, 78m respectively from the launching zone.

(iv) The landing points will be given for landing in the circular regions namely A, B, C, D and E having centres at a distance of 80 m from launching zone according to points distribution. These regions will have Radius 1, 3, 4, 5, 10 metres respectively. These circular regions are marked on ground itself.

(v) During flight if rocket passes through these circular rings then extra points will be given.

(vi) This is the last and final round and there will be two attempts for each qualifying team.

(vii) POINTS DISTRIBUTION :-

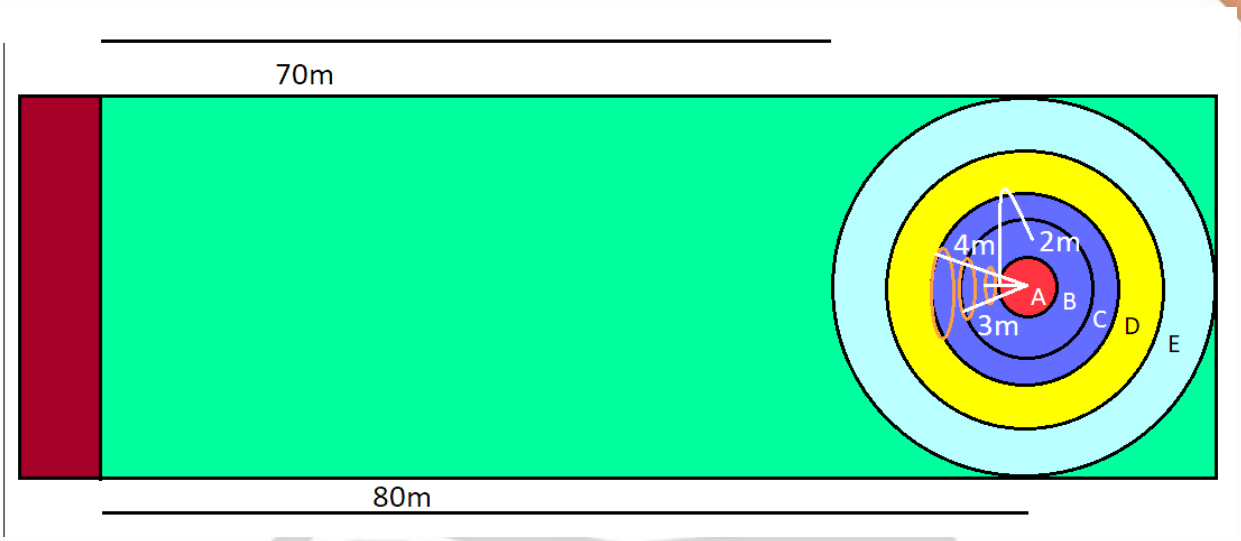
(a) Points for Crossing Rings (P4): R1 = 60; R2 = 80; R3= 100

(b) Point (P5) = 1.5x Time of flight (in secs)

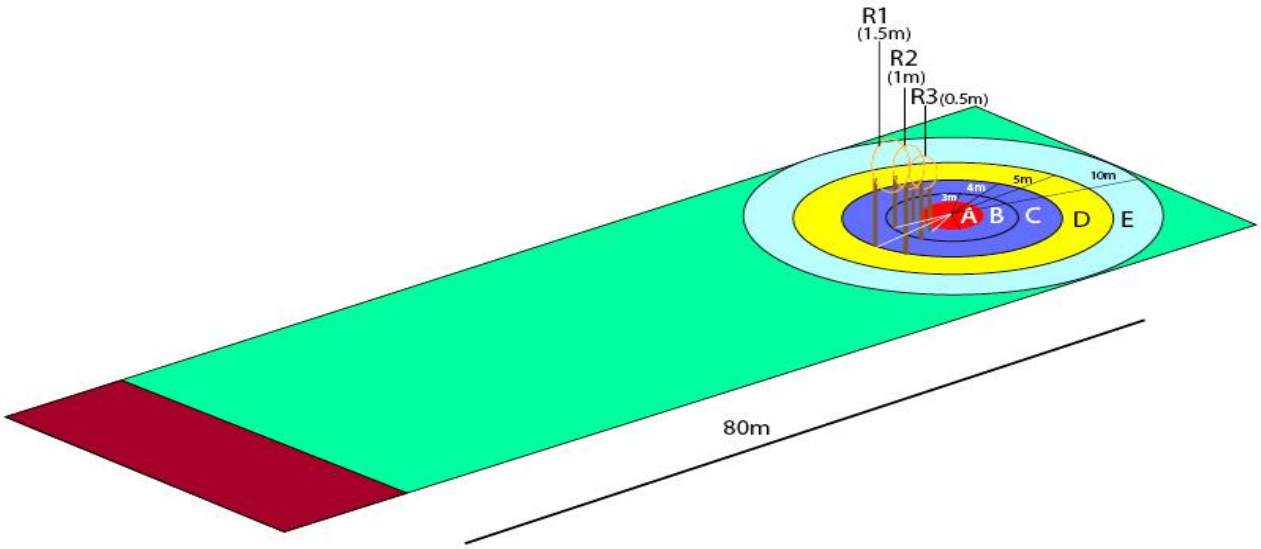
(c) Points gained in landing in circular regions : For A =80; For B= 70; For C = 70; For D =60; E=50;

(d) Total points will be = P4 + P5 + Points gained in landing region.

[NOTE: timer will stop at the first contact of rocket with any of the elements of arena (like … rings, poles, ground…etc.)]



TOP VIEW



ISOMETRIC VIEW

Competition Rules:

- Each team should consist of maximum of 4 members. Members can be from different institutes.
- Teams should have their own launcher, and in case they don't have, a simple launcher will be provided by Organizing Team.
  (**NOTE: 30 points will be provided in each round if you use your own launcher.**)
- Participating team will be disqualified if any damage occurs to the launcher provided by the organizing team.
- Teams having innovative mechanism must bring their own launcher like in case of booster, multistage.
- Only Top 10% teams of the first round will be qualified to the final round.
- Launching angle to be decided by the participating team.
- Range (in meters) and time of flight (in seconds) will be measured by the organizers.
- Only members of the participating team will be allowed to launch.
- Rocket has to be launched from a fixed point on the ground using a fixed launcher.

- Distance between the launcher and the first point of contact of falling rocket with the ground will be taken as the range. In case of booster and multistage, range will be calculated with the contact of last falling part (rocket).
- Participant's model should not damage the arena or hurt any person.
- Rules & regulations of the above rounds are liable to change as per the situation.
- Any change regarding the event will be mentioned on the website and mailed to the registered participants. You are advised to visit the website regularly.
- The decision of organizing team will be final and binding on all.
- All dimensions in the sketch of arena are in metres.

Model specification:

1. Rocket may consist of electronic components for increasing time of flight by parachute or booster mechanism but chemicals are not allowed.
2. Metals are not allowed in any form to be used with the rocket.

3. Working fluid is water and only it should be used in propulsion of rocket, no other things or system should be used. Participants will use the water provided by the organizers.
4. Participants can make different models for different rounds.
5. Foot pump will be provided by organizers, this foot pump is compatible with the standard bike valve. Please check the sizes of nozzle which you are using in case of using your own launcher. If any other size than the standard available in the market is used, arrange it beforehand to avoid any inconvenience. It will not be provided by the organizers. In case participants using their own pumps, the pump must have a pressure gauge.

Co-ordinators:

Aayush Malik

aayushm.cd.mec17@itbhu.ac.in

+91 9557535431

Rahul Bargi

rahul.bargi.phe17@itbhu.ac.in

+91 9828268908