UDAAN

Introduction:

On the occasion of Pryaukti 2019, for the first time ever in Haldia Institute of Technology we are organizing the Event Aeromodelling contest "**Udaan**".

Problem Statement:

The competition requires participants to design and fabricate an RC Aircraft (no ready-made aircraft like RTF, ARF, BNF etc. are permitted) and perform a set of tasks. Propellers, Motors, ESC, Servos, Receiver and Transmitter are allowed as off-the-shelf items.The arena will be an open ground.

There will be two rounds in the competition as follows:

Round 1: Gliding round

Round 2: Low-Pass

1. Gliding round

A good measure of the design of an aircraft is in rate of climb and gliding time. In this round, participants are required to make their aircraft (without payload) to climb for 20 seconds. After this, they need to perform a dead stick flight (throttle=0 or Gliding). The aircraft however can be manoeuvred while it is gliding. The teams will be graded based on the glide time of the aircraft as mentioned below.

τ = Total flight time (powered flight time + glide time) in seconds

τ_{max} = maximum recorded flight time amongst all the participants.

$$\text{Round 1 Score} = \frac{\tau}{\tau_{max}} \times 30$$

1st round is not qualifier round and all the participants will qualify to the second round irrespective of their scores. Winners will be selected after the evaluation of Final scores.

1. Low- Pass Round

In this round the manoeuvring capability of the aircraft and skill of the pilot is tested. Participants need to pass the plane through a rectangular loop placed in the middle of the arena with dimensions 5m × 8m (height × width). {Width same as that of football goal and height is double to that of a football goal post}. Participants will be given a time of 4 minutes the number of times it passes through the loop decides the score.

N = Number of passes through the loop in 4 minutes.

$\mathbf{N}_{max}$ = Maximum recorded passes amongst all the participants.

$$\text{Round 2 Score} = \frac{\mathbf{N}}{\mathbf{N}_{max}} \times 70$$

Final Score = Round 1 Score + Round 2 Score.

If there is a tie, the winner will be decided by a separate round framed by the Judges on the spot. Judges' decisions would be considered final in all cases.

Model Specification:

1. T/W <=0.99 without payload (If excess thrust is measured, it will be neutralized by adding weight below the aircraft at center of gravity)
2. Propeller diameter should not be greater than 13 inches.
3. Total wingspan should be a maximum of 1.5 m.
4. Only electrical motors are allowed. The use of IC engines or any other means of providing thrust is prohibited.
5. Use of gyroscopes (gyros) and programming assistance in receivers is prohibited.

Rules on Team Structure:

1. Maximum of 4 members in a team.
2. Members of a team may be from same college/school or different (School/UG/PG).
3. Any number of teams can participate from one college/school.
4. Professionals are not allowed. Only students can participate.

Rules:

1.Each team would be given one attempt in two attempts in both rounds and the best scoreis considered as per the scoring procedure mentioned above for each round.

2.If the aircraft does not take off in the first attempt during qualifier round due to uncontrollable/ natural causes like sudden gusts of wind etc., they will be given the second attempt then and there itself. This will be applicable only if the cause happens within the first 3 seconds of flight.

3.The timer will start the moment the participating team enters the take-off zone with the aircraft or within 30 seconds of the previous team completing their attempt, whichever is earlier. The participants need to be prepared in time and launch without delay after entering the take-off zone.

General Guidelines for the Competition:

1. The use of 2.4 GHz radio is required for all aircraft competing in the competition. If the participants want to use any other frequency, they will have to inform the organizers in advance.
2. A limited number of 2.4 GHz radios will be available with the organizers for use by the teams. Teams who do not have access to radios can inform the organizers in advance to request use of these radios.
3. Receivers installed in the aircraft must be in 'receiver mode only'.
4. All the systems (Servos, motor, etc.) will be checked by organizers for functionality before the competition. If found not working, teams will be dismissed from the competition.
5. Pilot can position himself at any point in the arena to fly the aircraft during the rounds.
6. In view of stringent safety requirements, if a pilot flies out of the designated flying zone which includes overhead of the event organizing and control section, as mentioned at the venue, he/ she is disqualified and has to immediately turn back and land at any cost.
7. Teams are suggested to carry additional components (motors, batteries, propellers etc.) as needed to avoid last minute surprises at the venue. You will lose time/ attempt if you are not ready at the time of your turn.

8. Metal propellers are not allowed.

9. The models can have powered take-off with a landing gear or can be launched manually
by a person standing at ground level.

10. Aircraft should be built from scratch by the participants of the team and should not be a purchased model.

11. A team member can't be a part of more than one team.

12. Bring your college/student I-Card at the time of competition.

13. Any of the above-mentioned rules, if found violated, teams would not be allowed to participate in the competition.

14. Each team is advised to bring all components for their aicraft although they are coming
from same college. Any delay due to sharing of components might result in your team losing the time available for your attempt or lose the entire attempt itself.

15. Decision Taken by Judges and Organizers will be final and binding for all.

***NOTE: Rules Are tentative at this stage and will be updated in the official website of Pryaukti 2019 when finalized*.**