

CRUISE CONTROL

Pool Event

Points : 40

Once you've learned to fly your RC aircraft confidently, it's time to step it up a notch and learn some basic designing and gliding skills. This event will test your nerves, ability to withstand difficult flying conditions and your flying skills. Design, fabricate and fly a wireless remote-controlled aircraft (using electric motors only), which has all three degrees of freedom including roll, pitch and yaw and that can satisfy these specified tasks.

Model Specifications

- The model must be hand-made.
- There is no limitation on the size of the plane.
- The Aero model must weigh less than 1 kg.
- The model must be hand launched.
- The participants are free to use the materials of their choice. However the use of Foam (sunboard) or sun pack (coroplast) or Styrofoam is advisable.
- Participants must make all parts of the aircraft themselves.
- Usage of Ready-to-Fly (RTF) and Almost Ready-to-Fly (ARF) kits are strictly prohibited.
- Use of readymade actuators/motors, remote controls and propellers are allowed.
- Use of gyroscopes (gyros) is prohibited

If anyone is found not following the above rules, they will be disqualified. Use of CF rods are allowed for strengthening.

Team Structure:

It is a pool event with a single team per pool. **The flyers should be only from Y18 batch.**

Problem Statement

The competition requires the participants to design an RC plane and achieve the maximum glide time. The event consist of two parts:

- A. Design Report Submission
- B. Flying Event

Round1: Design Report Submission

Participants must have a good knowledge of designing and analysis of an aircraft. The participants will have to submit the design report in order to qualify for the flying event.

- Copying of any other pools design report will lead to disqualification.
- The report must consist of the following details along with XFLR file.
 - Bending moment.
 - Tip stall
 - Cl/Cd wrt alpha
 - Neutral Point
 - HTV and VTV coefficient ratios
 - Lateral and longitudinal stability analysis.
 - Static margins.

Round2: Flying Event

The best measure of the design of an aircraft can be done by climb and gliding time. To examine this, participants have to climb for 20 seconds. After this, they need to perform a dead stick flight (throttle=0 or Gliding). The plane, however, can be maneuvered while it's gliding.

- The flyer will get two attempts for flying.
- The team will get a trial chance for testing and checking the proper working of the plane.
- In any case after the first 20 sec. If flyer anyhow uses throttle after the first 20 sec then the time only up to that point will be considered.
- The best score out of the two rounds will be considered for scoring.
- Crashlanding (harm to the plane, electronics, and other accessories.) will attract penalty - 20 sec from the total time.
- If the throttle is ON for more than 20 seconds then a penalty of 5 points will be awarded for every extra second after the first 20 seconds.

Point distribution

Round-1 S1: The total score for the design report is 100

Bending moment 10

Neutral Point 10

Cl/Cd w.r.t alpha 10

Tip stall 10

HTV and VTV coefficient ratios 10

Lateral and longitudinal stability analysis 20

Static margins 10

Damping of disturbance with time (lateral and longitudinal): 20

Round-2 S2: Glide time (T1) in seconds

Rules and Regulations

Participants should not disturb the flyer in any case otherwise it will attract a penalty of 5 points of total score evaluated for that team in that round. Then pool ranking will be based on [S1+S2].

Note:

****You have to demonstrate your design and show the analysis. Failure to give a valid reason for your design won't fetch you points.**

****The actual plane should be of the same specification mentioned in the design.**

(An error of 10% will be considered.)

**** If at any point of time coordinators feel that the aircraft is going out of control or out of the field then the transmitter will be immediately taken from the flyer and clock will be stopped. The time only up to that point will be considered.**

****If coordinator or judges feel the flyer is not capable enough to fly then he won't be allowed to fly.**

**** In case of any disputes, the decision of the coordinators and judges would be final and binding to all.**

****It is your responsibility to handle the electronics with care. No other electronics will be provided in case of any damage or failure.**

****One of the coordinator will be the caller for the flyer if the flyer wishes not to have a caller he/she should confirm the same before their attempt begins.**

****Team must report on scheduled time. If any team will fail this condition then points will be deducted as the following scheme from their total score**

- For the first 10 minutes 5 seconds penalty per minute
- For 10 to 15 minute 10 seconds penalty per minutes
- After 15 minutes team will be disqualified.

In case of any problem, feel free to contact.

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