Technical Board

IIT Guwahati

Aeromodelling Club

IIT Guwahati

RC PLANE

GC Points – **350**

Date – **20/10/2018**

Venue – **Football ground**

Time – **9:00 a.m.**

Last Updated – 20: 00 | 4/10/2018

<u>Contact Details</u>

Manik Mittal

8283902212

mittalmanik1998@gmail.com

Format of the Competition

The competition requires participants to design and fabricate an RC Aircraft, capable of basic maneuvers (Roll and Pitch) and perform a set of tasks. Propellers, Motors, ESC, Servos, Receiver and Transmitter are allowed as off-the-shelf items. The competition consists of two rounds:

1. Qualifier Round
2. Competitive Round

Qualifier Round

The participating teams are required to present the plane and explain the electronics and the basic dynamics of the plane and then fly the plane for at least 20 seconds to qualify for the next round. The teams will be provided with APM 2.5, a flight controller which can be used to stabilize the flight, on the day of competition. The usage of the flight controller hardware is optional but recommended for beginners in this field. NO Flight controller has to be used past this round. The teams qualifying without using a flight controller will be given bonus points. Each team will be given 10mins for flying the plane. The maximum flight time will be taken into consideration.

Competitive Round

This round consists of three tasks which can be performed in any order.

Part ONE

The teams have to perform the basic maneuvers (viz. ROLL LEFT, ROLL RIGHT, PITCH UP, PITCH DOWN) without using a flight controller.

Part TWO

The teams have to perform some difficult maneuvers:

- Inside Loop
- Outside Loop
- Roll 360

Part THREE

A cubical block of size 20mm will be provided to drop in the dropping area. The RC Plane is required to have a dropping mechanism for this task. Points will be provided according to the proximity of the dropped cube to the target dropping location.

Rules

3. **No readymade aircraft like RTF, ARF, BNF etc. are permitted.**
4. **No autopilot hardware has to be used past the qualifier round.**
5. **The maneuvers have to be performed in the visible distance of about 100m.**
6. **All the maneuvers listed in PART TWO and PART ONE can be performed in any order as desired by the team.**
7. **All the maneuvers listed in PART TWO and PART ONE have to be performed after at least 2 seconds before declaring the type of maneuvers or the judge allowing the team to perform, to avoid any kind of discrepancy. Any manoeuvre listed in PART TWO performed without declaring or the judge not allowing would lead to partial/no score as decided by the on-field judge.**
8. **All the maneuvers listed in PART ONE have to be performed in the sequence decided by the judge and the team beforehand. If the team decides to change the sequence, it has to be declared at least 2 seconds of performing those maneuvers mid-flight or the judge allowing the team to perform.**
9. **The plane has to take off and land into the specified zones.**
10. **Time of flight will be the ranking criteria in case no team qualifies first round.**

Suggestions

- **It is suggested to keep a cavity of 85 x 45 x 15 mm for the flight controller, though optional.**
- **Keep the servo wires long enough to reach the radio receiver or use wire extensions.**
- **It is suggested to test the RC Plane properly before the competition.**
- **It is suggested to keep multiple LIPO batteries charged before the competition.**
- **Keep spare propellers and motor in case it gets damaged during the competition.**
- **The teams are free to choose any type of model and material for making the plane (FliteTest.com and their YouTube channel are a great source for plane models).**

Scoring

TASKS	MAX SCORE
Explanation of basic dynamics	**20**
Take off by wheels	**20**
Qualifying first round	**50**
Bonus for flying without autopilot	**30**
ROLL LEFT	**20**
ROLL RIGHT	**20**
PITCH UP	**20**
PITCH DOWN	**20**
Inside Loop	**100**
Outside Loop	**100**
Roll 360	**100**
Drop within 1.5 m	**100**
Drop within 3.0 m	**80**
Drop within 5 m	**60**
Drop outside 5 m zone	**40**
Landing stability	**20**
Overall flight stability	**50**