**DESIGN AND FABRICATION OF AN RC GLIDER FOR BASIC AVIATION**

**Abstract**

1. **Frequency of Remote Control Panel:** 2.3 GHz
2. **Design of the RC Plane**

We are using the design shown in images (Google drive link below) and described below:

Assumptions

1. Aspect ratio: 5 for the main wing configuration.

2. Wing span: 35 inches (880 mm).

3. Aspect ratio: 3 for the horizontal stabilizer.

4. Aspect ratio: 1.5 for the vertical stabilizer.

DESIGN CALCULATIONS (photos in Google drive link)

1. Wing cube loading: 7.62.

2. Total weight: 480gms to 530gms.

3. Wing area: 245 sq.in

4. Horizontal stabilizer area: 61.25 sq.in

5. Aileron length: 0.86 in

6. Wing thickness: 0.74 in

7. Fuselage length: 26.25 in

8. Fuselage height: 5.25 in

9. Vertical stabilizer area: 27.56 sq.in

10. Elevator area: 13.48 sq.in

11. Fin (RUDDER): Trapezoidal shape.

1. **Components used and their configurations**

Motor and other electronic component details:

1. Outrunner motor (1)-For thrust.

A 2212 1400KV Brushless motor

1400 rpm/kv

Weight: 50gms

2. Electronic speed circuit (1)-To vary electric motor’s speed.

30A

Weight: 23gms

3. Propeller (1)

Diameter: 10 inches

Pitch: 4.5 inches

4. Servos (4) –For direction

Torque: 4.8v (1.80 kg-cm)

Speed: 4.8v (0.12sec/60)

Dim: 10\*5\*2cm

Weight: 50gms

5. Battery (1)-For power

1250mAh 3S Lipo

11.1 v/25c

Weight: 96g

Dim: 77\*35\*17mm

1. **Parameters and controlling mechanism**

* Tail configuration: Cruciform
* Wing configuration: Midwing-mounted halfway up the fuselage.
* Wing Planform: Tapered (trapezoidal) - We have used it because it is structurally and aerodynamically more efficient than a constant chord wing, and easier to make than the elliptical type.
* CONTROLLING SURFACES: No flaps, only ailerons, rudder, elevators.
* DIHEDRAL ANGLE: 0 degrees- easy and simple to make which is used mostly for simple purpose gliders.
* SWEEP ANGLE: 0 degrees.
* CONSTANT CHORD ALONG THE WING SPAN.
* WING SUPPORT: Cantilevered (self-supporting)- All the structure is buried under the aerodynamic skin, giving a clean appearance with low drag.

1. **Google Drive Link containing photos and videos** https://drive.google.com/drive/folders/1riqzFdNXs8c2LTxALTVafLS\_V5wbqBaS