AE-6501 Flight Dynamics

Important 13Mark Questions

Unit I

1. Derive the condition for minimum thrust required and minimum power required in straight and level flight case.
2. Considering a steady flight determine the expressions for drag polar and thrust required.
3. Derive power available and power required curve for piston and jet power Aircraft.

Unit II

1. Explain with sketches, the pull up and push over maneuvers of flight and derive the expressions for turn rate and turn radius.
2. Derive expressions for endurance and range for a jet aircraft.
3. Draw and explain the significance of V-n diagram also discuss how it is helpful to find the structural stability of an airplane.

Unit III

1. Derive the expression foe wing contribution to static longitudinal stability and offer your comments on this expression.
2. What are static and dynamic stability? Indicate inherently stable and marginal stable aircraft with suitable schematic.
3. Write down the expression hr neutral point and static margin and explain.

Unit IV

1. Discuss in detail the contribution of various components of the airplane on static lateral and directional stability.
2. Describe about coupling and rolling moments of an aircraft.
3. Derive the yawing moment coefficient equation of an aircraft.

Unit V

1. How does Dutch roll, auto rotation and spin happen in an airplane? Explain with neat sketches.
2. Discuss the various stability derivatives relevant to lateral dynamics.
3. Derive the rolling moment coefficient equation of an aircraft.