



# **SNS COLLEGE OF TECHNOLOGY**

(An Autonomous Institution)

Coimbatore - 641035

**Department of Aerospace Engineering**

**QUESTION BANK-IAE 1**

**19AST302 FLIGHT DYNAMICS**



1. Define skin friction drag and pressure drag.
2. Explain aspect ratio and discuss its significance in wing design.
3. What is aerodynamic center?
4. Write about range and endurance of an airplane.
5. List the factors which affect an aircraft's maximum range, and how do they interact with each other?
6. How does drag reduction impact an aircraft's fuel efficiency?
7. How does aspect ratio influence induced drag?
8. Define a shallow angle of climb and discuss when it might be advantageous during flight.
9. Explain how an aircraft's power-to-weight ratio influences its rate of climb.
10. Derive the expression for induced drag coefficient.
11. What are the conditions required for an aircraft to experience minimum drag during flight, and how does this relate to its efficiency?
12. Define the rate of climb and get the expression in the form of thrust to weight ratio & wing loading with neat graph.
13. Get the Breguet Range equation for propeller driven aircraft.
14. Can you explain the relationship between engine power, thrust, and an aircraft's maximum level flight speed?
15. Explain the relationship between lift, drag, and the angle of attack as depicted on a drag polar graph?
16. How do different types of airfoils, such as symmetric and asymmetric airfoils, perform under various flight conditions?
17. Describe the relationship between thrust or power required and altitude during level flight.
18. Compare and contrast the concepts of maximum range and endurance for aircraft.
19. Define the rate of climb and its importance for aircraft. Explain how an aircraft's rate of climb changes with variations in weight and engine power.
20. What is a drag polar, and how is it used to analyze an aircraft's performance in steady level flight?
21. Can you explain the conditions for minimum power required and how they impact an aircraft's endurance and range?