

- Q.27 Describe different structural components of a fuselage?
- Q.28 What is a spoiler and its use?
- Q.29 Write a brief note on helicopter controls.
- Q.30 What is short term longitudinal oscillation mode?
- Q.31 How the area of the wing taken care of?
- Q.32 Explain 6 series NACA airfoils.
- Q.33 What is buffeting?
- Q.34 Mention different types of drags?
- Q.35 What is a vortex generator?

#### **SECTION-D**

**Note:** Long answer questions. Attempt any two questions out of three Questions. **(2x10=20)**

- Q.36 What do you mean by adverse pressure gradient? How does it develop Boundary Layer? How can it be controlled?
- Q.37 What is stability for an airplane, explain with example? What are various types of stabilities? Describe the contribution of the parts involved in it.
- Q.38 Draw the forces acting on airplane during Takeoff, Landing, Cruise, circular motion and stall condition.

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**3rd Sem.**  
**Branch : Aircraft Maintenance Engg.**  
**Sub.: Theory of Flight**

**Time : 3 Hrs.**

**M.M. : 100**

#### **SECTION-A**

**Note: Multiple Choice Questions. All Questions are compulsory. (10x1=10)**

- Q.1 Which of the following is best related to Aerodynamics?  
 a) Moving Air  
 b) Still air  
 c) Moving air interaction with solid boundaries  
 d) Moving water
- Q.2 What is called aircraft stability?  
 a) The aircraft changes the route in level flight.  
 b) The aircraft follows its specified path  
 c) The aircraft return to its original attitude after being disturbed.  
 d) None of the above
- Q.3 Which of the following is direction of drag?  
 a) Perpendicular to flight direction  
 b) Along the flight direction  
 c) Opposite to the flight direction  
 d) Horizontal Backward

- Q.4 Which of the following does not apply Bernoulli's equation?  
 a) Nozzle                    b) Venturi meter  
 c) Pitot static tube        d) Pitot tube
- Q.5 Vortex flow occurs at \_\_\_\_\_ part of the wing.  
 a) Leading edge            b) Trailing edge  
 c) Tips                    d) Roots
- Q.6 Induced drag will increase if.  
 a) Angle of Attack is increased.  
 b) Aspect ratio is decreased  
 c) Speed is reduced in a level flight.  
 d) All of the above
- Q.7 The following is not a secondary control surface  
 a) Elevator                b) Trim Tab control  
 c) Flap                    d) Leading edge slats
- Q.8 Lift to drag ratio is maximum?  
 a) Short Wing Airplane    b) Fighter Plane  
 c) Large span airplanes    d) Swept back wings
- Q.9 The temperature in Troposphere \_\_\_\_\_  
 a) Decreases with Altitude    b) Increases with Altitude  
 c) Remains constant        d) Cannot say
- Q.10 The Drag Divergence Mach number is \_\_\_\_\_ than critical Mach number  
 a) Less                    b) More  
 c) Same                    d) Depends upon the altitude

### SECTION-B

**Note:** Objective type questions. All questions are compulsory.  $(10 \times 1 = 10)$

- Q.11 What do you mean by a stream line?
- Q.12 What is a trim tab control?
- Q.13 How the induced drag is affected?
- Q.14 What is super-cruise?
- Q.15 What is a venturi tube?
- Q.16 What is the effect of aspect ratio on lift and drag?
- Q.17 Draw a supersonic airfoil?
- Q.18 What is Standard Atmosphere?
- Q.19 What is a load factor?
- Q.20 What is drag divergence Mach number?

### SECTION-C

**Note:** Short answer type Questions. Attempt any twelve questions out of fifteen Questions.  $(12 \times 5 = 60)$

- Q.21 What are supercritical airfoils?
- Q.22 List the various Aerodynamic forces in aircrafts in descending attitude.
- Q.23 Describe critical Mach number.
- Q.24 What is boundary layer?
- Q.25 Name the secondary controls and their functions?
- Q.26 Describe the use of leading edge flaps.