

- Q.27 Differentiate between stream and path lines .
 Q.28 What do you mean by stagnation pressure?
 Q.29 State Bernoulli's principle. How do you calculate air speed with it?
 Q.30 Locate the center of pressure for different airfoils.
 Q.31 What is buffeting?
 Q.32 Describe flutter of a wing.
 Q.33 Explain the function of flaps and winglets.
 Q.34 Explain the dihedral wing use?
 Q.35 What are various types of flaps used in airplanes?

SECTION-D

- Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)
- Q.36 Classify the different aircrafts in detail with examples from the real world.
 Q.37 Draw the forces acting on airplane during all phases of flight including a vertical loop.
 Q.38 a) What are the various performance parameters of an airplane?
 b) What are various control systems in aircrafts?

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SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 What is the use of fin in an airplane?
 a) Provide lateral stability
 b) Control airplane
 c) Provide Static stability
 d) All of the above
- Q.2 Bernoulli's equation is applicable only for _____
 a) Irrotational flow
 b) Viscous flow
 c) Inviscid, incompressible flow
 d) Compressible flow
- Q.3 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.4 What is the direction of lift?
 a) Perpendicular to the direction of motion
 b) Parallel to the direction of motion
 c) Vertical direction
 d) Horizontal direction

- Q.5 In the flow, the point where the fluid comes to rest is called as _____
 a) Null point b) Rest point
 c) Stagnation point d) Viscous point
- Q.6 The water jet is a set of _____
 a) Streamlines b) Streaklines
 c) Path lines d) Position vectors
- Q.7 What is the use of trim tab?
 a) Minute control of airplane
 b) Relieve pilot from stick force
 c) To stabilize the airplane
 d) All of the above
- Q.8 Which of the following is incorrect?
 a) Symmetrical wing lift curve is not same as that of the Cambered
 b) Stick free and stick fixed are same
 c) Lift is not always same as weight
 d) Thrust required is not always same
- Q.9 Aerodynamic center is close to?
 a) 0.5 C b) 0.8 C
 c) 0.6 C d) None of the above
- Q.10 What is a transonic flight?
 a) Somewhere supersonic on aircraft
 b) Nowhere subsonic on aircraft
 c) Everywhere transonic
 d) Changing from subsonic to supersonic on the way

SECTION-B

- Note:** Objective type questions. All questions are compulsory. (10x1=10)
- Q.11 What is a super cruise airfoil?
 Q.12 How many trim tab controls are on the airplane?
 Q.13 Minimum value of lift is during which phase of flight?
 Q.14 Critical Mach number more/less than Mach number for Transonic flight?
 Q.15 What is the use of a spoiler?
 Q.16 Where honeycomb structure is used?
 Q.17 What is a slot?
 Q.18 How static and dynamic pressures are related?
 Q.19 What is the purpose of a V tail?
 Q.20 What do you mean by gliding path?

SECTION-C

- Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)
- Q.21 Draw CI alpha curve for a wing and airfoil.
 Q.22 Classify aircrafts with respect speed and weight.
 Q.23 What is a boundary layer fence?
 Q.24 How can you reduce induced drag?
 Q.25 Explain role of tail in stability.
 Q.26 Calculate the temperature at 25 km altitude.