1. Which of the following is not a type of drag experienced by immersed bodies?
a) Form drag
b) Skin friction drag
c) Wave drag
d) Thrust drag

Answer: d) Thrust drag
Explanation: Thrust drag is not a type of drag experienced by immersed bodies. It is typically associated with propulsion systems, such as jet engines or propellers, and is the resistance encountered by the body due to the propulsion force.

2. What type of drag is primarily caused by the pressure difference between the front and rear surfaces of an object moving through a fluid?
a) Form drag
b) Skin friction drag
c) Wave drag
d) Lift-induced drag

Answer: a) Form drag
Explanation: Form drag, also known as pressure drag, is primarily caused by the pressure difference between the front and rear surfaces of an object moving through a fluid. It is influenced by the shape of the object and the flow around it.

3. Which body shape experiences the highest form drag when moving through a fluid?
a) Sphere
b) Flat plate
c) Cylinder

d) Aerofoil

Answer: b) Flat plate
Explanation: A flat plate experiences the highest form drag among the given options because it presents a large frontal area to the flow, resulting in greater pressure difference between the front and rear surfaces.

4. What phenomenon contributes to the lift generated by an aerofoil?
a) Bernoulli's principle
b) Newton's first law
c) Pascal's law
d) Archimedes' principle

Answer: a) Bernoulli's principle
Explanation: The lift generated by an aerofoil is primarily attributed to Bernoulli's principle, which states that an increase in the speed of a fluid occurs simultaneously with a decrease in pressure or a decrease in the fluid's potential energy.

5. Which of the following is not a method for improving lift on an aerofoil?
a) Installing lifting vanes
b) Utilizing the Coandă effect
c) Employing ailerons
d) Increasing the angle of attack

Answer: c) Employing ailerons
Explanation: Ailerons are control surfaces primarily used for controlling the roll of an aircraft and are not directly involved in improving lift on an aerofoil.

6. What effect describes the lift force generated by a rotating cylinder or sphere in a fluid flow?
a) Venturi effect
b) Magnus effect
c) Coandă effect
d) D’Alembert’s paradox

Answer: b) Magnus effect
Explanation: The Magnus effect describes the lift force generated by a rotating cylinder or sphere in a fluid flow. It occurs due to the pressure difference around the rotating object, leading to a perpendicular force.

7. Which of the following shapes experiences the least drag when moving through a fluid?
a) Sphere
b) Flat plate
c) Cylinder
d) Aerofoil

Answer: a) Sphere
Explanation: A sphere experiences less drag compared to other shapes like a flat plate or a cylinder because it presents a more streamlined profile to the flow, resulting in reduced pressure drag.

8. What is the primary factor determining the amount of lift generated by an aerofoil?
a) Surface area of the aerofoil
b) Weight of the aerofoil
c) Angle of attack

d) Length of the aerofoil

Answer: c) Angle of attack
Explanation: The angle of attack, which is the angle between the chord line of the aerofoil and the direction of the airflow, is the primary factor determining the amount of lift generated by an aerofoil.

9. Which of the following statements about lifting vanes is true?
a) Lifting vanes are used to reduce drag on immersed bodies.
b) Lifting vanes work by increasing the surface area of the body.
c) Lifting vanes are typically installed perpendicular to the direction of airflow.
d) Lifting vanes contribute to the generation of lift on an aerofoil.

Answer: d) Lifting vanes contribute to the generation of lift on an aerofoil.
Explanation: Lifting vanes are components designed to enhance the lift characteristics of an aerofoil by redirecting airflow in a favorable manner, thus contributing to lift generation.

10. What is the primary mechanism behind skin friction drag?
a) Pressure difference between the front and rear surfaces
b) Turbulent flow around the object
c) Viscous interaction between the fluid and the object's surface
d) Formation of shock waves

Answer: c) Viscous interaction between the fluid and the object's surface
Explanation: Skin friction drag is primarily caused by the viscous interaction between the fluid and the surface of the immersed body, resulting in a resistance to motion.