

1. Which type of flow assumes no friction and perfect fluid behavior?

- a) Ideal flow
- b) Real flow
- c) Steady flow
- d) Unsteady flow

Answer: a) Ideal flow

Ideal flow assumes perfect fluid behavior with no friction between fluid layers, simplifying the analysis of fluid motion.

2. When the flow parameters remain constant with respect to time, what type of flow is it?

- a) Steady flow
- b) Unsteady flow
- c) Uniform flow
- d) Non-uniform flow

Answer: a) Steady flow

Steady flow implies that the velocity, pressure, and other flow parameters at any given point do not change with time.

3. In which type of flow are the velocity vectors parallel and do not change with respect to position?

- a) Uniform flow
- b) Non-uniform flow
- c) One-dimensional flow

d) Two-dimensional flow

Answer: a) Uniform flow

Uniform flow means that the velocity of the fluid remains constant in both magnitude and direction at any given point in the flow field.

4. Which type of flow analysis involves considering motion in a single direction only?

- a) One-dimensional flow
- b) Two-dimensional flow
- c) Three-dimensional flow
- d) Uniform flow

Answer: a) One-dimensional flow

In one-dimensional flow, the fluid moves in a single direction, typically along a straight line, simplifying the analysis.

5. What are imaginary lines that trace the path of individual fluid particles as they move within a flow field called?

- a) Path lines
- b) Streamlines
- c) Streaklines
- d) Stream tubes

Answer: a) Path lines

Path lines represent the actual paths followed by individual fluid particles as they move within a flow field.

6. Which type of flow analysis involves considering motion in two dimensions within a plane?

- a) One-dimensional flow
- b) Two-dimensional flow
- c) Three-dimensional flow
- d) Uniform flow

Answer: b) Two-dimensional flow

Two-dimensional flow analysis considers fluid motion within a plane, involving two spatial dimensions.

7. What are lines that are everywhere tangent to the velocity vectors of a flow field called?

- a) Path lines
- b) Streamlines
- c) Streaklines
- d) Stream tubes

Answer: b) Streamlines

Streamlines are lines that are tangent to the velocity vectors of a flow field at every point, providing a visualization of the flow direction.

8. What term describes the volume enclosed by a group of streamlines?

- a) Path lines
- b) Streamlines
- c) Streaklines
- d) Stream tubes

Answer: d) Stream tubes

Stream tubes are imaginary tubes formed by a group of streamlines, representing the volume of fluid passing through a specific area in the flow field.

9. Which equation represents the conservation of mass for one-dimensional flow?

- a) Bernoulli's equation
- b) Euler's equation
- c) Continuity equation
- d) Navier-Stokes equation

Answer: c) Continuity equation

The continuity equation states that the mass flow rate of an incompressible fluid is constant along a streamline in one-dimensional flow.

10. In which type of flow does the fluid have a net angular velocity at every point?

- a) Rotational flow
- b) Irrotational flow
- c) Uniform flow
- d) Non-uniform flow

Answer: a) Rotational flow

Rotational flow is characterized by the presence of a net angular velocity at every point in the flow field, causing fluid rotation.

11. What term refers to the circulation of a fluid around a closed path within a flow field?

- a) Path lines
- b) Streamlines
- c) Circulation
- d) Stagnation point

Answer: c) Circulation

Circulation describes the motion of fluid particles around a closed path within a flow field, indicating the presence of vortices or rotational motion.

12. Where in a flow field does the velocity of the fluid become zero?

- a) Path lines
- b) Streamlines
- c) Circulation
- d) Stagnation point

Answer: d) Stagnation point

The stagnation point is a point in a flow field where the velocity of the fluid becomes zero due to an obstruction or a change in flow direction.

13. What term describes the phenomenon when a fluid separates from a surface due to adverse pressure gradient?

- a) Separation of flow
- b) Sources & sinks
- c) Velocity potential
- d) Flow nets

Answer: a) Separation of flow

Separation of flow occurs when a fluid detaches from a surface due to adverse pressure gradients, leading to flow separation and potential turbulence.

14. Which function describes the velocity field of an incompressible, irrotational flow?

- a) Velocity potential
- b) Stream function
- c) Circulation
- d) Stagnation point

Answer: a) Velocity potential

The velocity potential is a scalar function that describes the velocity field of an incompressible, irrotational flow, providing a useful tool for flow analysis.

15. What graphical method is used to represent flow fields and equipotential lines in two-dimensional flow?

- a) Path lines
- b) Streamlines
- c) Flow nets
- d) Streaklines

Answer: c) Flow nets

Flow nets are graphical representations used to visualize flow fields and equipotential lines in two-dimensional flow, aiding in the analysis of fluid motion.