



# Quiz Questions

## Fluid Kinematics

Created by Ansys ACE

Edited by Ansys Academic Development Team

1. Which of the following is an example of a closed system?

- (1) Turbine
- (2) Compressor
- (3) Hydraulic breaks
- (4) Pump

2. How are vorticity and rotational speed of the fluid element mathematically related?

- (1) Vorticity is half the rotational speed of the fluid element
- (2) Vorticity is twice the rotational speed of the fluid element
- (3) Vorticity is four times the rotational speed of the fluid element
- (4) Vorticity is square root of the rotational speed of the fluid element

3. Rate of volumetric strain is defined as

- (1) Ratio of rate of change of volume to original volume
- (2) Ratio of rate of change of volume to deformed volume
- (3) Both (1) and (2)
- (4) None of the above

4. What type of flow does the expression below represent?

- (1) Rotational flow
- (2) Irrotational flow
- (3) Both (1) and (2)
- (4) Expression does not represent any flow type

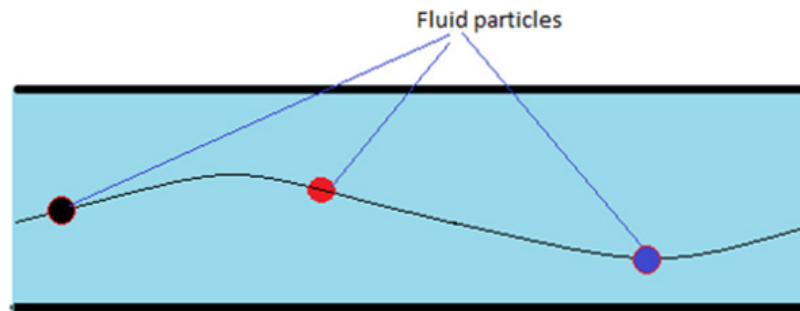
5. Which of the following does not represent Helmholtz's vortex theorem?

- (1) Fluid elements lying on a vortex line at some instants continue to lie on that vortex line.
- (2) Fluid elements initially free of vorticity, continue to remain free of vorticity.
- (3) The strength of the vortex tube varies in course of time
- (4) Vortex tubes can only extend to infinity, form a closed loop or end at a solid boundary.

6. Which of the following flow quantities does fluid kinematics not represent?

- (1) Velocity
- (2) Acceleration
- (3) Position of fluid particle
- (4) Force acting on fluid particle

7. When a picture of a flow field is taken at an instant of time, multiple particles are observed along a prescribed flow path as shown in the figure below. What does it represent?



- (1) Streamline
- (2) Streakline
- (3) Pathline
- (4) Timeline

8. What technique does Schlieren Photography use to measure fluids of varying densities?

- (1) Optical visualization technique
- (2) Dye injection
- (3) Oil coating on surface
- (4) Attaching tufts to the body

9. How do you calculate the flowrate of a fluid from the pressure difference measured by a manometer?

- (1) Bernoulli's equation
- (2) Pascal's law
- (3) Hooke's law
- (4) Newton's Second law of motion

10. Which of the following is not a flowrate measuring device?

- (1) The venturi tube
- (2) The pitot tube
- (3) Hot wire Anemometers
- (4) The Bourdon tube

© 2023 ANSYS, Inc. All rights reserved.

## Use and Reproduction

The content used in this resource may only be used or reproduced for teaching purposes; and any commercial use is strictly prohibited.

## Document Information

This case study is part of a set of teaching resources to help introduce students to topics related to fluids.

## Ansyes Education Resources

To access more undergraduate education resources, including lecture presentations with notes, exercises with worked solutions, microprojects, real life examples and more, visit [www.ansys.com/education-resources](http://www.ansys.com/education-resources).

## Feedback

If you notice any errors in this resource or need to get in contact with the authors, please email us at [education@ansys.com](mailto:education@ansys.com).

**ANSYS, Inc.**  
Southpointe  
2600 Ansys Drive  
Canonsburg, PA 15317  
U.S.A.  
724.746.3304  
[ansysinfo@ansys.com](mailto:ansysinfo@ansys.com)

If you've ever seen a rocket launch, flown on an airplane, driven a car, used a computer, touched a mobile device, crossed a bridge or put on wearable technology, chances are you've used a product where Ansys software played a critical role in its creation. Ansys is the global leader in engineering simulation. We help the world's most innovative companies deliver radically better products to their customers. By offering the best and broadest portfolio of engineering simulation software, we help them solve the most complex design challenges and engineer products limited only by imagination.

visit [www.ansys.com](http://www.ansys.com) for more information

Any and all ANSYS, Inc. brand, product, service and feature names, logos and slogans are registered trademarks or trademarks of ANSYS, Inc. or its subsidiaries in the United States or other countries. All other brand, product, service and feature names or trademarks are the property of their respective owners.

© 2023 ANSYS, Inc. All Rights Reserved.