

Surface Tension Quiz Answer Key PDF

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What are the consequences of reduced surface tension in biological systems?

- A. Easier breathing in lungs ✓**
- C. Increased capillary action
- D. Enhanced nutrient absorption
- C. Difficulty in forming stable droplets ✓**

What happens to the surface tension of a liquid as the temperature increases?

- A. It increases
- C. It remains constant
- D. It fluctuates randomly
- C. It decreases ✓**

Which of the following factors can affect the surface tension of a liquid?

- A. Temperature ✓**
- C. Atmospheric pressure
- D. Type of liquid ✓**
- C. Impurities ✓**

Which of the following best describes the meniscus of water in a glass tube?

- A. Convex
- C. Flat
- D. Irregular
- C. Concave ✓**

Which of the following statements about surface tension are true?

A. It is caused by adhesive forces.

C. It allows liquids to form droplets. ✓

D. It is measured in pascals.

C. It decreases with an increase in temperature. ✓

What roles do cohesive and adhesive forces play in capillarity?

A. Cohesive forces attract the liquid to the container walls.

C. Cohesive forces help the liquid rise in the tube.

D. Adhesive forces help the liquid rise in the tube. ✓

C. Adhesive forces attract the liquid to the container walls. ✓

What effect do detergents have on the surface tension of water?

A. Increase it

C. No effect

D. Neutralize it

C. Decrease it ✓

Which of the following is NOT a method to measure surface tension?

A. Drop weight method

C. Capillary rise method

D. Thermometer ✓

C. Tensiometer

Which of the following liquids is likely to have the highest surface tension?

A. Ethanol

C. Water

D. Olive oil

C. Mercury ✓

Which phenomenon allows small insects to walk on water?

A. Capillarity

C. Surface tension ✓

- D. Buoyancy
- C. Viscosity

Discuss the role of surface tension in the respiratory system, particularly in the alveoli.

Surface tension in the alveoli helps maintain their structure but must be reduced by surfactants to prevent collapse and allow for efficient gas exchange.

Why does mercury form a convex meniscus in a glass tube, unlike water?

Mercury's cohesive forces are stronger than its adhesive forces with glass, causing it to pull inward and form a convex meniscus.

How can surface tension be measured using the capillary rise method? Describe the process briefly.

The capillary rise method involves observing the height a liquid rises in a narrow tube due to surface tension, which is calculated using the height, tube radius, and liquid density.

What is surface tension primarily caused by?

- A. Adhesives forces
- C. Cohesives forces ✓**
- C. Cohesives forces ✓**
- D. Magnetic forces

Which unit is commonly used to measure surface tension?

- A. Joules
- C. Pascals
- D. Watts
- C. Newtons per meter ✓**

Explain how surface tension contributes to the formation of droplets on a leaf.

Surface tension causes the liquid molecules at the surface to be pulled together, forming a spherical shape that minimizes surface area, resulting in droplets.

Describe the relationship between surface tension and the contact angle of a liquid on a solid surface.

The contact angle is determined by the balance between cohesive forces within the liquid and adhesive forces between the liquid and the solid. High surface tension results in a larger contact angle.

How does the presence of surfactants affect the surface tension of a liquid? Provide an example.

Surfactants reduce surface tension by disrupting the cohesive forces between liquid molecules. An example is soap in water.

In which of the following applications is surface tension a critical factor?

- A. Inkjet printing ✓**
- C. Painting ✓**
- D. Alveoli function in lungs ✓**
- C. Cooking

Which of the following liquids typically have lower surface tension than water?

- A. Olive oil ✓**
- C. Ethanol ✓**
- D. Glycerin
- C. Mercury