

Fundamentals of Thermodynamics

Physics · Practice Test · 18 Questions

1. Which law of thermodynamics states that energy cannot be created or destroyed, only transformed?

- A) First Law
- B) Second Law
- C) Third Law
- D) Zeroth Law

2. What is the unit of measure for heat energy in the International System of Units (SI)?

- A) Watt
- B) Joule
- C) Newton
- D) Pascal

3. Which method of heat transfer occurs through the movement of fluids like liquids or gases?

- A) Conduction
- B) Radiation
- C) Convection
- D) Refraction

4. What is the temperature at which all molecular motion theoretically stops, known as absolute zero?

- A) 0 degrees Celsius
- B) 273 Kelvin
- C) -273.15 degrees Celsius
- D) 100 degrees Celsius

5. Which law of thermodynamics dictates that entropy in an isolated system always increases over time?

- A) Zeroth Law
- B) First Law
- C) Second Law
- D) Third Law

6. What type of heat transfer occurs through electromagnetic waves without the need for a medium?

- A) Conduction
- B) Radiation
- C) Convection
- D) Diffusion

7. What device is used to measure the amount of heat released or absorbed during a chemical reaction?

- A) Barometer
- B) Thermometer
- C) Calorimeter
- D) Hydrometer

8. Which process involves a substance changing from a solid directly to a gas without becoming a liquid?

- A) Evaporation
- B) Condensation
- C) Sublimation
- D) Deposition

9. What physical property measures the average kinetic energy of the particles in a substance?

- A) Heat
- B) Temperature
- C) Density
- D) Pressure

10. The Zeroth Law of Thermodynamics is fundamental to the definition of what concept?

- A) Work
- B) Pressure
- C) Temperature equilibrium
- D) Entropy

11. Which material is generally considered a poor conductor of heat, also known as an insulator?

- A) Copper
- B) Aluminum
- C) Iron
- D) Wood

12. What is the term for the amount of heat required to raise the temperature of one kilogram of a substance by one degree Celsius?

- A) Latent heat
- B) Specific heat capacity
- C) Thermal expansion
- D) Internal energy

13. In a thermodynamic system, what is defined as the product of force and displacement?

- A) Work
- B) Power
- C) Entropy
- D) Enthalpy

14. Which phase change occurs when a gas releases heat to become a liquid?

- A) Vaporization
- B) Condensation
- C) Melting
- D) Freezing

15. What happens to the volume of most substances when they are heated, a phenomenon known as thermal expansion?

- A) It decreases
- B) It stays the same
- C) It increases
- D) It fluctuates

16. Which state of matter has the highest average kinetic energy of its particles?

- A) Solid
- B) Liquid
- C) Gas
- D) Bose-Einstein condensate

17. What is the primary heat transfer mechanism in solids where energy is passed via particle collisions?

- A) Conduction
- B) Radiation
- C) Convection
- D) Evaporation

18. Which law of thermodynamics states that the entropy of a perfect crystal at absolute zero is zero?

- A) First Law
- B) Second Law
- C) Third Law
- D) Zeroth Law