Pioneers of Thermodynamics

Thermodynamics · Practice Test · 8 Questions

1. Who is widely credited with the first clear statement of the First Law of Thermodynamics, which is essentially the law of conservation of energy, in 1841?

A) Lord Kelvin
B) Julius Robert von Mayer
C) James Prescott Joule
D) Sadi Carnot

2. What was the primary subject of Sadi Carnot's seminal 1824 work, 'Reflections on the Motive Power of Fire,' which laid the groundwork for the Second Law of Thermodynamics?

A) The efficiency of steam engines
B) The absolute zero temperature
C) The nature of heat transfer
D) The kinetic theory of gases

3. Which scientist, in 1847, proposed that heat is a form of energy and that heat energy can be converted into mechanical work, thereby contributing significantly to the First Law of Thermodynamics?

A) James Clerk Maxwell
B) Hermann von Helmholtz
C) James Prescott Joule
D) Ludwig Boltzmann

4. The concept of absolute zero temperature was first theoretically calculated by which physicist in 1848, leading to the definition of the Kelvin temperature scale?

A) Michael Faraday
B) Lord Kelvin (William Thomson)
C) Josiah Willard Gibbs
D) Rudolf Clausius

5. Rudolf Clausius introduced the concept of entropy and formulated the Second Law of Thermodynamics in its modern form. In what year did he publish his groundbreaking paper on this topic?

A) 1827
B) 1849
C) 1865
D) 1888

6. What fundamental thermodynamic property did Josiah Willard Gibbs introduce in the 1870s, which combined enthalpy and entropy to predict the spontaneity of chemical reactions?

A) Heat capacity
B) Gibbs free energy
C) Latent heat
D) Thermal conductivity

7. The concept of the 'thermodynamic equilibrium' was a key development in understanding the states of matter and their transformations. Which scientist is primarily associated with formalizing this concept in the late 19th century?

A) J. Willard Gibbs
B) Ludwig Boltzmann
C) Max Planck
D) Henri Poincaré

8. Who experimentally demonstrated the quantitative relationship between heat and work, famously showing that the heat generated by friction is proportional to the work done, in a series of experiments conducted in the 1840s?

A) Michael Faraday
B) James Prescott Joule
C) Lord Kelvin
D) Hermann von Helmholtz