

Fundamentals of Physics

Physics · Practice Test · 20 Questions

1. What is the SI unit of pressure?

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

2. Which fundamental force is responsible for the binding of protons and neutrons within an atomic nucleus?

- A) Electromagnetic force
- B) Weak nuclear force
- C) Strong nuclear force
- D) Gravitational force

3. According to the first law of thermodynamics, what is conserved in an isolated system?

- A) Entropy
- B) Temperature
- C) Mass
- D) Energy

4. In a vacuum, how does the speed of light compare for different frequencies of electromagnetic radiation?

- A) Higher frequency travels faster
- B) Lower frequency travels faster
- C) All frequencies travel at the same speed
- D) Frequency does not affect speed only wavelength

5. Which principle states that the buoyant force on an object submerged in a fluid is equal to the weight of the fluid displaced by the object?

- A) Bernoulli's principle
- B) Archimedes' principle
- C) Pascal's law
- D) Hooke's law

6. What type of wave is a sound wave in air?

- A) Transverse
- B) Electromagnetic
- C) Longitudinal
- D) Polarized

7. What is the relationship between the period of a simple pendulum and its mass?

- A) Period is directly proportional to mass
- B) Period is inversely proportional to mass
- C) Period is proportional to the square root of mass
- D) Period is independent of mass

8. What is the elementary charge approximately equal to?

- A) 1.602×10^{-19} Coulombs
- B) 9.109×10^{-31} Coulombs
- C) 6.626×10^{-34} Joules
- D) 1.38×10^{-23} Joules/Kelvin

9. Which law describes the relationship between the current, voltage, and resistance in an electrical circuit?

- A) Kirchhoff's law
- B) Ohm's law
- C) Faraday's law
- D) Lenz's law

10. What is the phenomenon where light bends when passing from one medium to another of different density?

- A) Reflection
- B) Diffraction
- C) Refraction
- D) Polarization

11. Which subatomic particle has a neutral electric charge?

- A) Proton
- B) Electron
- C) Neutron
- D) Positron

12. In the context of the photoelectric effect, what determines the maximum kinetic energy of emitted electrons?

- A) Intensity of the light
- B) Frequency of the light
- C) Duration of exposure
- D) Surface area of the metal

13. What is the theoretical temperature at which all molecular motion ceases?

- A) 0 degrees Celsius
- B) 0 Kelvin
- C) 32 degrees Fahrenheit
- D) 273 Kelvin

14. Which quantity is defined as the rate of change of velocity over time?

- A) Speed
- B) Momentum
- C) Acceleration
- D) Force

15. 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) Thermal capacity
- C) Specific heat capacity
- D) Internal energy

16. According to General Relativity, gravity is described as:

- A) An invisible force between masses
- B) The curvature of spacetime
- C) A exchange of gravitons
- D) A electromagnetic interaction

17. What is the SI unit for magnetic flux?

- A) Tesla
- B) Weber
- C) Henry
- D) Gauss

18. Which of these describes the behavior of an ideal gas as temperature increases at a constant volume?

- A) Pressure decreases
- B) Pressure increases
- C) Volume increases
- D) Density decreases

19. What property of a wave remains constant when it passes from one medium into another?

- A) Speed
- B) Wavelength
- C) Amplitude
- D) Frequency

20. Which scientist is credited with formulating the laws of motion and universal gravitation?

- A) Albert Einstein
- B) Niels Bohr
- C) Isaac Newton
- D) Galileo Galilei