Fundamentals of Physics

Physics · Answer Key · 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 x 10^-19 Coulombs
B) 9.109 x 10^-31 Coulombs
C) 6.626 x 10^-34 Joules
D) 1.38 x 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