Top 60 questions of Physics for Competitive exams.

•11. What property of a wave determines its pitch in sound?•
a) Amplitude
b) Frequency
c) Wavelength
d) Speed
•Answer•: b) Frequency
•Explanation•: The frequency of a sound wave determines its pitch. Higher frequency corresponds to higher pitch.

•12. Which of the following best describes inertia?•
a) Resistance to acceleration
b) Ability to attract objects
c) Ability to conduct electricity
d) Resistance to gravity
•Answer•: a) Resistance to acceleration
•Explanation•: Inertia is the property of an object that resists changes in its state of motion.

•13. What is the primary function of a capacitor in a circuit?•
a) Store charge
b) Increase current
c) Decrease voltage
d) Conduct electricity
•Answer•: a) Store charge
•Explanation•: A capacitor stores electrical energy in an electric field between two conductive plates.

•14. Which color of light has the highest energy?•
a) Red
b) Blue
c) Yellow
d) Green
•Answer•: b) Blue
•Explanation•: Blue light has a shorter wavelength and higher frequency, which results in higher energy compared to other visible light colors.

•15. What happens when two opposite charges are brought close to each other?•
a) They repel
b) They attract
c) They neutralize each other
d) They form a magnetic field
•Answer•: b) They attract
•Explanation•: Opposite charges attract due to the electrostatic force, pulling them together.

•16. What is the function of the ozone layer in Earth's atmosphere?•
a) Reflects sunlight
b) Absorbs ultraviolet radiation
c) Traps heat
d) Increases oxygen levels
•Answer•: b) Absorbs ultraviolet radiation
•Explanation•: The ozone layer protects life on Earth by absorbing harmful UV radiation from the Sun.

•17. What is the main source of energy in the Sun?•
a) Chemical reactions
b) Nuclear fusion
c) Gravitational contraction
d) Nuclear fission
•Answer•: b) Nuclear fusion
•Explanation•: The Sun generates energy through nuclear fusion, where hydrogen nuclei fuse to form helium, releasing vast amounts of energy.

•18. What happens to time in a strong gravitational field according to general relativity?•
a) Time speeds up
b) Time slows down
c) Time remains constant
d) Time reverses
•Answer•: b) Time slows down
•Explanation•: In a strong gravitational field, time dilation occurs, causing time to move more slowly relative to weaker fields.

•19. Which of the following is a longitudinal wave?•
a) Light
b) Radio waves
c) Sound
d) X-rays
•Answer•: c) Sound
•Explanation•: Sound is a longitudinal wave, meaning the oscillation of particles occurs in the same direction as the wave travels.

•20. What is the effect of increasing the temperature of a gas in a sealed container?•
a) Pressure decreases
b) Volume increases
c) Pressure increases
d) Volume decreases
•Answer•: c) Pressure increases
•Explanation•: According to Gay-Lussac's law, if the volume is constant, increasing the temperature of a gas increases its pressure.

•21. Why does ice float on water?•
a) Ice is denser than water.
b) Ice is lighter than air.
c) Ice is less dense than water.
d) Ice has a higher surface tension.
•Answer•: c) Ice is less dense than water.
•Explanation•: Ice is less dense than liquid water due to its molecular structure, allowing it to float.

•22. What type of electromagnetic radiation is used for night vision?•
a) Infrared
b) Ultraviolet
c) X-rays
d) Microwaves
•Answer•: a) Infrared
•Explanation•: Night vision devices detect infrared radiation, which is emitted as heat by objects.

•23. What happens to the pressure of a gas when its volume is halved at constant temperature?•
a) Pressure is halved
b) Pressure doubles
c) Pressure remains constant
d) Pressure quadruples
•Answer•: b) Pressure doubles
•Explanation•: Boyle's law states that at constant temperature, pressure is inversely proportional to volume, so halving the volume doubles the pressure.

•24. What happens to an object in free fall?•
a) It accelerates
b) It reaches constant velocity
c) It decelerates
d) It stops moving
•Answer•: a) It accelerates
•Explanation•: In free fall, an object accelerates due to gravity, increasing its velocity as long as no other forces act on it.

•25. Which of the following is a renewable energy source?•
a) Natural gas
b) Coal
c) Solar power
d) Nuclear fission
•Answer•: c) Solar power
•Explanation•: Solar power is a renewable energy source, as it relies on the Sun's energy, which is constantly replenished.

•26. What is the principle behind the operation of a hydraulic lift?•
a) Pascal's law
b) Newton's first law
c) Archimedes' principle
d) Boyle's law
•Answer•: a) Pascal's law
•Explanation•: Pascal's law states that pressure applied to a confined fluid is transmitted equally in all directions, enabling the hydraulic lift to function.

•27. What happens to the kinetic energy of a body when its velocity is doubled?•
a) Kinetic energy doubles
b) Kinetic energy remains the same
c) Kinetic energy quadruples
d) Kinetic energy halves
•Answer•: c) Kinetic energy quadruples
•Explanation•: Kinetic energy is proportional to the square of velocity. Therefore, if velocity doubles, the kinetic energy increases by four times.

•28. Why is it difficult to stop a fast-moving object?•
a) Low kinetic energy
b) High inertia
c) Low mass
d) High potential energy
•Answer•: b) High inertia
•Explanation•: A fast-moving object has high inertia, making it difficult to stop because inertia resists changes in motion.

•29. What is the purpose of a fuse in an electrical circuit?•
a) To store energy
b) To increase current
c) To prevent overloading
d) To provide insulation
•Answer•: c) To prevent overloading
•Explanation•: A fuse melts and breaks the circuit when the current exceeds a safe level, protecting devices from damage.

•30. What phenomenon is responsible for the bending of light when it passes through a prism?•
a) Reflection
b) Refraction
c) Diffraction
d) Interference
•Answer•: b) Refraction
•Explanation•: Refraction occurs when light changes direction as it passes through materials of different densities, causing it to bend.

•31. What is the primary factor that determines the color of a star?•
a) Star's mass
b) Star's temperature
c) Distance from Earth
d) Star's rotation
•Answer•: b) Star's temperature
•Explanation•: The color of a star is primarily determined by its surface temperature, with hotter stars appearing blue and cooler stars appearing red.

•32. Which of the following is a consequence of Einstein's theory of special relativity?•
a) Time is absolute
b) Speed of light is constant
c) Mass increases with distance
d) Gravity is stronger in space
•Answer•: b) Speed of light is constant
•Explanation•: Special relativity states that the speed of light in a vacuum is constant, independent of the observer's motion.

•33. What is the role of a transformer in an electrical circuit?•
a) Store electrical energy
b) Convert electrical energy to mechanical energy
c) Step up or step down voltage
d) Increase current flow
•Answer•: c) Step up or step down voltage
•Explanation•: A transformer changes the voltage of alternating current (AC) by stepping it up or down based on the turns ratio of the coils.

•34. What physical quantity is conserved in an elastic collision?•
a) Mass
b) Kinetic energy
c) Temperature
d) Gravitational force
•Answer•: b) Kinetic energy
•Explanation•: In an elastic collision, both kinetic energy and momentum are conserved, with no loss of energy to sound or heat.

•35. What type of radiation is emitted by an object due to its temperature?•
a) Alpha radiation
b) Gamma radiation
c) Infrared radiation
d) Microwave radiation
•Answer•: c) Infrared radiation
•Explanation•: All objects emit infrared radiation as a function of their temperature, which is part of the blackbody radiation spectrum.

•36. Which of the following materials is a good conductor of electricity?•
a) Glass
b) Rubber
c) Copper
d) Wood
•Answer•: c) Copper
•Explanation•: Copper is an excellent conductor of electricity due to its high electron mobility, making it widely used in electrical wiring.

•37. What is the primary cause of seasons on Earth?•
a) Distance from the Sun
b) Earth's axial tilt
c) Earth's rotation
d) Sun’s gravity
•Answer•: b) Earth's axial tilt
•Explanation•: The Earth's axial tilt causes varying angles of sunlight during the year, leading to the seasonal changes in temperature and weather.

•38. Which of the following forces is the weakest?•
a) Gravitational force
b) Electromagnetic force
c) Strong nuclear force
d) Weak nuclear force
•Answer•: a) Gravitational force
•Explanation•: The gravitational force is the weakest of the four fundamental forces, despite its long-range influence on large masses like planets.

•39. What is the primary function of an electric motor?•
a) Convert electrical energy to heat
b) Convert mechanical energy to electrical energy
c) Convert electrical energy to mechanical energy
d) Store electrical energy
•Answer•: c) Convert electrical energy to mechanical energy
•Explanation•: An electric motor converts electrical energy into mechanical energy, using electromagnetic forces to produce motion.

•40. Which of the following substances has the highest specific heat capacity?•
a) Water
b) Iron
c) Sand
d) Copper
•Answer•: a) Water
•Explanation•: Water has a high specific heat capacity, meaning it can absorb and store large amounts of heat energy with little change in temperature.

•41. What happens to light when it enters a denser medium from a less dense medium?•
a) It bends away from the normal
b) It bends toward the normal
c) Its speed increases
d) Its frequency decreases
•Answer•: b) It bends toward the normal
•Explanation•: When light passes into a denser medium, it slows down and bends toward the normal line, a phenomenon called refraction.

•42. Which of the following phenomena explains the blue color of the deep ocean?•
a) Absorption of red light
b) Scattering of blue light
c) Reflection of the sky
d) Emission of blue light
•Answer•: a) Absorption of red light
•Explanation•: Water absorbs red wavelengths more efficiently, allowing blue wavelengths to penetrate deeper, making the ocean appear blue.

•43. What is the Doppler effect?•
a) The bending of light around objects
b) The change in frequency of a wave due to motion
c) The dispersion of light into colors
d) The reflection of sound waves
•Answer•: b) The change in frequency of a wave due to motion
•Explanation•: The Doppler effect refers to the change in frequency of waves (sound, light, etc.) as the source and observer move relative to each other.

•44. What type of energy conversion occurs in a solar cell?•
a) Chemical to electrical
b) Light to electrical
c) Thermal to mechanical
d) Light to chemical
•Answer•: b) Light to electrical
•Explanation•: Solar cells convert sunlight (photons) into electrical energy through the photovoltaic effect.

•45. What is the primary reason astronauts appear weightless in space?•
a) Lack of gravity in space
b) Zero mass in space
c) Free-fall condition
d) Earth's gravity pulls them down
•Answer•: c) Free-fall condition
•Explanation•: Astronauts are in a state of continuous free fall towards Earth while orbiting, which creates the sensation of weightlessness.

•46. Why do metals feel colder to the touch than wood at the same temperature?•
a) Metals have higher specific heat
b) Metals are better conductors of heat
c) Metals have lower density
d) Metals absorb heat faster
•Answer•: b) Metals are better conductors of heat
•Explanation•: Metals conduct heat away from the skin more efficiently than wood, making them feel colder at the same temperature.

•47. What is the primary function of a heat engine?•
a) Convert heat to mechanical work
b) Convert mechanical work to heat
c) Convert heat to electricity
d) Store thermal energy
•Answer•: a) Convert heat to mechanical work
•Explanation•: A heat engine converts thermal energy into mechanical work by exploiting temperature differences between hot and cold reservoirs.

•48. What is the speed of electromagnetic waves in a vacuum?•
a) 3 × 10^8 m/s
b) 1 × 10^6 m/s
c) 5 × 10^4 m/s
d) 9 × 10^9 m/s
•Answer•: a) 3 × 10^8 m/s
•Explanation•: Electromagnetic waves, including light, travel at a constant speed of 3 × 10^8 meters per second in a vacuum.

•49. What causes the greenhouse effect?•
a) Trapping of ultraviolet light
b) Absorption of infrared radiation by gases
c) Reflection of visible light
d) Dispersion of microwaves
•Answer•: b) Absorption of infrared radiation by gases
•Explanation•: Greenhouse gases trap infrared radiation, preventing heat from escaping Earth’s atmosphere, leading to a warming effect.

•50. Which principle explains why planes can fly?•
a) Archimedes’ principle
b) Bernoulli’s principle
c) Pascal’s principle
d) Boyle’s law
•Answer•: b) Bernoulli’s principle
•Explanation•: Bernoulli's principle states that as the speed of airflow increases, pressure decreases, creating lift and enabling flight.

•51. What happens to the frequency of light as its wavelength decreases?•
a) Frequency decreases
b) Frequency increases
c) Frequency remains constant
d) Frequency is zero
•Answer•: b) Frequency increases
•Explanation•: The frequency of light is inversely proportional to its wavelength. Shorter wavelengths correspond to higher frequencies.

•52. Which subatomic particle is responsible for electrical conductivity in metals?•
a) Proton
b) Neutron
c) Electron
d) Positron
•Answer•: c) Electron
•Explanation•: Electrons, which are free to move in metals, are responsible for conducting electricity when a voltage is applied.

•53. What causes auroras in the Earth's atmosphere?•
a) Moon’s magnetic field
b) Solar wind interacting with Earth's magnetic field
c) Reflection of sunlight
d) Ozone layer breakdown
•Answer•: b) Solar wind interacting with Earth's magnetic field
•Explanation•: Auroras are caused by charged particles from the solar wind colliding with atoms in Earth's atmosphere, producing light.

•54. What happens to a material’s resistance as temperature increases in most conductors?•
a) Resistance decreases
b) Resistance increases
c) Resistance remains constant
d) Resistance fluctuates randomly
•Answer•: b) Resistance increases

•Explanation•: As temperature increases, the atomic vibrations in a conductor increase, making it harder for electrons to flow, thus increasing resistance.

•55. What is the SI unit of pressure?•
a) Pascal
b) Joule
c) Newton
d) Watt
•Answer•: a) Pascal
•Explanation•: The SI unit of pressure is the Pascal (Pa), which is equal to one Newton per square meter.

•56. What causes a rainbow to form?•
a) Reflection of sunlight
b) Refraction and dispersion of light in water droplets
c) Diffraction of light in clouds
d) Absorption of sunlight
•Answer•: b) Refraction and dispersion of light in water droplets
•Explanation•: A rainbow forms when light is refracted, dispersed, and reflected inside water droplets, splitting it into its component colors.

•57. What is the purpose of a Faraday cage?•
a) Store charge
b) Protect against electric fields
c) Increase voltage
d) Conduct electricity
•Answer•: b) Protect against electric fields
•Explanation•: A Faraday cage blocks external static and non-static electric fields by distributing charges on its surface, preventing them from entering.

•58. What causes sound to travel faster in solids than in gases?•
a) Higher density
b) Higher temperature
c) Stronger atomic bonds
d) Lower pressure
•Answer•: c) Stronger atomic bonds

•Explanation•: In solids, atoms are more tightly bound, allowing sound waves to transfer energy more quickly compared to gases.

•59. What is the main factor that determines the strength of an electromagnet?•
a) Length of wire
b) Thickness of wire
c) Number of wire turns and current
d) Speed of electric current
•Answer•: c) Number of wire turns and current
•Explanation•: The strength of an electromagnet is determined by the number of coils and the amount of current passing through the wire.

•60. What happens to the gravitational force between two objects when the distance between them is doubled?•
a) Force remains the same
b) Force is halved
c) Force is quartered
d) Force doubles
•Answer•: c) Force is quartered
•Explanation•: According to the inverse square law, gravitational force decreases by the square of the distance, so doubling the distance quarters the force.