

11.9: End of Chapter Key Terms

Definition: Key Terms

1. **Source Charge:** A charge that produces an electromagnetic wave when it is oscillated.
2. **Amplitude:** The strength of the electric field.
3. **Wavelength:** The distance between maximum electric field locations.
4. **Frequency:** The number of oscillations per second completed by the source charge.
5. **Wave Speed:** The rate at which electromagnetic energy propagates. In vacuum this is the speed of light: 3×10^8 meters per second.
6. **Wave Interference:** When two or more waves combine to create a larger or smaller wave.
7. **Intensity:** The power delivered by a wave per unit of area.
8. **Radiation Pressure:** The force per unit area delivered by an electromagnetic wave.
9. **Electromagnetic Spectrum:** The range of frequencies and wavelengths that encompass electromagnetic waves.
10. **Infrared Light:** Wavelengths of light longer than red light.
11. **Ultraviolet Light:** Wavelengths of light shorter than violet light.
12. **Photoreceptors:** Light sensing cells in the retina of human eyes.
13. **True Color:** The color of an object when illuminated by white light.
14. **Retinex:** A collection of photoreceptors in the retina.
15. **Color Constancy:** The ability of the eye to perceive true colors under a variety of lighting.
16. **Wien's Law:** An experimental relationship between temperature of an object and the wavelength of light it emits.
17. **Ultraviolet Catastrophe:** The failure of the electromagnetic wave model to recreate Wien's Law.
18. **Quanta:** The smallest bit of energy possible in Planck's Hypothesis.
19. **Quantized Energy:** The idea that all energy must be a multiple of a fundamental value.
20. **Energy State:** A way to describe the value of the energy associated with a particular object.
21. **Quantum Number:** A number that is used to multiply the quanta to obtain the energy state.
22. **Photoelectrons:** Electrons ejected from surfaces when light shines upon them.
23. **Photoelectric Effect:** The relationship between the wavelength of light and the appearance of photoelectrons.
24. **Electromagnetic Radiation:** Waves of electric and magnetic fields that propagate through space.
25. **Photon:** The smallest unit of an electromagnetic wave in the particle model of light.
26. **Gain Medium:** The part of a laser that produces the laser light.
27. **Metastable State:** A condition where excited electrons remain in an excited state for some period of time.
28. **Population Inversion:** When there are more electrons in an excited state than in lower energy states.
29. **Laser Pumping:** The process of transferring energy from the power supply to the gain medium.
30. **Optical Resonator:** A component of a laser that traps and amplifies electromagnetic radiation before it is released as a beam.
31. **Particle-Wave Duality:** The concept that objects display both wave-like and particle-like properties.
32. **Quantum Mechanics:** The branch of physics that studies the behavior of particles on the atomic and subatomic level.

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