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CLASS 12

Physics

Chapterwise Important Questions

14 sections | 56 original questions | 2026-27

Read each chapter, attempt the questions, and support explanations with working or textbook evidence.

Choose a chapter or topic

Physics	
Chapter 1	Electric Charges and Fields
Chapter 2	Electrostatic Potential and Capacitance
Chapter 3	Current Electricity
Chapter 4	Moving Charges and Magnetism
Chapter 5	Magnetism and Matter
Chapter 6	Electromagnetic Induction
Chapter 7	Alternating Current
Chapter 8	Electromagnetic Waves
Chapter 9	Ray Optics and Optical Instruments
Chapter 10	Wave Optics
Chapter 11	Dual Nature of Radiation and Matter
Chapter 12	Atoms
Chapter 13	Nuclei
Chapter 14	Semiconductor Electronics: Materials, Devices and Simple Circuits

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CHAPTER 1

Electric Charges and Fields

Physics

1. State Coulomb's law and explain the role of the surrounding medium.
2. Find the electric field halfway between two equal positive point charges and justify the direction argument.
3. Explain electric flux and its SI unit.
4. Use Gauss's law to obtain the field outside a uniformly charged spherical shell.

CHAPTER 2

Electrostatic Potential and Capacitance

Physics

1. Distinguish electric potential from electric potential energy.
2. Explain why moving a charge along an equipotential surface requires no electrostatic work.
3. A 4 microfarad capacitor is charged to 100 V. Find charge and stored energy.
4. How does inserting a dielectric affect capacitance, and what changes if the battery remains connected?

CHAPTER 3

Current Electricity

Physics

1. Use the drift-velocity model to explain electric current in a metal.
2. A battery of emf 12 V and internal resistance 1 ohm supplies a 5 ohm load. Find the current and terminal voltage.

3. State Kirchhoff's junction and loop rules and the conservation principles behind them.

4. Explain the balance condition of a Wheatstone bridge.

CHAPTER 4

Moving Charges and Magnetism

Physics

1. A charge enters a uniform magnetic field perpendicular to its velocity. Explain the path and find the radius in symbolic form.

2. Explain why a magnetic force does no work on an isolated moving charge.

3. Derive the force per unit length between two long parallel currents.

4. Explain how a moving-coil galvanometer is converted to an ammeter.

CHAPTER 5

Magnetism and Matter

Physics

1. Compare diamagnetic, paramagnetic and ferromagnetic materials.

2. Explain why magnetic field lines form closed loops.

3. Describe the torque on a magnetic dipole in a uniform magnetic field.

4. How does the magnetic field of a short bar magnet vary far along its axial line?

CHAPTER 6

Electromagnetic Induction

Physics

1. State Faraday's law and explain the meaning of magnetic flux linkage.
2. Use Lenz's law to predict the direction of induced current when a magnet approaches a coil.
3. A coil's flux linkage changes from 0.20 Wb to 0.05 Wb in 0.03 s. Find the magnitude of average induced emf.
4. Explain self-inductance and why it opposes a change of current.

CHAPTER 7

Alternating Current

Physics

1. Relate rms and peak values of a sinusoidal current.
2. Explain the phase relation between current and voltage in an ideal capacitor.
3. State the resonance condition for a series LCR circuit.
4. An ideal transformer has 500 primary turns and 100 secondary turns. Find the secondary voltage for a 220 V primary supply.

CHAPTER 8

Electromagnetic Waves

Physics

1. Explain why a changing electric field is associated with a magnetic field.
2. Arrange radio waves, visible light, X-rays and gamma rays in increasing frequency.
3. Compare electromagnetic waves with mechanical waves in terms of a medium.

4. Give two uses of electromagnetic bands and relate each use to a relevant property.

CHAPTER 9

Ray Optics and Optical Instruments

Physics

1. Draw a ray diagram for image formation by a compound microscope.
2. Derive or apply the critical-angle relation for a denser-to-rarer boundary.
3. A thin convex lens of focal length 20 cm forms an image of an object 30 cm in front of it. Find the image position.
4. Explain total internal reflection and its use in an optical fibre.

CHAPTER 10

Wave Optics

Physics

1. Explain how Young's double-slit experiment demonstrates interference.
2. Derive the fringe-width expression for equal coherent slits.
3. How does the central diffraction maximum change when a single slit becomes narrower?
4. Explain why sustained interference requires coherence.

CHAPTER 11

Dual Nature of Radiation and Matter

Physics

1. Explain why the photoelectric threshold frequency supports the photon model.

2. Use Einstein's photoelectric equation to relate maximum kinetic energy and frequency.

3. Find the de Broglie wavelength symbolically for a particle of momentum p.

4. How does changing light intensity affect photoelectric current and stopping potential when frequency is fixed above threshold?

CHAPTER 12

Atoms

Physics

1. Explain why Rutherford's model could not account for atomic stability.

2. Use Bohr's model to explain discrete hydrogen spectral lines.

3. How do radius and energy vary with principal quantum number in hydrogen?

4. Distinguish emission and absorption spectra.

CHAPTER 13

Nuclei

Physics

1. Explain mass defect and binding energy per nucleon.

2. Compare nuclear fission and fusion in terms of initial nuclei and energy release.

3. Explain why the binding-energy curve helps identify relatively stable nuclei.

4. Relate atomic mass units to energy and calculate the energy equivalent of 0.01 u using 1 u c^2 = 931.5 MeV.

CHAPTER 14

Semiconductor Electronics: Materials, Devices and Simple Circuits

Physics

1. Compare intrinsic and extrinsic semiconductors.
2. Explain the formation of a depletion layer at a p-n junction.
3. Compare forward and reverse bias in a junction diode.
4. Draw and explain a junction-diode rectifier circuit.

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