

# CBSE Class 12 Physics Vol 2 (2025-26) – Important Questions

## Chapter 8: Electromagnetic Waves

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1 Mark:

- Write the relation between  $c$ ,  $\mu$ , and  $\epsilon$ .
- Define electromagnetic waves.

2 Marks:

- Write characteristics of electromagnetic waves.
- List the properties of EM waves.

3 Marks:

- Explain how electromagnetic waves are produced by oscillating charges.
- Give uses of different parts of the electromagnetic spectrum.

4 Marks (Case Study):

- Communication applications using microwave and infrared waves.

5 Marks:

- Derive Maxwell's equation form for electromagnetic waves.

## Chapter 9: Ray Optics and Optical Instruments

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1 Mark:

- State Snell's law.
- Define focal length.

2 Marks:

- Derive relation between  $u$ ,  $v$ , and  $f$  for a mirror.
- Define refractive index and its relation with velocity of light.

3 Marks:

- Derive mirror and lens formula using the Cartesian sign convention.
- Explain total internal reflection and its applications.

4 Marks (Case Study):

- Lens combination or optical instrument design question.

5 Marks:

- Derive expression for magnification of compound microscope or astronomical telescope.

## Chapter 10: Wave Optics

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1 Mark:

- Define coherence.
- Define fringe width.

2 Marks:

- Explain the concept of interference.
- Write the condition for constructive and destructive interference.

3 Marks:

- Derive expression for fringe width in Young's double-slit experiment.
- Explain diffraction at a single slit.

4 Marks (Case Study):

- Polarisation-based application question.

5 Marks:

- Derive expression for intensity in interference of light.

#### Chapter 11: Dual Nature of Radiation and Matter

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1 Mark:

- Define photoelectric effect.
- Write Einstein's photoelectric equation.

2 Marks:

- Explain why photoelectric effect cannot be explained by wave theory.
- Define work function.

3 Marks:

- Graph between stopping potential and frequency of light.
- Explain the concept of threshold frequency.

4 Marks (Case Study):

- Application-based numerical question on photoelectric effect.

5 Marks:

- Derive Einstein's photoelectric equation and explain each term.

#### Chapter 12: Atoms

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1 Mark:

- Write Bohr's postulates.
- Define energy levels.

2 Marks:

- Derive relation between energy and radius in Bohr's model.
- Explain spectral series in hydrogen atom.

3 Marks:

- Derive expression for energy of an electron in nth orbit.
- Explain limitations of Bohr's model.

4 Marks (Case Study):

- Hydrogen spectrum-based question.

5 Marks:

- Derive expression for frequency of radiation emitted during transition between energy levels.

#### Chapter 13: Nuclei

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1 Mark:

- Define mass defect.
- Define binding energy.

2 Marks:

- Explain the concept of nuclear fission.
- What is nuclear fusion?

3 Marks:

- Derive relation between binding energy and mass defect.
- Explain stability curve for nuclei.

4 Marks (Case Study):

- Comparison of fission and fusion processes with examples.

5 Marks:

- Numerical based on binding energy calculation.

#### Chapter 14: Semiconductor Electronics

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1 Mark:

- Define semiconductor.
- What is doping?

2 Marks:

- Difference between intrinsic and extrinsic semiconductors.
- Define n-type and p-type semiconductors.

3 Marks:

- Explain V-I characteristics of a p-n junction diode.
- Explain working of a full-wave rectifier.

4 Marks (Case Study):

- Logic gate-based question or circuit analysis.

5 Marks:

- Explain working of n-p-n transistor as an amplifier.

#### Chapter 15: Communication Systems

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1 Mark:

- Define modulation.
- What is bandwidth?

2 Marks:

- Explain the need for modulation.
- Difference between AM and FM.

3 Marks:

- Derive expression for amplitude modulated wave.
- Explain block diagram of communication system.

4 Marks (Case Study):

- Comparison of transmission media and modulation types.

5 Marks:

- Explain principles of satellite communication and propagation of EM waves.