

Important questions of First Four units of Physics

1. Electrostatics

Electrostatics

1. State Gauss's theorem and using this theorem find an expression for the electric field intensity at a point due to (i) an infinite long straight wire having uniform Charge Density (ii) an infinite plane charged sheet with uniform Charge Density (iii) A uniformly charged spherical shell.

Electrostatics

2. Explain the principle on which Van-de-Graff generator operates. Draw a labeled schematic sketch and write briefly its working.
3. Derive an expression for the capacitance of a parallel plate capacitor with a dielectric slab between the plates

Electrostatics

4. Deduce expressions for Electric Fields due to an Electric Dipole at axial and Equatorial points
5. Write Coulomb's law in vector form and show that it is in accordance with Newton's third law of motion.

Important questions of First Four units of Physics

2. Current Electricity

Current Electricity

1. Establish a relation between current and drift velocity.
2. State the principle of working of a meter bridge.
3. Using Kirchoff's Laws deduce the condition for the balance point of a Wheatstone Bridge.

Current Electricity

4. State the principle of the device used for comparing the e.m.f. of two cells. Draw the relevant circuit diagram and explain how the e.m.f.s of the two cells is compared. How can the sensitivity of such a device be increased? In what way is this method different from the one using voltmeter for comparing the e.m.f.s?

Magnetic Effects of Current and Magnetism

1. Using Biot Savart's Law deduce the expression for magnetic field at the (i) centre of (ii) axial point of a current carrying loop.
2. Using Ampere's circuital law deduce expression for magnetic field inside a torroid.
3. Explain principal, construction and working of a cyclotron.

Magnetic Effects of Current and Magnetism

4. Explain principal, construction and working of a moving coil galvanometer.
5. Name and Define Magnetic Elements of Earth's magnetic field.
6. Differentiate Dia- , para – and ferromagnetic substances.

EMI and Alternating currents

1. What are Eddy currents. What are their uses. How can we minimize them.
2. Explain principal, construction and working of a Transformer.
3. Derive expression for RMS value of Alternating Current.

EMI and Alternating currents

4. Derive an expression for current in Series LCR circuit. Explain the phenomenon of resonance.
5. Derive an expression for average power in AC circuits. Define wattless devices