JKBOSE Class 12th Physics Important Guess Questions

1. State Gauss's law. Derive an expression for the electric field due to an infinite line charge and infinite sheet.

2. Electric field due to a dipole.

3. Potential due to dipole on axial and equatorial line.

4. Electric field due to dipole (general expression).

5. Derive an expression for capacitance, principle of capacitor, and expression for capacitance of parallel plate capacitor with or without dielectric.

6. Derive an expression for the torque experienced by dipole in a uniform electric field.

7. Explain equipotential surfaces and their characteristics.

8. What is meant by quantization of charge?

9. What is an electric dipole and electric dipole moment?

10. State Coulomb's law, express in vector form, define unit charge.

11. Properties of electric lines of force and define electric flux and its units.

12. Work done in rotating a dipole in uniform electric field. What is potential energy?

13. What is current, drift velocity, relation between current and drift velocity?

14. Ohm's Law, VI curve, $R = \rho l/A$, temperature dependence of resistance, temperature coefficient of resistance.

15. A wire of resistance R is stretched so that its length becomes double. What is new resistance?

16. EMF and potential difference.

17. State and explain Kirchhoff's rules and obtain balance condition for Wheatstone bridge.

18. Magnetic force acting on a charged particle, circular path, expression for radius and time period.

19. State Biot-Savart law. Obtain expression for magnetic field due to circular coil (straight conductor).

20. Torque on a current loop and construction and working of moving coil galvanometer. Define current sensitivity.

21. Torque on current loop and construction and working of moving coil galvanometer. Define voltage sensitivity.

22. State Ampere’s Circuital Law. Apply it to straight conductor and solenoid.

23. Difference between paramagnetic, diamagnetic, and ferromagnetic materials and domain theory.

24. Construction and working of moving coil galvanometer. Also explain current sensitivity and voltage sensitivity.

25. Explain Ampere’s Circuital Law. Determine magnetic field for straight conductor, thick conductor, solenoid, toroid.

26. Magnetic flux and formulas.

27. Factors on which flux depends.

28. SI unit of flux.

29. Faraday’s First Law of Electromagnetic Induction.

30. Faraday’s Second Law of Electromagnetic Induction.

31. Meaning of negative sign in induced EMF.

32. Lenz’s Law and its explanation.

33. Lenz’s Law and conservation of energy.

34. Derive mirror formula for concave mirror.

35. Numerical on concave mirror: focal length 10 cm and object at 30 cm.

36. Derive lens maker’s formula.

37. Real and apparent depth.

38. Total internal reflection and critical angle, applications.

39. Mirage and explanation.

40. Optical fiber: definition, structure, applications.

41. Prism formula derivation.

42. Dispersion of light and causes.

43. Angular dispersion and dispersive power.

44. Power of a lens.

45. Compound microscope: diagram, working, magnification.

46. Astronomical telescope: construction, working, magnifying power.

47. What is a wavefront and its types?

48. Huygens’ principle and laws of reflection and refraction.

49. Young’s double slit experiment and fringe width.

50. Diffraction due to single slit and width of central maximum.

51. Coherent sources and conditions for interference.
52. Photoelectric effect and Einstein’s photoelectric equation.
53. Laws of photoelectric emission.
54. Threshold frequency, stopping potential and effect of frequency.
55. Matter wave nature and de-Broglie relation.
56. Bohr’s model and expressions for radius and energy.
57. Binding energy and binding energy curve.
58. Nuclear fission and nuclear fusion.
59. Nuclear force and its properties.
60. Band theory: conductors, semiconductors, insulators.
61. Doping, intrinsic and extrinsic semiconductors.
62. Working of PN junction as diode.
63. PN junction as rectifier.
64. Displacement current in capacitor.
65. Electromagnetic spectrum description.