

- (b) Explain how a Galvanometer with resistance ' G ' and current at full scale deflection, ' I_g ' is converted into
- (i) voltmeter of range $(0 - V)$ (volt).
 - (ii) Ammeter of range $(0 - I)$ Ampere.
38. (a) Define magnetic retentivity for a ferromagnetic substance.
(b) Explain with the help of diagram, principle, construction and working of a cyclotron.
39. (a) Define angle of dip at a place.
(b) What is Biot-Savart law? Derive relation for magnetic field at centre of a current carrying loop.
40. Define drift velocity and derive its expression.
41. Explain how meter bridge can be used to find out the value of unknown resistance.
42. Explain acceptor type (p -type) semi-conductors.
43. Explain donor type (n -type) semi-conductor.
44. Explain with the help of diagram, the formation of depletion region and barrier potential in a p - n junction.
45. What is Zener diode? Briefly describe how a zener diode acts as a voltage regulator.
46. What is doping? Write three conditions for it and two methods of doping.
47. What were the observation and conclusion drawn from Rutherford α particle scattering experiment?
48. Draw and explain energy level diagram for hydrogen atom showing spectral series emitted by it.
49. Explain the origin of spectral lines of hydrogen using Bohr's theory.
50. Define Binding Energy, Binding Energy per nucleon. Draw and explain a curve between Binding Energy per nucleon and mass no.
51. What are nuclear forces? Explain their properties.
52. Explain nuclear size and nuclear density. Show that nuclear density is same for all nuclei.
53. Define co-efficient of self induction and find an expression for it for a solenoid.
54. Derive an expression for the mutual induction of two long co-axial solenoids of same length wound one over the other.
55. Derive an expression for average power in RLC circuit.
56. Define r.m.s. value of alternating current and find an expression for it.
57. Derive the expression for the impedance of an a.c. circuit with RLC circuit in series.