PHYSICS UNIT WISE IMPORTANT QUESTIONS

Unit – 1

Chapter-1 Crystal Structure

LAQ'S

Q1) Deduce Interplaner spacing of cubic crystal system? What are Miller Indices ? How are they obtained ?

Q2) Describe the working and construction of powder-diffraction by debye scherren method?

Q3) Explain points defect in crystrals ?

SAQ'S

Q1) What is meant by space lattice and unit cells ?

Q2) State and prove Bragg's Law?

Q3) Write few applications of point defect?

Chapter-2 Quantum Mechanics

LAQ'S

Q1) what are matter waves? Derive its equation?

Q2) Deduce Schroedinger Time Dependent & Independent Equation ?

Q3) Derive Eigen Values & Eigen Vectors in the Case of Particle in "Potential Box" ?

SAQ'S

Q1) What are matter waves ? Write few properties of matter waves ?

Q2) Write the properties & physical significance of wave function ?

Q3) What is meant by wave function ?

Q4) Differentiate between Electromagnetic wave and Matter wave ?

Unit – 2

Chapter -1 Bond theory of solids

LAQ'S

Q1) Explain the postulates of Drude and Loventz theory ? Write it's Advantages and Disadvantages?

Q2) Discuss important features of Kronig's and penny model?

Q3) Describe the origin of energy band in solid's which leads to the classifications of materials in conductor, semiconductor and insulators.

SAQ'S

Q1) What is meant by electron gas?

Q2) Define Electron Volt's?

Unit - 3

Chapter – 1 Lasers

LAQ'S

Q1) Explain The Characteristics Of Lasers ? Describe The Construction and Working Of Any One Laser ?
Q2) What Are Einstien's Coefficient ? Deduce the relation between them ?
Q3) Bring out the Analog Between Ruby & He-Ne Laser ?

SAQ'S

Q1) what is meant by population invesion ?
Q2) Distinguish between Spontaneous & Stimulated Emission ?
Q3) Write Few Application Of Ruby/Semiconductor/He-Ne Lasers ?
Q4) Problems on E = HV
Q5) Problems on En = (n^2/h^2)/8ml^2

Chapter – 2 Optical Fiber

LAQ'S

Q1) What is meant by Acceptance Angle? Obtain the expression for acceptance angle and numerical aperture of the given optical fiber ?
Q2) Discuss the classification of Optical fiber Based on refractive index profile?
Q3) Write shorts notes on

i) Losses in optical fiber
ii) Fiber drawing process (Double crucible method)

SAQ's

Q1) What is meant by acceptance cone ?
Q2) Define numerical Apperture and Acceptance angle of the given Optical fiber ?
Q3) Differentiate between step index optical fiber and graded index optical index ?
Q4) Write few application of Optical fiber ?

Unit – 4

Chapter – 1 Dielectric Materials

LAQ'S

Q1)

a) State Ionic polarization ? Derive an expression for ionic polarization ?
b) State electronic polarization ? Derive expression for (e-) polarization ?

Q2)

a) Discuss the frequency and temperature dependence on dielectric polarization ?
b) What is meant by dielectric polarization? Classify different types of dielectric polarization ?

Q3)

a) Describe the structure of barium Titanate ?
b) List of any 4 application of Ferro electric materials ?

SAQ'S

Q1) What is meant by Ferro electricity ?
Q2) Draw the structure of barium titanade ?
Q3) Classify different dielectric polarizations ?
Q4) what is meant by spontaneous polarization ? and write any 2 types of Ferro electric materials ?

Chapter – 2 Magnetic materials

LAQ'S

Q1) Classify different magnetic materials ?
Q2) Derive Curie – Weiss Law ?
Q3) Bring out the analog of Hysteresis curve (B-H Curve) of Ferro magnetic materials ?
Q4) Describe the Hysteresis curve of Ferro magnetic materials based on magnetic domains ?
Q5) Explain the structure of ferrites and classify hard magnetic materials and soft magnetic materials depending upon Hysteresis curve ?

SAQ'S

Q1) Define Magnetic Susceptibility and Magnetic Permeability ?
Q2) Mark the points in the Hysteresis curve in representative
i) Residual magnetism
ii) Co- reactivity
iii) Saturate point
Q3) Distinguish between Soft and Hard Magnetic materials ?
Q4) Write few application of Ferrites?
Q5) Draw the structure of Ferrites indicating Lattice sites (A,B) ?

Unit – 5

Chapter – 1 Super Conductors

LAQ'S

Q1) What is meant by super conductivity ? Write the properties of super conductor's ?
Q2) Discuss the different types of super conductors ?
Q3) Explain BSC theory and write short notes on High Temperature Super conductor's ?
Q4) Explain Wiessner effect ? Write few applications of super conductors ?

SAQ'S

Q1) Differentiate between low temperature super conductors and high temperature super condutor's ?
Q2) Prove that super conductors exhibit perfect Dia magnatism?
Q3) Explain Cooper pairs?
Q4) Explain Miessners effect ?
Q5) Write short notes on BCS theory ?
Q6) Write few application of super conductors ?