CLASS-12TH   **SUBJECT: PHYSICS**

Chapters: Optics(Ray optics and wave optics), Electrostatic and Current electricity

Q1. Can two equipotential surfaces intersect eachother? Justify your answer.

Q2. Give relation between real depth and apparent depth.

Q3. If refractive indices of glass and water w.r.t air are 3/2 and 4/3 resp. What is the refractive index of glass w.r.t to water

Q4. Find the radius of curvature of convex surface of aplano convex lens whose focal length is 0.3m and μ= 1.5

Q5. Derive lens maker formula for thin convex lens with the help of diagram.

Q6. Explain the phenonmenon of total internal reflection. Give its one application.

Q7. Draw a ray diagram of astronomical telescope. Derive an expression for its magnifying power.

Q8. State Guass's theorem in electrostatic. Draw a graph showing the variation of electric field intensity with radius in case of spherical shell.

Q9. Define the term electric dipole moment. Derive an expression for the total work done in rotating the dipole through an angle Ө in uniform electric field.

Q10. Derive an expression for the energy stored in parallel plate capacitor.

Q11. On charging a parallel plate capacitor to a potential, the spacing b/w the plates is halved and a a dielectric medium of $\epsilon_{r=}10$ is introduced without disconnecting the d.c source. Explain using suitable expression how the capacitance, electric field and energy density of the capacitor change.

Q12. Green light is incident at the polarizing angle on a certain glass plate. The angle of refraction is 32°.what are i) the polarizing angle ii) the index of refraction of glass iii)indicate the polarization component on the reflected and refracted rays by double arrows and dots.

Q13.Describe Young's double slit experiment to produce interference pattern due to a monochromatic source of light. Deduce the expression fot the fringe width.

Q14. Derive the relation between current and drift velocity.

Q15. Give dimensional formula for current density. Explain electron mobility.

Q16. State the principle of a potentiometer. with the help of a circuit diagram, describe a method to find the internal resistance of primary cell

Q17. What is wheat stone bridge? State its principle. Deduce the condition for which the wheat stone bridge is balanced.

Q18. Explain with the help of a graph, the variation of conductivity with temperature or a metallic conductor.