ASSIGNMENT : 2

SUBJECT: PHYSICS

1. Define drift velocity. Derive relation of drift velocity with electric field.
2. Derive relation between drift velocity and electric current.
3. Define internal resistance of a cell. Derive an expression for it.
4. State and explain Kirchhoff ‘s law. Using these derive wheatstone bridge equation.
5. Explain how metre bridge is used to find unknown resistance of a wire?
6. Deduce Ohm’s law from drift velocity.
7. Define resistance. On what factors it depends?
8. State and prove Ampere circuital law.
9. By using Ampere circuital law find magnetic field intensity well inside a solenoid.
10. Derive expression for force acting on a current carrying conductor inside a magnetic field. How its direction is determined?
11. Show that path of a charge inside electric field is parabolic in nature.
12. What is meant by self induction. Find its expression and its units.
13. State and explain Faraday’s laws of electromagnetic induction.
14. Derive an expression for impedance of LCR series ac circuit.
15. Derive an expression for self inductance of a solenoid.
16. Write assumptions and sign conventions and derive mirror formula for concave mirror.
17. Derive lens formula for convex lens.
18. Derive prism formula.
19. What is meant by lateral shift? Find an expression for it.
20. What is meant by total internal reflection? What are necessary conditions for it? Derive relation between critical angle and refractive index.
21. In YDS experiment, derive expression for fringe width.
22. Explain principle of Astronomical telescope. Find magnifying power when final image is formed at least distance of distinct vision.
23. Explain principle of compound microscope. Find its magnifying power.
24. Derive an expression for electric potential at any point on electric dipole.
25. Derive an expression for energy stored in a capacitor. In what form energy is stored?
26. Derive expression for capacitance of a parallel plate capacitor.
27. Discuss the effect of dielectric slab introduced between the plates of parallel plate capacitor on its capacitance.
28. State and prove Gauss’s law.
29. By using Gauss’s law find expression for electric field due to a wire carrying charge
30. By using Gauss ‘s law find electric field intensity due to infinite plane sheet of charge.