ST. JOSEPH STUDY CENTRE

12th STD: Unit Test-2 **PHYSICS** **Time: 1 Hr / Total Marks: 25**

I. Answer any 3 of the following questions: **[3 x 2 = 6]**

1. What is an equipotential surface?
2. State Gauss Law.
3. Is it safe for a person to sit under an open tree? Justify your answer
4. Define Dielectric Strength.
5. Define Capacitance of a conductor.

II. Answer any 3 of the following questions: **[3 x 3 = 9]**

6. Derive an expression for electrostatic potential energy of a dipole in a uniform electric field.
7. Illustrate any five points of Gauss law.
8. What is Electrostatic Induction? Explain the steps involved in Electrostatic Induction.
9. Distinguish between polar and non-polar molecules. Define polarization of dielectric.
10. Derive an expression for capacitance of a parallel plate capacitor

III. Answer the following questions: **[2 x 5 = 10]**

11. Applying Gauss law derive an expression for Electric field at a point due to an infinitely long charged wire.

[OR]

Derive an expression for energy stored in a capacitor.

12. By applying Gauss law derive an expression for Electric field due to a uniformly charged spherical shell at point
    (i) Outside the shell.
    (ii) On the surface of the spherical shell.
    (iii)Inside the spherical shell.

[OR]

What is meant by Electrostatic equilibrium? Illustrate the properties of a conductor at Electrostatic equilibrium.

----------ALL THE BEST----------

Test should be written under the supervision of your parents and get the answer paper signed from them.

No corrections should be made after the test timings. We expect your honesty.

Test Papers have to be submitted after the completion of all the 4 tests.

Submission Date of Test Papers: 1st July, 2nd July, 3rd July Timings: 9 AM – 12.30 PM / 5 PM- 7 PM