

CONCEPTUAL PROBLEMS, Chapter 23-24

Phys 2401, Dr. Huang

Fill in a **T/F** answer for each statement below:

1. [] Although one can electrify a glass rod by rubbing it with silk, no net charge is created.
2. [] A proton carries positive charge, and weights the same as an electron.
3. [] The elementary charge equals 1.6×10^{-9} C.
4. [] At any point P , the total electric field due to a group of charges equals the vector sum of the electric fields of the individual charge.
5. [] Electric field vector is tangent to the electric field line at each point.
6. [] No two electric field lines can cross or touch.
7. [] The force on a negative charge is in the opposite direction of the electric field.
8. [] Electric flux can be understood as the number of electric field lines passing through a surface.
9. [] Gauss's law states that the net electric flux Φ_E through any closed gaussian surface is equal to the net charge inside the surface divided by $4\pi\epsilon_0$.
10. [] Gauss's law is useful to calculate electric field when the charge distribution is highly symmetrical.
11. [] At electrostatic equilibrium, the electric field is zero everywhere inside a conductor, and any charge can only be distributed on the conductor surface.
12. [] Electric field just outside a charged conductor is perpendicular to the surface and has a magnitude $\sigma/2\epsilon_0$.