

F. Iron struck by lightning often becomes magnetized.

I. , III, IV, V. Lightning involves the ionization of air due to the strong electric field (Gauss' Law) generated by electric sources in the ground and the clouds. When iron is struck by lightning, a current flows through the iron due to the conductivity of iron. There is a potential difference (Faraday's law for slowly varying fields) hence an electric field. Thus there is an electric force on the charges (Lorentz force Law) and a current. The current creates a magnetic field in the iron (Ampere's Law), which torques the iron magnetic moments to line up (Lorentz Force Law) , hence increasing the magnetic field (Ampere's Law).

G. There is no magnetic equivalent of a Faraday cage.

II. No magnetic monopoles that are free to move to shield the B field.

H. All unbalanced charge in a metal is found at the surface under static conditions.

V, I. Definition of static equilibrium implies that no electric force (Lorentz force law) exists inside the conductor. Therefore the electric field in the conductor is zero. Gauss's Law implies that the conducting charges move to the boundaries in order to cancel the electric field in the interior of the conductor.

Moving a coil through a magnet generates an electric current in the coil

III. When a coil is moved through a non-uniform magnetic field generated by a magnet, there is changing magnetic flux through the coil. Faradays's law implies that an induced electric field drives the current in the coil when the magnetic flux through the coil is changing.