Problem 3 (Electricity)

A plane capacitor with rectangular plates is fixed in a vertical position having the lower part in contact with a dielectric liquid (fig. 3.1)

Determine the height, h, of the liquid between the plates and explain the phenomenon.

The capillarity effects are neglected.

It is supposed that the distance between the plates is much smaller than the linear dimensions of the plates.

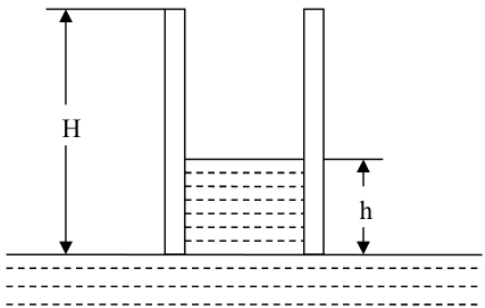


Fig. 3.1

It is known: the initial intensity of the electric field of the charged capacitor, E, the density ρ, the relative electric permittivity ε_r of the liquid, and the height H of the plates of the capacitor.

Discussion.