

State Examination Commission – Physics Higher Level, 2008

Question 12d

Define capacitance. (6)

Describe how an electroscope can be charged by induction. (10)

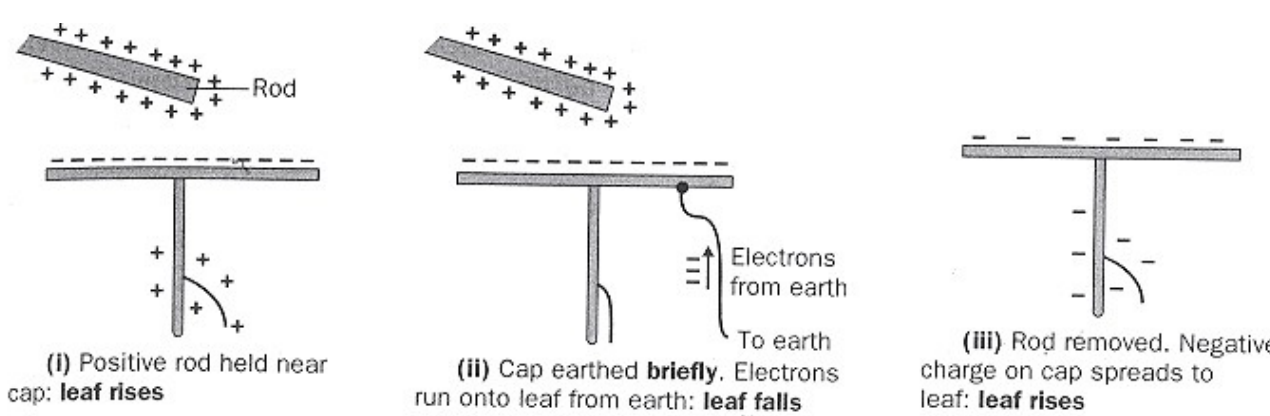
How would you demonstrate that the capacitance of a parallel plate capacitor depends on the distance between its plates? (12)



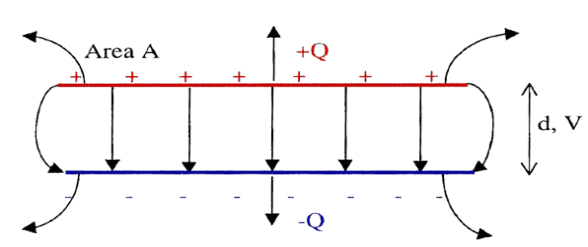
Define capacitance. (6)

basic definition

Describe how an electroscope can be charged by induction. (10)



How would you demonstrate that the capacitance of a parallel plate capacitor depends on the distance between its plates? (12)



Two plates are separated by means of plastic spacers of thickness 0.5mm, and connected to the multimeter which gives a digital readout of the capacitance of the capacitor.

The top plate is raised, a second 'spacer' is sat on top of the original, to give a separation of 1mm, and the capacitance is read again from the multimeter.

This is repeated several more times, and each value of separation and capacitance noted.

It will become evident that, with increasing separation the capacitance decreases. The relationship is $C \propto 1/d$