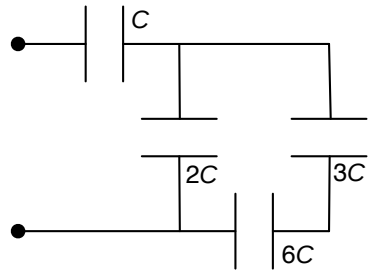

1. Determine the equivalent capacitance of the combination shown when $C = 45\ \mu\text{F}$.

2. Regarding the Earth and a cloud layer 800 m above the Earth as the "plates" of a capacitor, calculate the capacitance if the cloud layer has an area of 1.0 km^2. If an electric field of 2.0×10^6 N/C makes the air break down and conduct electricity (lightning), what is the maximum charge the cloud can hold?