

Answer on Question# 40669, Physics, Electrodynamics Question: A 3F CAPACITOR IS CHARGED TO A POTENTIAL OF 300V AND 2F CAPACITOR IS CHARGED TO 200V. THE CAPACITOR ARE THEN CONNECTED IN PARALLEL WITH PLATES OF OPPOSITE POLARITY JOINED TOGETHER. WHAT AMOUNT OF CHARGE WILL FLOW , WHEN THE PLATES ARE SO CONNECTED ? 1. 600C 2. 800C 3. 700C 4. 300C

Solution. Charge on the first capacitor

$$Q_1 = C_1 U_1 = 3 \cdot 10^{-6} \cdot 300 = 900 \cdot 10^{-6} C$$

Charge on the second one:

$$Q_2 = C_2 U_2 = 2 \cdot 10^{-6} \cdot 200 = 400 \cdot 10^{-6} C$$

When plates with opposite polarity are joint, the potential will be

$$U = U_2 - U_1 = 100 V$$

The capacity will be

$$C = C_1 + C_2 = 6 \mu F$$

Charge will be

$$Q = UC = 600 \mu C$$

Hence it have to flow

$$Q_1 + Q_2 - Q = 900 + 400 - 600 = 700 \mu C$$