# Tutorial 2

# Question 1a

For the system of capacitors shown in the figure, find the equivalent capacitance between b and c.

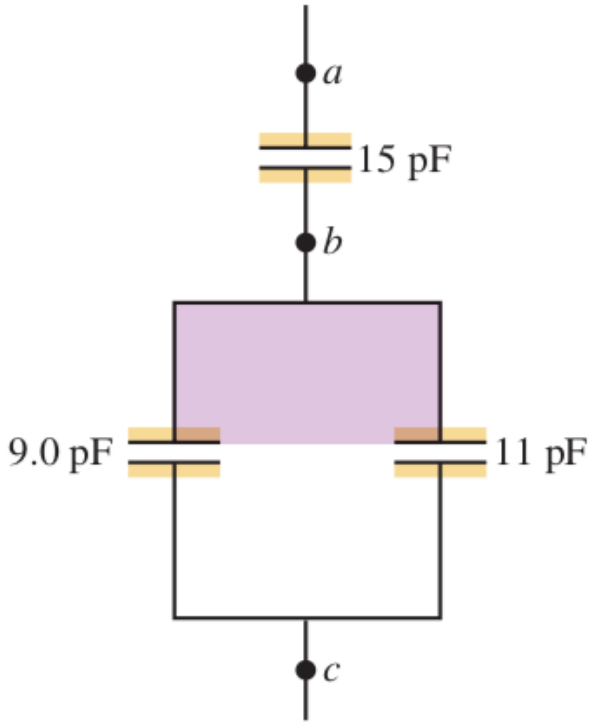
a) 20.0 pF

b) 2.0 pF

c) 15.0 F

d) 4.9 pF

e) 35.0 pF



# Question 1b

For the same system now find the equivalent capacitance between a and c

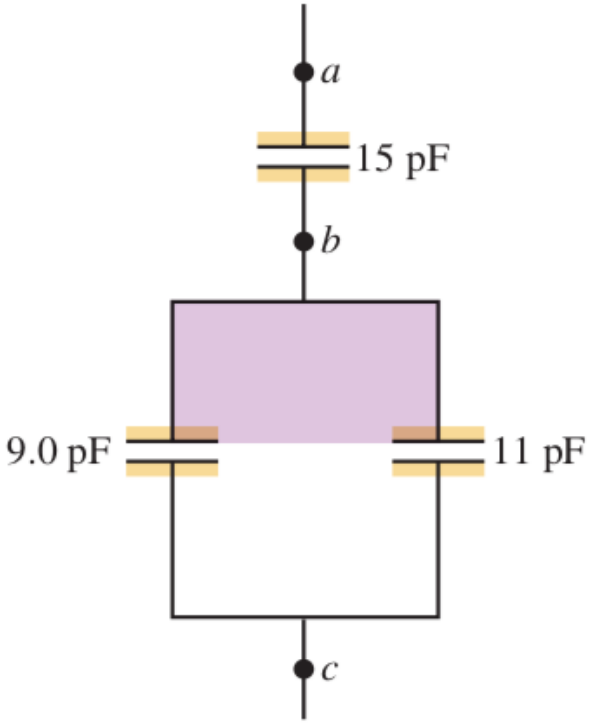
a) 35.0 pF

b) 3.7 pF

c) 15.0 pF

d) 8.6 pF

e) 86.0 pF



# Question 2

During lightning strikes from a cloud to the ground, currents as high as 25,000 A can occur and last for about 40 µs. How much charge is transferred from the cloud to the ground during such a strike?

a) 1.0 C

b) 10.0 C

c) 1.0 µC

d) 625.0 C

e) 1.6 mC

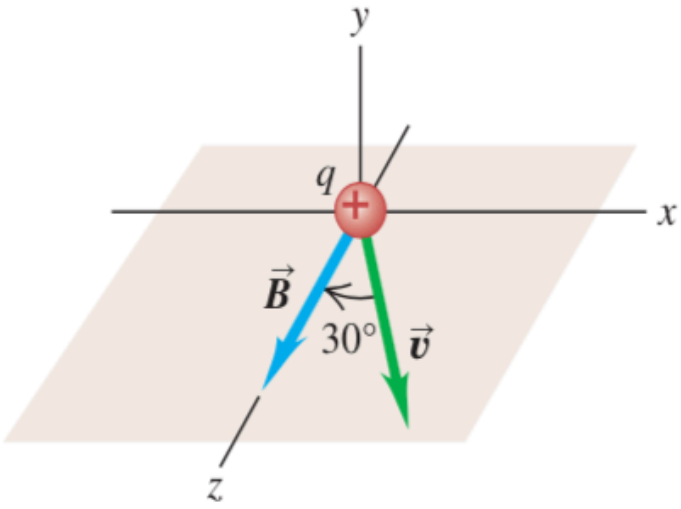
# Question 3

A beam of protons ($q = 1.6 \times 10^{-19}$ C) moves at $3.0 \times 10^{5}$ m/s through a uniform 2.0 T magnetic field directed along the positive z-axis (see figure). The velocity of each proton lies in the xz-plane and is directed at 30° to the +z axis. Find the force on a proton.

a) $2.0 \times 10^{-14}$ N

b) $9.6 \times 10^{-19}$ N

c) $4.8 \times 10^{-14}$ N

d) $1.6 \times 10^{-19}$ N

e) $9.6 \times 10^{-14}$ N