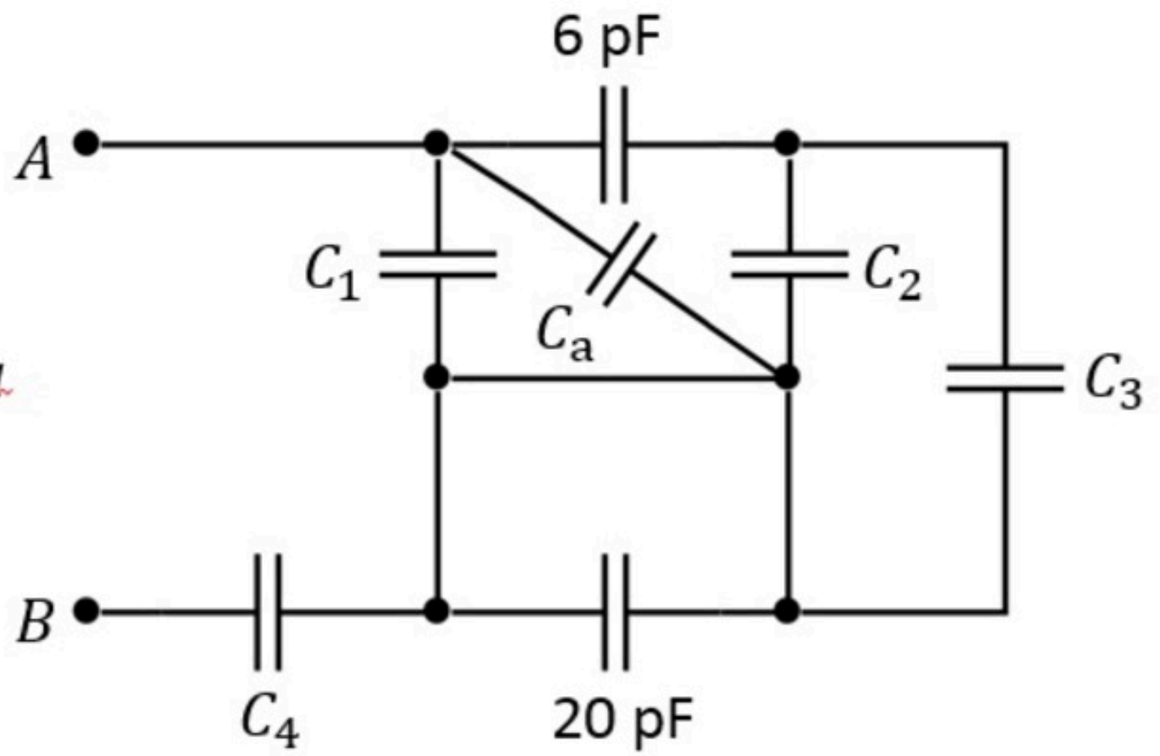
Capacitors Inductors 002

Problem has been graded.

Given C_{eq} between points A and B, what is C_a?



Given Variables:

C1 : 2 pF

C2 : 2 pF

C3 : 4 pF

C4 : 6 pF

Ceq : 3 pF

Calculate the following:

Ca (pF) :

Given C_{eq} between points A and B, what is C_a?

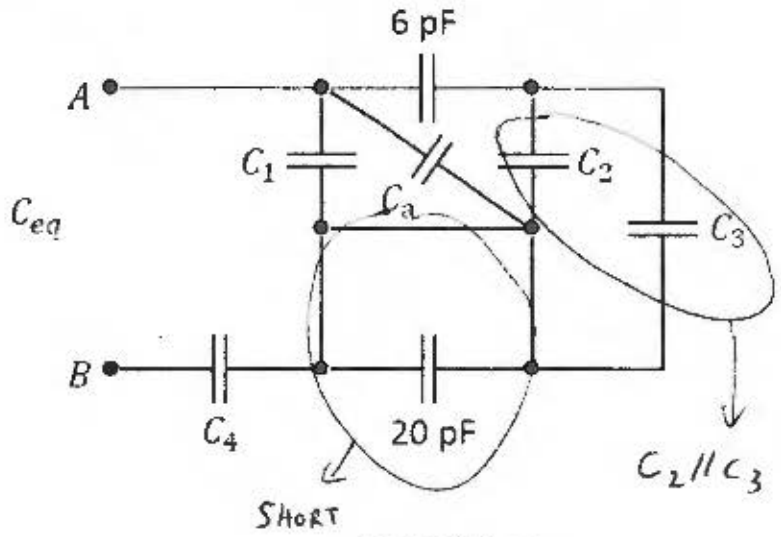
C1 = 4 pF

C2 = 5 pF

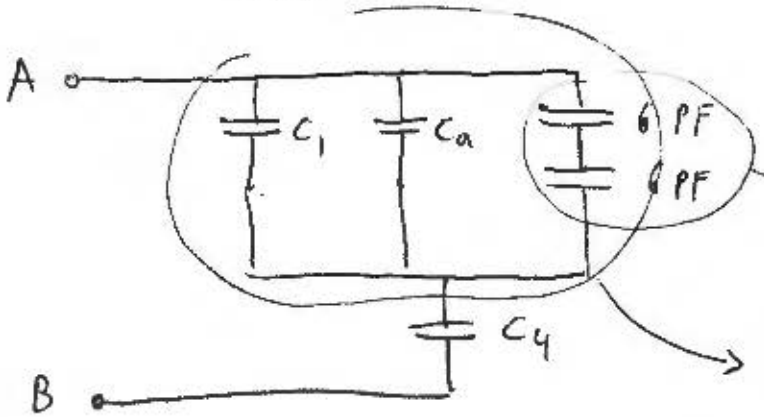
C3 = 1 pF

C4 = 10 pF

Ceq = 5 pF



$C_2 // C_3 = C_2 + C_3 = 6\ pF$



$\frac{1}{\frac{1}{6}+\frac{1}{6}} = \frac{1}{\frac{1}{3}} = 3\ pF$

$$\frac{1}{C_{eq}} = \frac{1}{C_4} + \frac{1}{C^*} \Rightarrow \frac{1}{C^*} = \frac{1}{5} - \frac{1}{10} = \frac{1}{10} \Rightarrow C^* = 10\ pF$$

$$C^* = C_1 + C_a + 3 \Rightarrow C_a = 10 - 4 - 3 = 3\ pF$$

$$\boxed{C_a = 3\ pF}$$