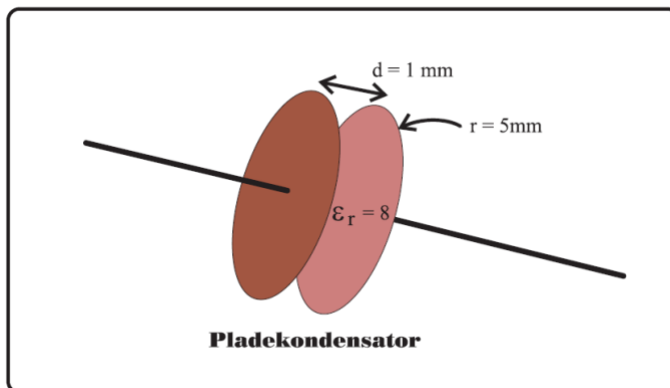


Exercise 2.1

The figure shows a plate capacitor consisting of two circular plates with a dielectric in between.



- Calculate the capacitance value of the capacitor.
- The capacitor is charged up to 10 V. Determine the strength and direction of the E-field and the D-field between the plates.
- Calculate the stored energy in the capacitor.
- Calculate the stored charge in the capacitor.
- The capacitor is now discharged through a 1 ohm resistor. Calculate the change in the capacitor's charge (in C/s) at the initial point.

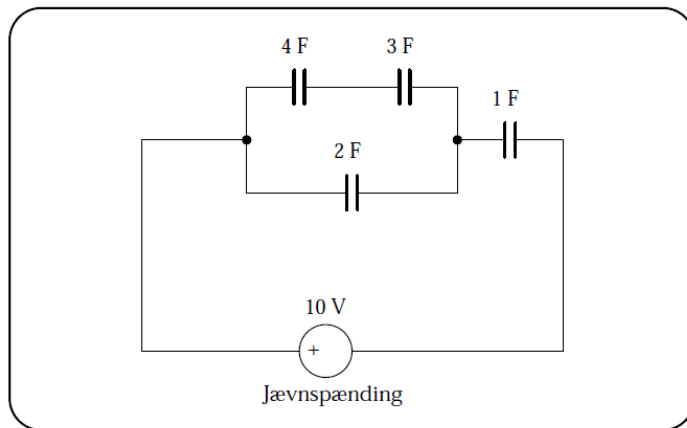
Exercise 2.2

A 100km long sea cable with $C = 150 \text{ nF/m}$ transports electricity between Sweden and Finland. The voltage is 400 kV DC.

- Calculate the energy contained in the cable when it is charged. Express the answer in kWh.
- How long will it take to charge the cable with 10 A?

Exercise 2.3

The schematic below shows a connection of 4 capacitors connected to a DC voltage of 10 V.



- Calculate the resulting capacitance as experienced by the voltage source.
- Calculate the voltage across each of the capacitors.