

Capacitors:
Revision and Exam-style
Questions

Section 1 – Suitable for all exam boards

1. What is the name given to an insulating material that may be placed between the two plates of a capacitor?

[1]

2. Which of these could be a correct unit for Capacitance?

a. V/C

b. CV^2

c. C/V

d. V/s

[1]

3. True or false: When a capacitor is charging, the current through it is initially equal to zero and increases, before reaching a final value.

True

False

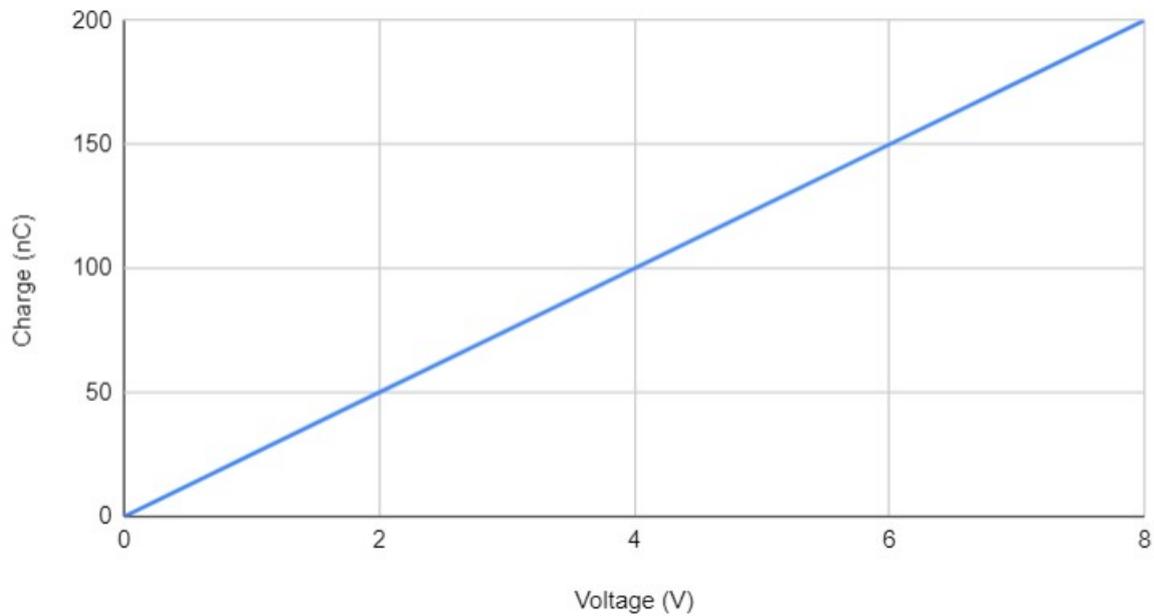
[1]

4. Sketch a circuit that could be used to measure the voltage across a capacitor while charging. Include: a power supply, a capacitor, a resistor, a voltmeter, a switch:

[2]

5. The graph below shows the Charge stored in a capacitor at a range of voltages. The supply voltage is 8V.

Voltage (V) vs. Charge (nC)



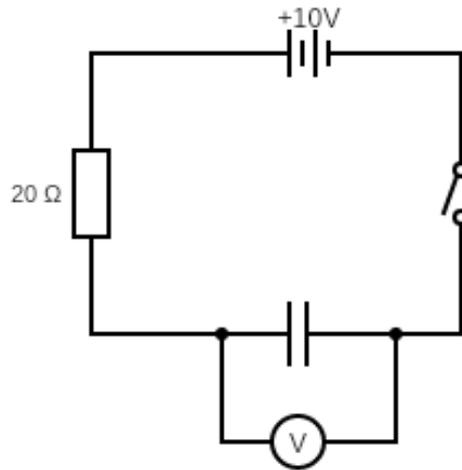
Find:

a) The capacitance of the capacitor. [2]

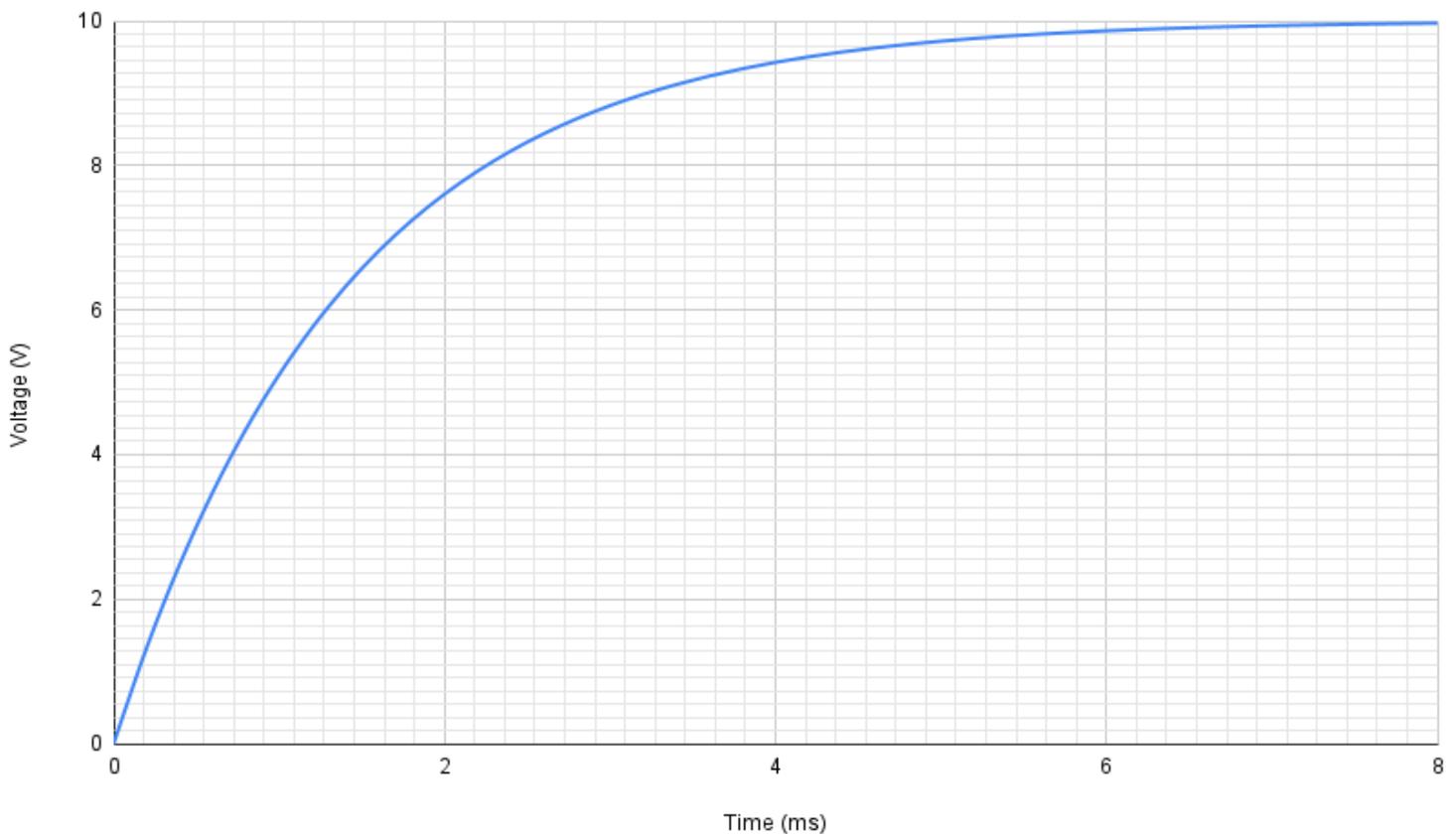
b) The energy stored in the capacitor when it is fully charged

[2]

6. The following circuit is used to measure the voltage across a capacitor while it charges.



The voltage measured is plotted as a function of time as shown.



a) What will be the initial value of current in the circuit?

[2]

b) Would it be advantageous to use a data logger to plot the voltage across the capacitor in this experiment? Why/why not?

[2]

END for SQA Higher physics pupils

c) Use the graph to estimate the time constant of this circuit

[2]

d) Calculate the capacitance of the capacitor.

[2]

e) How much charge is stored in the capacitor when it is fully charged?

[2]