**6** **(a)** Explain what is meant by the *capacitance* of a parallel plate capacitor.

.....

.....

.....

.....[3]

**(b)** Three parallel plate capacitors each have a capacitance of 6.0 μF.

Draw circuit diagrams, one in each case, to show how the capacitors may be connected together to give a combined capacitance of

**(i)** 9.0 μF,

[1]

**(ii)** 4.0 μF.

[1]

**(c)** Two capacitors of capacitances 3.0 μF and 2.0 μF are connected in series with a battery of electromotive force (e.m.f.) 8.0 V, as shown in Fig. 6.1.

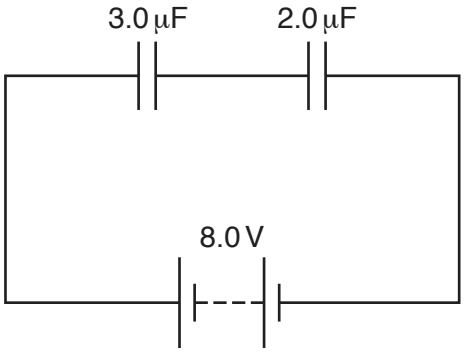


**Fig. 6.1**

**(i)** Calculate the combined capacitance of the capacitors.

capacitance = ..... μF [1]

**(ii)** Use your answer in **(i)** to determine, for the capacitor of capacitance 3.0 μF,

**1.** the charge on one plate of the capacitor,

charge = ..... μC

**2.** the energy stored in the capacitor.

energy = ..... J
[4]

[Total: 10]