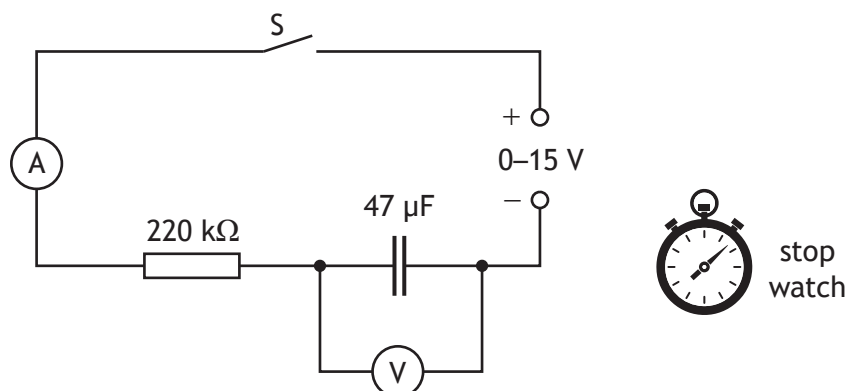


13. A student carries out an experiment to investigate the charging of a capacitor, using the circuit shown.



- (a) Describe how the results of this experiment are obtained **and** used to show how the voltage across the capacitor varies with time while the capacitor is charging.

2

- (b) The capacitor is initially uncharged.  
The variable voltage supply is set at 12 V.  
Switch S is closed.  
The capacitor becomes fully charged.

- (i) Calculate the maximum energy stored by the capacitor.

3

*Space for working and answer*



13. (b) (continued)

- (ii) Suggest an alteration the student could make to this circuit to increase the maximum energy stored by the  $47\ \mu\text{F}$  capacitor.

1

[Turn over

