

Support Worksheet – Topic 5, Worksheet 3

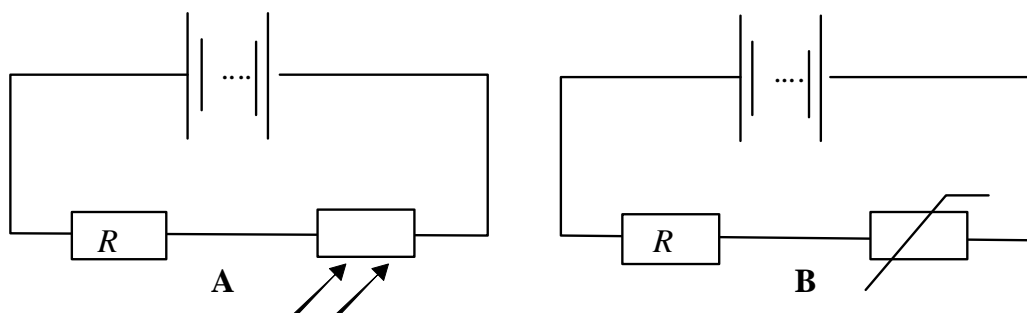
- 1** For the circuits below, state and explain the change (if any) of the voltage across resistor R when:

a the intensity of light in circuit A increases.

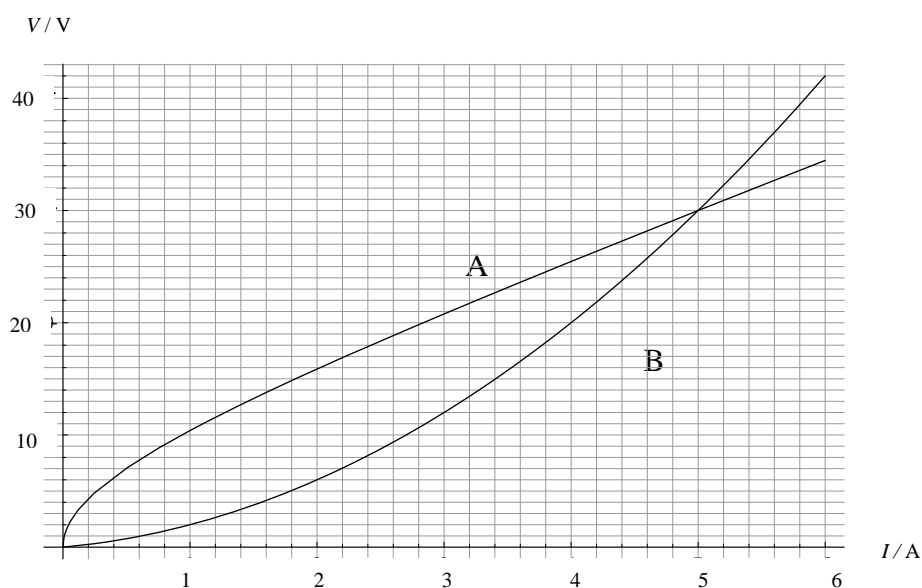
[2]

b the temperature in circuit B increases.

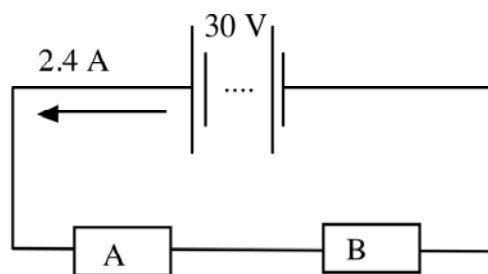
[2]



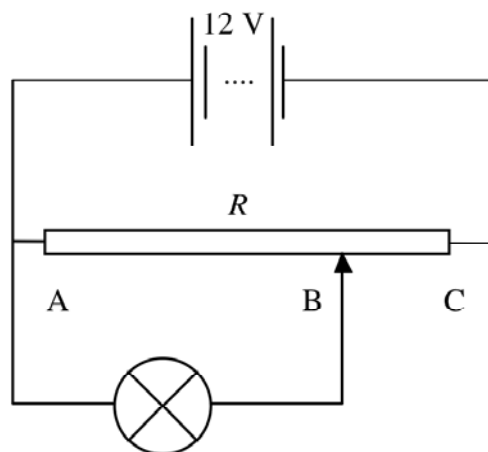
- 2** Two devices have voltage–current characteristics as shown in the graph.



They are connected in the circuit on the next page. The current in the circuit is 2.4 A.



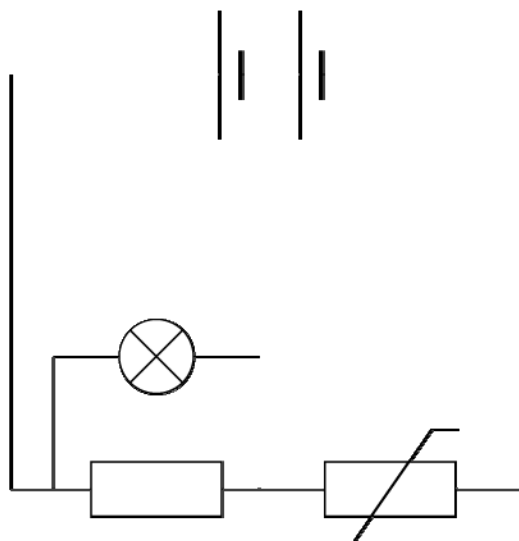
- a** Describe how the resistance of A and of B varies as the current is increased. [2]
- b** Calculate the power dissipated in each device. [2]
- c** Calculate the internal resistance of the battery. [2]
- 3** The diagram shows a potential divider circuit. The battery has negligible internal resistance and AC is a wire whose resistance increases uniformly with length.



The lamp is rated as 12 W at 6.0 V at normal operation. The lamp operates normally when the moveable contact is attached to point B such that the length AB is double that of BC. Calculate

- a** the current through the light bulb. [1]
- b** the resistance of the light bulb. [1]
- c** the resistance R of the wire AC. [2]

- 4 The diagram shows a lamp connected in a circuit containing a thermistor.



At room temperature the lamp is on at medium brightness. State and explain what will happen to the brightness of the lamp as the temperature of the thermistor increases.

[3]