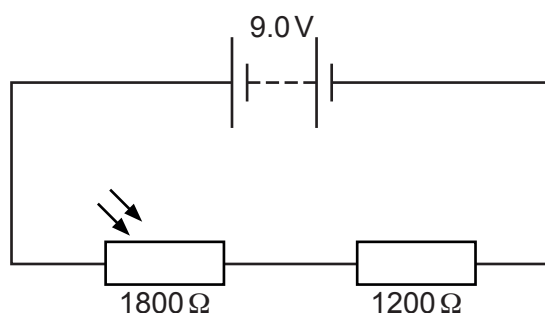


- 7 (a) A battery of electromotive force (e.m.f.) 9.0 V and negligible internal resistance is connected to a light-dependent resistor (LDR) and a fixed resistor, as shown in Fig. 7.1.



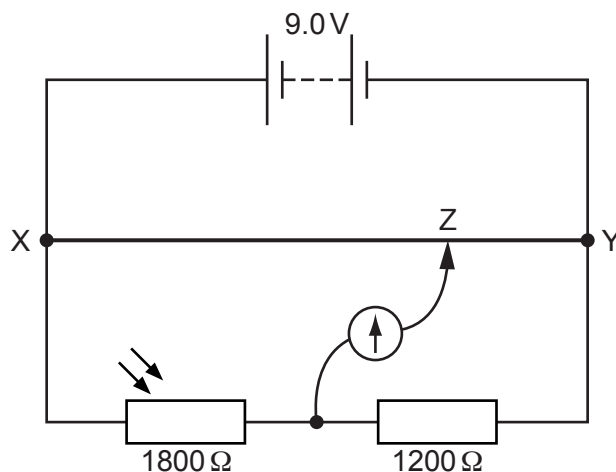
**Fig. 7.1**

The LDR and fixed resistor have resistances of  $1800\ \Omega$  and  $1200\ \Omega$  respectively.

Calculate the potential difference across the LDR.

potential difference = ..... V [2]

- (b) The circuit in (a) is now modified by adding a uniform resistance wire XY and a galvanometer, as shown in Fig. 7.2.



**Fig. 7.2** (not to scale)

The length of the wire XY is 1.2 m. The movable connection Z is positioned on the wire XY so that the galvanometer reading is zero.

- (i) Calculate the length XZ along the resistance wire.

length XZ = .....m [2]

- (ii) The environmental conditions change causing a decrease in the resistance of the LDR. The temperature of the LDR remains constant.

State whether there is a decrease, increase or no change to:

- the intensity of the light illuminating the LDR

.....

- the total power produced by the battery

.....

- the length XZ so that the galvanometer reads zero.

.....

[3]

[Total: 7]