4 A battery of electromotive force 12V and negligible internal resistance is connected to two resistors and a light-dependent resistor (LDR), as shown in Fig. 4.1.

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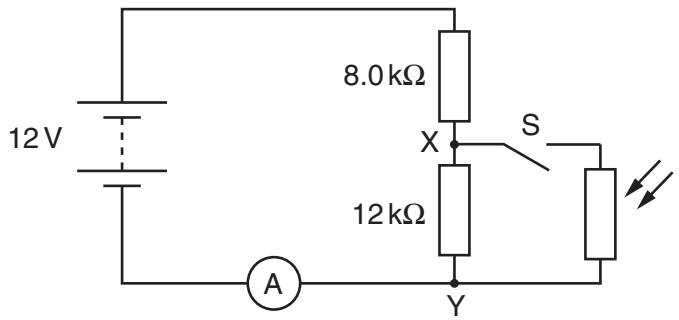

Fig. 4.1

An ammeter is connected in series with the battery. The LDR and switch S are connected across the points XY.

(a) The switch S is open. Calculate the potential difference (p.d.) across XY.

p. d. = ... V [3]

(b) The switch S is closed. The resistance of the LDR is 4.0 kΩ. Calculate the current in the ammeter.

current = ... A [3]

(c) The switch S remains closed. The intensity of the light on the LDR is increased. State and explain the change to

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(i) the ammeter reading,

.....

.....

.....[2]

(ii) the p.d. across XY.

.....

.....

.....[2]