

- 5 A 240V power supply S with negligible internal resistance is connected to four resistors, as shown in Fig. 5.1.

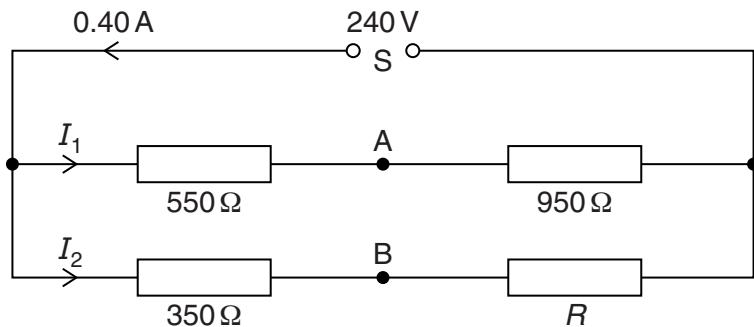


Fig. 5.1

Two resistors of resistance 550Ω and 950Ω are connected in series across S. Two resistors of resistance 350Ω and R are also connected in series across S.

The current supplied by S is 0.40A.

Currents I_1 and I_2 in the circuit are shown in Fig. 5.1.

(a) Calculate

(i) current I_1 ,

$$I_1 = \dots \text{A} [2]$$

(ii) resistance R ,

$$R = \dots \Omega [2]$$

(iii) the ratio

$$\frac{\text{power transformed in resistor of resistance } 350\Omega}{\text{power transformed in resistor of resistance } 550\Omega}.$$

$$\text{ratio} = \dots [2]$$

(b) Two points are labelled A and B, as shown in Fig. 5.1.

(i) Calculate the potential difference V_{AB} between A and B.

$$V_{AB} = \dots \text{ V} [2]$$

(ii) The resistance R is increased.

State and explain the effect on V_{AB} .

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..... [1]