

- 6 (a) Define electric potential difference.

..... [1]

- (b) A battery is connected to two resistors X and Y, as shown in Fig. 6.1.

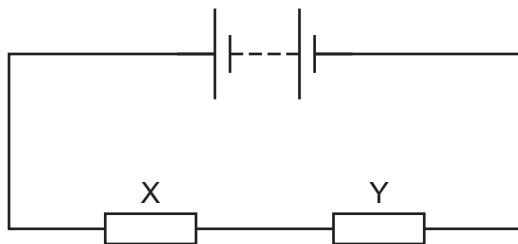


Fig. 6.1

The resistance of resistor X is greater than the resistance of resistor Y.

State and explain which resistor dissipates more power.

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[3]

- (c) A battery of electromotive force (e.m.f.) 9.0V and internal resistance  $r$  is connected to two resistors P and Q, as shown in Fig. 6.2.

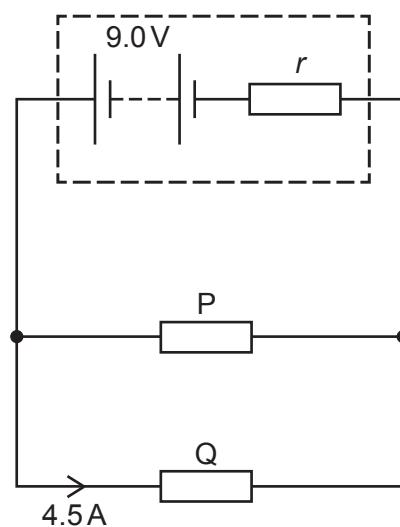


Fig. 6.2

A total charge of 650 C moves through resistor P in a time interval of 540 s. During this time resistor P dissipates 4800 J of energy. The current in resistor Q is 4.5 A. Assume that the e.m.f. of the battery remains constant.

Calculate:

- (i) the current in resistor P

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

- (ii) the potential difference across resistor P

$$\text{potential difference} = \dots \text{V} [2]$$

- (iii) the internal resistance  $r$  of the battery.

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