

- 6 A 12V battery with internal resistance 0.50Ω is connected to two identical filament lamps L_1 and L_2 as shown in Fig. 6.1.

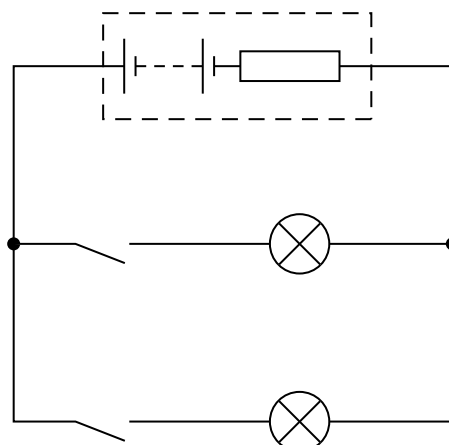


Fig. 6.1

The lamps are connected to the battery via switches S_1 and S_2 . The power rating of each lamp is 48W for a potential difference of 12V.

- (a) S_1 is closed and S_2 open.

State and explain whether the power transformed in L_1 is 48W.

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[2]

- (b) S_2 is now also closed.

- (i) State and explain the effect on the current in L_1 .

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[1]

- (ii) State and explain the effect on the resistance of L_1 .

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[1]