

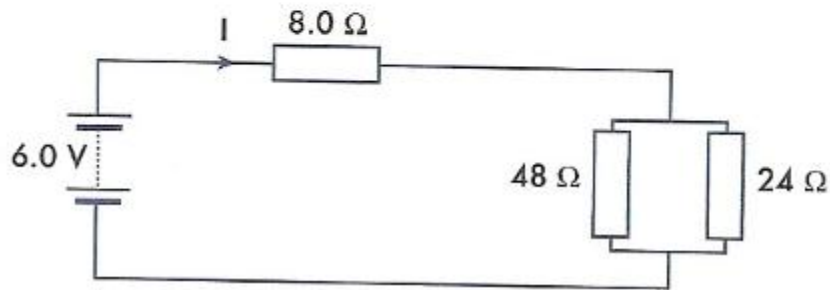
PQ 12

Questions

Q1

For the circuit drawn below calculate the

- (a) total resistance of the circuit,
- (b) I ,
- (c) potential difference across the $24\ \Omega$ resistor, and
- (d) power dissipated through $8.0\ \Omega$ resistor.



Q2

Kylie made a cup of coffee by boiling 300 mL of water in an electric kettle which had the following written on its base: 240 V, 2400 W

If the kettle took 50.0 seconds to boil the water,

- (a) how much electrical energy was used in this time, and
- (b) can Kylie expect all of the heat energy transformed from this electrical energy to be absorbed by the water in the kettle and heat it to boiling point?

Q3

A television set owned by Michael is rated at 180 W and is designed to operate on a 240 V supply. If standard values for fuses are 2.00 A , 5.00 A and 10.0 A ,

- (a) suggest a value for a fuse to be placed in the circuit to which Michael's television is connected, and
- (b) if a 10.0 A fuse was inadvertently used instead of the recommended fuse, predict what may happen if fault in the television caused a much larger current to flow in the television set.

Q4

List three advantages of using an earth leakage circuit breaker.

Q5

The 12.0 V battery in a car supplies a current of 3.50×10^2 A to provide the starter motor with maximum power.

- (a) Calculate the maximum power of the starter motor.
- (b) Determine the maximum resistance of the starter motor, the battery and the connective wires.
- (c) Compare the thickness of the wire connecting the battery to the starter motor with the thickness of the wire used in most other circuits in the car. Give a reason for your answer.