

TBSG and W Physics Revision Ws 2

Total points 16.5/20 ?

Class 10

Ch. Electricity

Email address *

mananmehtabatman@gmail.com

Name *

Manan Y Mehta

School *

TBSG

- ✓ 1. Calculate the electrical energy consumed when a bulb of 40 W is used 2/2
for 12.5 hours everyday for 39 days. *

Total energy consumed per day = Power x Time = $40 \times 12.5 = 500\text{W}$

Total energy consumed in 39 days = $(500 \times 39) / 1000 = 19500 / 1000 = 19.50 \text{ kWh}$

Thus, 19.50 kWh electrical energy is consumed.

Feedback

$EE \text{ consumed} = P \times t = 40 \times 12.5 \times 39 = 19500 \text{ Wh} = 19.5 \text{ kWh}$



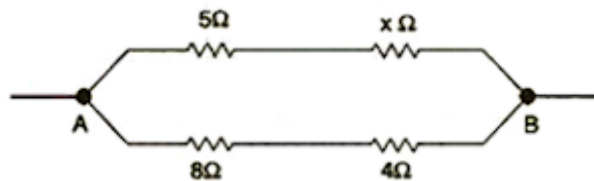
- ✓ 2. State Ohm's Law. Diagrammatically illustrate how you would connect a 3/3 key, a battery, a voltmeter, an ammeter, unknown resistor R, and a rheostat to verify the law. *

PDF ohmlaw - Manan ...

Feedback

Text book page 179 and 180 (fig 8.4)

- ✓ 3. The equivalent resistance of the following circuit is 4 ohms. Calculate the value of x. *



$$1/R = 1/R_1 + 1/R_2$$

$$1/R = 1/(4+8) + 1/(5+x)$$

$$1/4 = 1/12 + 1/5+x$$

$$1/4 = (5 + x + 12)/(12)(5+x)$$

$$15 + 3x = 17 + x$$

$$2x = 2$$

$$x = 1$$

Feedback

5 and x in series so $R_s = 5 + x$

4 and 8 in series so $R_{s1} = 4+8 = 12$

$R_p = 4$

$$1/4 = 1/12 + 1/(5+x)$$

$$2/12 = 1/5+x$$

$$1/6 = 1/5+x$$

$$5+x = 6 \quad x = 6-5 = 1 \text{ ohm}$$



- ✓ 4. Calculate the quantity of heat that will be produced in a coil of resistance 75 ohms if a current of 2 A is passed through it for 2 minutes. 3/3 *

$$H = I^2 R t$$

$$H = 2 \times 2 \times 75 \times 120$$

$$H = 36000J$$

Feedback

$$H = I^2 R t = 2 \times 2 \times 75 \times 120 = 36000J$$

- ✓ 5. A substance has nearly zero resistance at a temperature of 1 K. What is this substance called? State two factors on which the resistance of a wire depends. 3/3 *

Its called superconductor.

The resistance of a wire increases with an increase in its temperature.

The resistance of a wire increases with its increase in length.

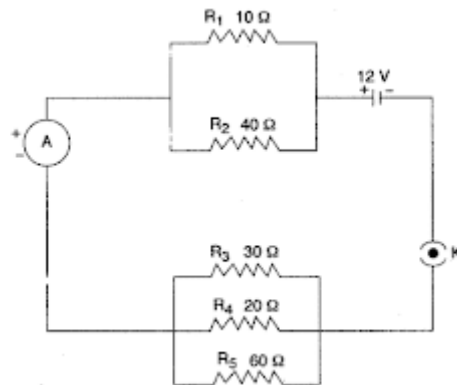
Feedback

Superconductor

length of conductor, area of cross section of the wire, material of the conductor, temperature of the conductor



- ✗ 6. Five resistors are connected as shown. A 15 V battery is connected to the circuit. Calculate (i) the total resistance and (ii) the total current in the circuit. *



$$1/R' = 1/R_1 + 1/R_2$$

$$1/R' = 1/10 + 1/40$$

$$1/R' = 1/8$$

$$R' = 8 \text{ ohm}$$

$$1/R'' = 1/R_3 + 1/R_4 + 1/R_5$$

$$1/R'' = 1/30 + 1/20 + 1/60$$

$$1/R'' = 1/10$$

$$R'' = 10 \text{ ohm}$$

$$\text{Total } R = R' + R''$$

$$R = 8 + 10 = 18 \text{ ohm}$$

$$I = V/R$$

$$I = 12/18$$

$$I = 2/3 \text{ A}$$


Feedback

Total resistance = 18 ohms

Total current = 0.67 A



- ✗ 7. Draw a Potential difference (V) vs Current (I) graph for an ohmic resistor. How will you find the Resistance of the resistor from this graph? 0/2
*

 ohmic - Manan ...

Feedback

Text book page 180

- ✗ 8. An electric bulb is marked 100 W-250 V. What information does this convey? * 0/1

It conveys that the bulb lights on a 250V supply and consumes 100W electrical power.
.....

Feedback

It conveys that if the bulb is connected to a 250 V supply it will consume 100 J of energy per second or expend a power of 100 W

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