

NAME # KAMRAN KHAN

ID # 6990

Semester # 8th

Subject # Network

Analysis 1

Submitted to! Eng'r

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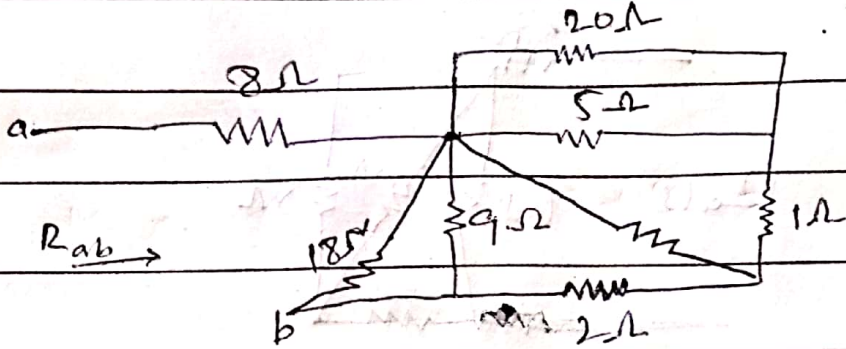
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Electrical

Q No 2

Ans

Find R_{ab} for the circuit given below!



The formula is

$$R_{ab} = \frac{R_1 \times R_2}{R_1 + R_2}$$

$$\frac{9 \times 18}{9 + 18} = 6\Omega$$

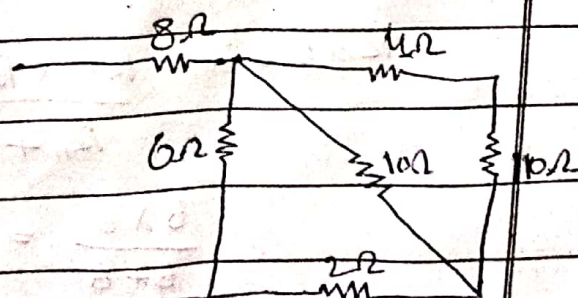
then!

$$\frac{R_3 \times R_4}{R_3 + R_4}$$

then!

$$\frac{5 \times 20}{5 + 20} = 4\Omega$$

then it becomes



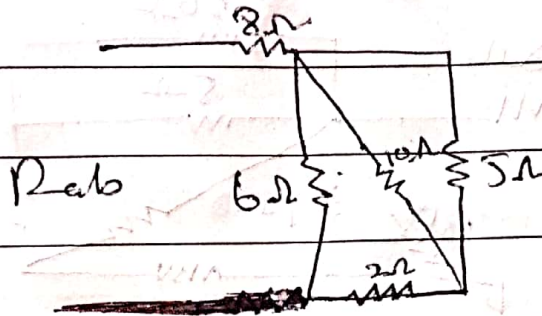
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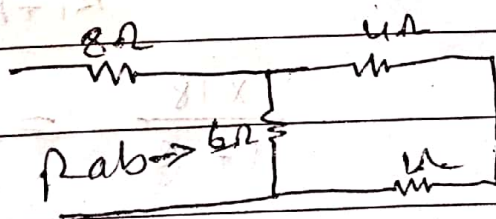
$$R_{ab} = R_5 + R_6$$

$$R_{ab} = 4 + 1 = 5$$



$$R_{ab} = \frac{R_1 \times R_2}{R_1 + R_2} = \frac{5 \times 20}{5 + 20} = \frac{100}{25} = 4$$

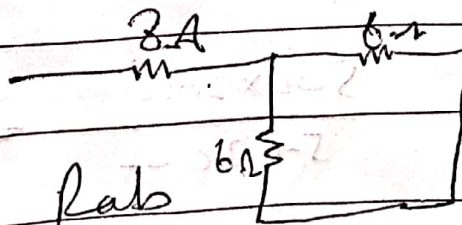
Then the circuit it come!



$$R_{ab} = R_9 + R_{10}$$

$$4 + 2 = 6$$

then!



$$R_{ab} = \frac{R_{11} \times R_{12}}{R_{11} + R_{12}}$$

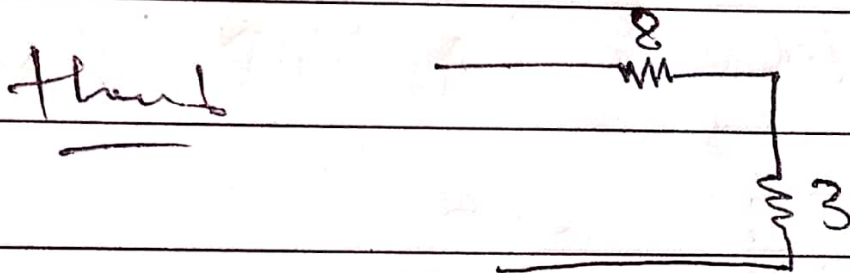
$$\frac{6 \times 6}{6 + 6} = \frac{36}{12} = 3$$

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this Req = $8 + 3 = 11 \Omega$

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(QNO1) Part 1

Ans:

$$P = 20 \cos^2(t) \text{ mw}$$

$$V = 10 \cos(t) \text{ V}$$

$$I = ?$$

$$R = ?$$

Formula is:

$$P = VI$$

$$I = \frac{P}{V}$$

$$I = \frac{20 \cos^2 t \text{ mw amp}}{10 \cos t}$$

$$I = 2 \cos t \text{ mw amp}$$

Now find R

$$\frac{V}{I} = \frac{IR}{I}$$

$$R = \frac{V}{I} =$$

$$R = \frac{10^5 \cos t}{2 \cos t} = \frac{5}{10^3} = 5 \times 10^3$$

$$= \boxed{R = 5 \text{ k}\Omega}$$

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(Q NO 3) b)

The essential component
of a toaster is an
electrical element (resistor)
that converts electrical
energy to heat energy.
How much current is drawn
by a toaster with resistance
 10Ω at $110V$?

Solution!

$$V = 110V$$

$$R = 10\Omega$$

$$I = ?$$

Formula!

$$V = IR$$

Solution!

$$I = \frac{V}{R}$$

$$= \frac{110}{10} = 11A$$

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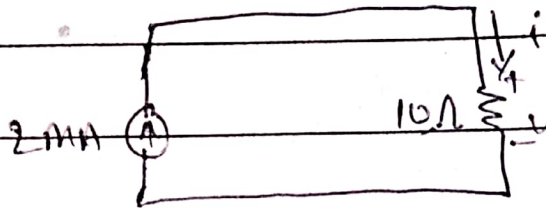
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(QNO1)

part (A)

Solution



Formula For voltage

$$V = IR$$

$$V = (2)(10)$$

$$V = 20V$$

Formula for the conductance

$$G = \frac{1}{R} = \frac{1}{10} = 100 \text{ siemen}$$

Formula for the power

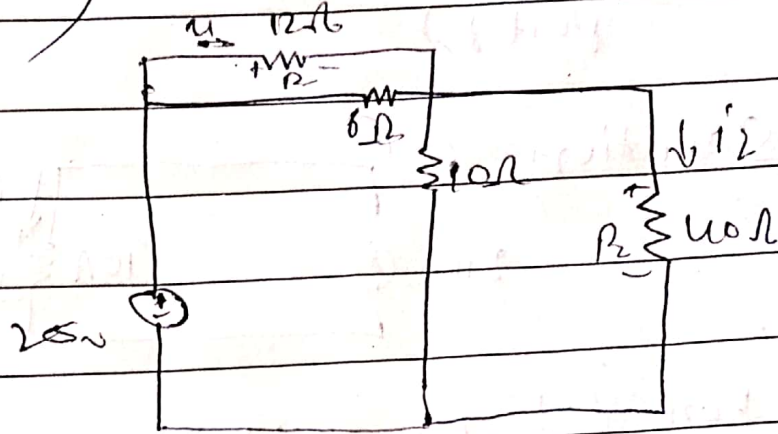
$$P = VI$$

$$= (20V)(2mA)$$

$$P = 40W$$

Ans.

(QNO3) Part.

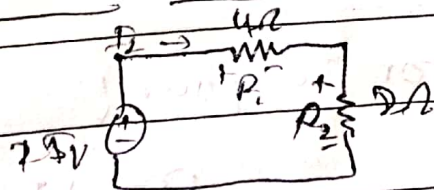


12/6

$$\frac{6 \times 12}{6 + 12} = \frac{72}{18} = 4\Omega$$

$$\frac{10}{40} = \frac{10 \times 40}{10 + 40} = \frac{400}{50} = 8\Omega$$

Equivalent circuit!



Now we use in a voltage division rule:

$$V_1 = \left[\frac{4}{4+8} \right] (15) = 5V$$

$$V_2 = \left[\frac{8}{4+8} \right] (15) = 10V$$

$$I_1 = \frac{V_1}{12} = \frac{5}{12} = 416.7mA$$

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$$I_2 = V_2 / 40 = 20 / 40 = 250 \text{ mA}$$

$$P_1 = V_1 I_1 = 5 \times (5/12) = 2.083 \text{ W}$$

$$P_2 = V_2 I_2 = 10 \times (0.25) = 2.5 \text{ W}$$