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**Sessional Assignment**

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Sessional Assignment

Q2 A wattmeter has 2 current coils connected in parallel, each having a resistance of  $0.7 \Omega$ . The wattmeter is connected in a circuit to measure power with its potential coil on the supply side. The reading on the wattmeter is  $100 \text{ W}$  and the reading on the ammeter connected in series with the current coil is  $3 \text{ A}$ . Calculate.

- Power loss in the wattmeter
- True load power
- Percentage error due to wattmeter connection.

Answer

Given data:

$$R = 0.7 \Omega$$

$$P = 100 \text{ W}$$

$$A = 3 \text{ A}$$

Required

Power loss, True load power and %age error.

Solution:- We have  $R_c = \frac{R_1 R_2}{R_1 + R_2} = \frac{0.7 \times 0.7}{0.7 + 0.7} = 0.35 \Omega$

$$\text{Power loss} = I^2 R_c = (3)^2 (0.35) = \boxed{3.15 \text{ W}}$$

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(2) True load power =  $100 - 3.15 = 96.85$

(3) % age power =  $\frac{100 - 96.85}{96.85} \times 100 = 3.25$

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Q2 Two voltmeter have the same range 0-500V  
The internal resistance are  $30\text{ k}\Omega$  and  
 $20\text{ k}\Omega$  respectively. If they are connected  
in series and  $700\text{ V}$  be applied  
across them, what will be their reading?

Answer

Given data:

$$\text{range} = 0 \text{ to } 500\text{ V}$$

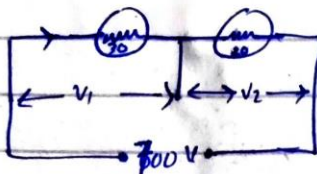
$$\text{resistance} = 30\text{ k}\Omega \text{ and } 20\text{ k}\Omega$$

$$V = 700\text{ V}$$

Required =

$$\text{Reading} = ? \quad V_1 = ? , V_2 = ?$$

Solution:



Now we know that:

$$V_1 = \frac{30\text{ k}\Omega}{30\text{ k}\Omega + 20\text{ k}\Omega} \times 700 = 420$$

$$V_2 = \frac{20\text{ k}\Omega}{30\text{ k}\Omega + 20\text{ k}\Omega} = 280$$

Ans

