

DAPT of Electrical Engineering:  
Sessional Assignment.

Sub: Instrumentation and Measurement:

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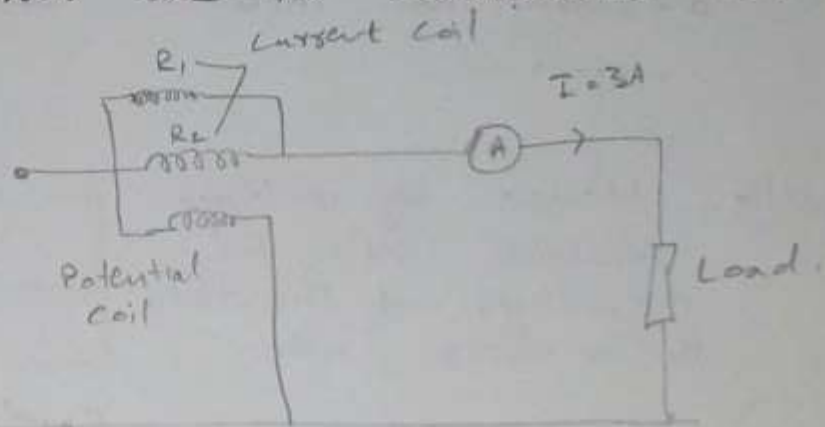
" 4 "

Q1 A wattmeter has 2 current coils connected in parallel, each having - - - -

To find:

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

Q2)



Sol:

Effective resistance of current coil

$$R_c = \frac{R_1 R_2}{R_1 + R_2} = \frac{0.7 \times 0.7}{0.7 + 0.7} = 0.35 \Omega$$

i) Power loss in the wattmeter

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

ii) True load power =  $100 - 3.15 = \boxed{96.85 \text{ W}}$

iii) Percentage error =  $\frac{100 - 96.85}{96.85} \times 100$   
 $= \boxed{3.25 \%}$

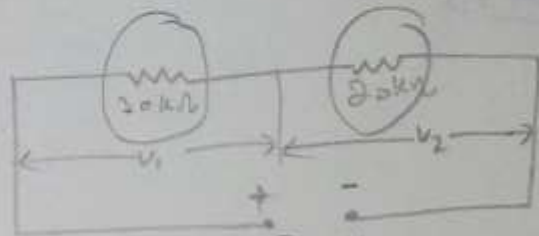
Q2 Two voltmeters have the "same range" 0-500V. The internal resistance .....

Sol<sup>n</sup> - Hence by voltage divider rule, the readings of the two voltmeters are.

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

$$\boxed{V_1 = 420 \text{ V}}$$

$$V_2 = \frac{20 \text{ k}\Omega}{30 \text{ k}\Omega + 20 \text{ k}\Omega} \times 700 = \boxed{280 \text{ V}}$$



Condition of the Problem shown in the figure.