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Cource.

D.C machine & Transformer.

Module.

2nd (B-Tech)

Department.

Electrical

Assignment.

Sessional.

Q1 # A transformer, when operated at 100V in the primary, The current in the primary is 4A. Find the current in the secondary winding if the voltage stepped up to 600V.

Given Data.

$V_P = 100V$

$I_P = 4A$.

$V_S = 600V$.

Req.

$I_S = ?$

Sol.

we know that.

$$\frac{V_P}{V_S} = \frac{I_S}{I_P}$$

$$I_S = \left(\frac{V_P}{V_S}\right) I_P$$

$$I_S = \left(\frac{100}{600}\right) \times 4$$

$$I_S = \boxed{\Rightarrow 0.66A}$$

Q2 A 3300/250V, 50Hz. Single phase transformer is built on an iron core having an effective cross sectional area of 125cm² and 70 turns low voltage winding. Calculate

a) The value of maximum flux Density.

b) The number of turns on the high voltage winding.

Given:

$E_1 = 3300V$ $E_2 = 250V$

$f = 50Hz$ $A = 125cm^2 = 125 \times 10^{-4} m^2$

$N_2 = 70$ turns.

Req:

a) $B_m = ?$ b) $N_1 = ?$

Sol

A) The emf induced on Secondary Side is given by

$E_2 = 4.44 \Phi_m f N_2 =$

$4.44 B_m A f N_2$ $(A.S. B = \frac{\Phi}{A})$

$B_m = \frac{E_2}{4.44 f N_2} = \frac{250}{4.44(125\times10^{-4})(50)(70)}$

$B_m =$ **1.289 T** Ans

B) $\frac{E_2}{E_1} = \frac{N_2}{N_1}$

$\Rightarrow N_1 \left(\frac{E_1}{E_2}\right) N_2 = \frac{3300}{250} \times 70$

$\Rightarrow$ **$N_1 = 924$ Turns**

Ans.

Q3 # A transformer with 800 primary turns & 200 Secondary turns is supplied from a 100v Ac Supply: Calculate the Secondary voltage and the volts per turn.

Given.

$E_1 = 100V$

$N_1 = 800$ turns

$N_2 = 200$ turns.

Req:

$E_2 = ?$ $E/T = ?$

Sol.

E_2/E_1 or N_2/N_1

$E_2 \left(\frac{200}{800}\right) 100 \Rightarrow \boxed{E_2 = 25V}$

volts per turn: $E_1/N_1 = 100/800 \Rightarrow \boxed{0.125}$

or volts per turn. $E_2/N_2 = 25/200 = \boxed{0.125}$