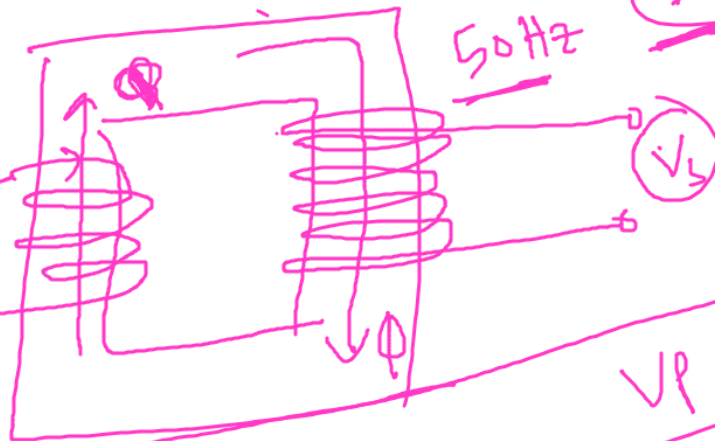


$$E_p = 4.44 N_p \phi_m$$

$$E_s = 4.44 N_s \phi_m$$

50Hz

$E_p$



Transformer (Job Bstn)

AC ✓

DC

X

Low ✓

$$\text{turns ratio} = a = \frac{V_p}{V_s} = \frac{N_p}{N_s} = \frac{I_s}{I_p}$$

DC

Volt



$$E_P = 4.44 N_P f \Phi_m$$

$$E_S = 4.44 N_S f \Phi_m$$

Induced EMF

$N_P =$  Turns on Primary side

$N_S =$  Turns on Secondary side

$f =$  frequency

$\Phi_m =$  Magnetic flux

#

A 20:10 XF ~~is~~ having a magnetic flux  
20 sin( $\omega t + 30$ ). Then what is the induced emf  
at primary and secondary in Bangladeshi?

$$E_p = 4.44 \times 20 \times 50 \times 20$$
$$= 88.8 \text{ kV}$$

$$E_s = 4.44 \times 10 \times 50 \times 20 \text{ V}$$



# Power ratings: ~~✓~~  $S_{in} = S_{out}$  (VA)

$$\Rightarrow V_{in} I_{in} = V_{out} I_{out}$$

~~✓~~  $P_{in} = P_{out}$

'input power'

$$\Rightarrow V_p I_p \cos \theta = V_s I_s \cos \theta$$

Transformer equivalent model

