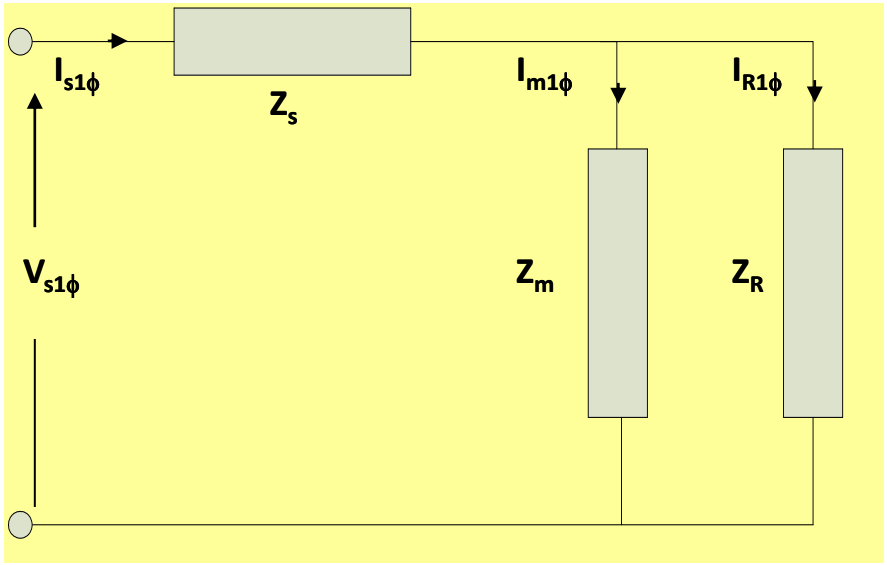
- LECTURE 3

Analysis of Induction Machines

- For simplicity, let assume

$$I_s = I_1 \quad , \quad I_R = I_2$$

(s=stator, R=rotor)



$$Z_R = \frac{R_R'}{s} + jX_R' \quad ;$$

$$Z_m = R_c \,//\, jX_m \quad ; R_c \neq neglected$$

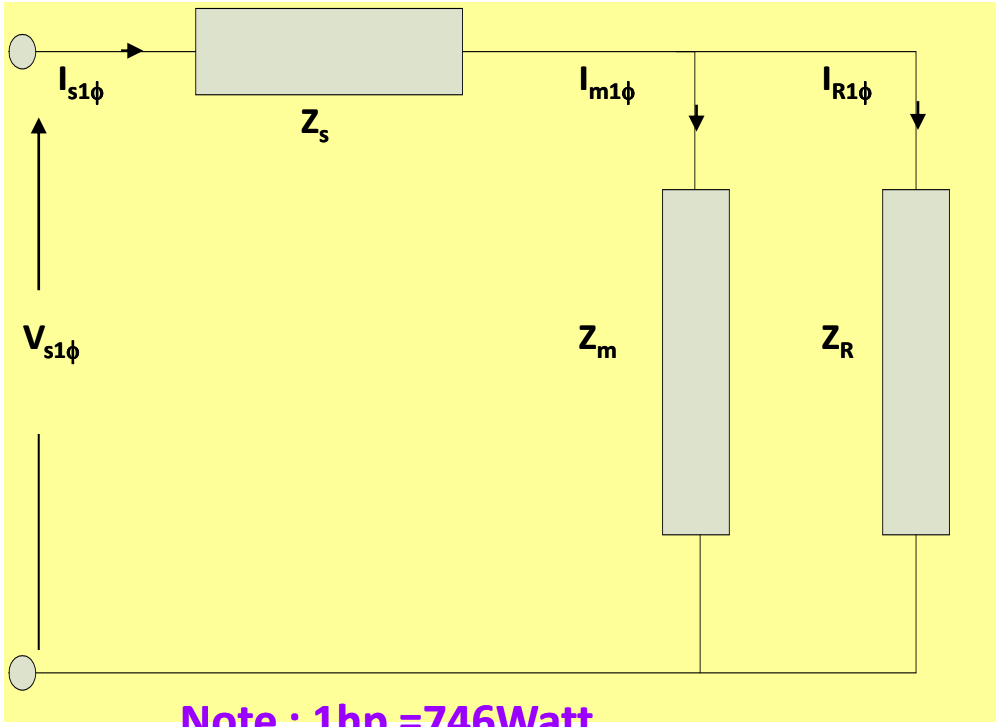
$$Z_m = jX_m \quad ; R_c = neglected$$

$$Z_s = R_s + jX_s \quad ;$$

$$Z_{Total} = Z_s + \left[Z_m \,//\, Z_R \right]$$

$$I_{s1\phi} = \frac{V_{s_{1\phi}}}{Z_T}$$

Analysis of Induction Machines



Note : 1hp =746Watt

Current Dividing Rules,

$$I_{m1\phi} = \left[\frac{Z_R}{Z_m + Z_R}\right] I_{s1\phi}$$

$$I_{R1\phi} = \left[\frac{Z_m}{Z_m + Z_R}\right] I_{s1\phi}$$

OR

Voltage Dividing Rules,

$$V_{RM\,1\phi} = \left[\frac{Z_R \,//\, Z_m}{Z_T}\right] V_{s1\phi}$$

$$\textit{Hence,} \quad I_{R1\phi} = \left[\frac{V_{RM\,1\phi}}{Z_R}\right]$$

$$I_{m1\phi} = \left[\frac{V_{RM\,1\phi}}{Z_m}\right]$$