

ET 332b
Induction Motor Homework

The following constants apply to a 2200 V 50 hp, three-phase 60 Hz wye-connected, 6 pole squirrel-cage induction motor.

$$\begin{array}{ll} R_1 = 3.5 \, \Omega/\text{phase} & X_1 = X_2 = 7.2 \, \Omega/\text{phase} \\ R_2 = 2.4 \, \Omega/\text{phase} & R_{fe} = 4170 \, \Omega/\text{phase} \\ & X_M = 328 \, \Omega/\text{phase} \end{array}$$

Assume that the value of R_{fe} includes the friction, windage and stray losses. Also assume that the motor core losses are negligible. Calculate for a slip of 0.019: a.) the rotor developed torque; b.) the motor efficiency c.) the motor power factor.