Three-phase Induction Motor – Torque & Rotor p.f.

$\therefore T \propto \Phi I_2 cos\phi_2$

Or,

$\therefore T = k\Phi I_2 cos\phi_2$

Where,

$I_2 = rotor\ current\ at\ standstill$

$\phi_2 = angle\ between\ rotor\ emf\ and\ rotor\ current$

$k = a\ constant$

If rotor emf at standstill is E2,

$\therefore E_2 \propto \Phi$

$\therefore T \propto E_2 I_2 cos\phi_2$

$\therefore \boxed{T = k_1 E_2 I_2 cos\phi_2}$

Where,

$k_1 = another\ constant$