EE462 – Laboratory

Exp. 3 Quiz **Group #3** **25.05.2017**

Name: **Duration:** 15 min

ID: **Grade:** …../30

Questions

Part I: Understand

(5 pts) Why did the power factor of the induction motor increase with increasing torque?

(5 pts) Why is the power factor of induction motors poor?

Part II: Solve

Consider an electric vehicle weight of which is 10 tons. The vehicle is going on a level track (straight road) with 300 km/h speed. The diameter of the wheels is 0.5 m. The total mechanical output power of the traction motors is 100 kW. Neglect friction and windage throughout the question.

(5 pts) How much time does it take for the vehicle to stop, if rated torque is applied in reverse direction during deceleration?

(5 pts) How much distance should the vehicle leave before starting the deceleration?

Part III: Think

(10 pts) Consider the recorded harmonic components of the grid side line current in the experiment. Why are the harmonics order of which are integer multiples of 3 are low?