

S-18.2103 POWER SYSTEMS

Exam 19.12.2012 at 9-12 hrs in room S4

1. Explain how voltage, current and impedance are referred over a power transformer.
2. Derive the power angle equation for real power.



3. The maximum temperature rise of a conductor is 80 degrees, the mass 145 kg/km, specific heat 910 Ws/°C kg and resistance 0,673 ohms/km. Calculate the maximum allowed 1 second short circuit current.
4. The earth fault current of a 20 kV overhead line is 0,065 A/km and the charging current is 0,054 A/km. Calculate a) the zero sequence capacitance, b) the positive sequence capacitance and c) the phase to phase capacitance per kilometer.
5. A generator is feeding power to a grid. In the middle point of the connecting line happens a three phase bolted short circuit. Calculate the voltage in the fault point before the fault. What are the fault currents (transient, sub-transient and steady state currents) ?

