Tutorial 5

1) Why induction generator need to absorb significant amount of reactive power?
2) When connecting a small-scale DG to a distribution network, why the issue of voltage rise is less severe for induction generator (without PE converter)?
3) How can reactive power affect the voltage variation with a more inductive power line?
4) Why the voltage regulation by reactive power is less effective in LV system than MV system?
5) An induction generator is connected to an infinitive distribution bus bar with a cable inductance of 1 mH and a resistance of 0.31 Ω.
   Assume the reactive power consumed by magnetizing current has been fully compensated by a shunt capacitor. Defining the maximum output power of the DG is P_{max}, and the corresponding reactive power consumption after the capacitor compensation is Q_{max}. What is the ideal ratio of Q_{max}/P_{max} to make the output voltage rise 0.
6) Briefly explain the motivation of Virtual Power Plant.
7) Briefly describe the objectives of microgrid
   – Able to sustain a prolonged islanding operation automatically at any time
8) State the main economical constraint for the implementation of microgrid
9) Briefly explain why DC microgrid control strategy is easier than AC?