

ECE470 Power Systems I Hints for HW # 2

Selected answers:

1. $p = 6$, $n_{60} = 1200$ rpm, $n_{50} = 1000$ rpm
2. The frequency is in between 54 and 57 Hz
3. $p = 10$
4. The speed is in between 1350 and 1600 rpm
5. Note that the generator is rated at 240 V, but is being operated at 230 V. Also, it is rated 100 kVA but is being operated at 80 kVA. Select either 100 kVA, 240 V, or 80 kVA 230 V as your base and work the problem in pu.
b) $E_f = 371.8$ V
c) $\delta = 21^\circ$
6. Everything is rated, so V_t and I_a are both 1.0 pu.
 $E_f = 0.894$ pu and $\delta = 63.4^\circ$
7. The current is given as 2 kA in the generator circuit, so you have to get the correct I_B to produce the pu current.