The solutions will be released on Monday, October 16, 2017

Quiz Date: Thursday, October 19, 2017 during class

The quiz is based on the following material: Lecture 9, Chapter 7 (Sections 7.5, 7.6, 7.7.1, 7.7.2 and 7.8) from the textbook and the problems in Homework 4.

Problem 1: 7.6 and 7.7 from the textbook.

Problem 2:
   a. Sketch the ideal power curve of the turbine with the following characteristics:
      • rated speed is 14 m/s
      • cut-in speed is 5 m/s
      • rated power is 1.25 MW
      • furling or cut-out speed is 20 m/s
   b. Given part (i), calculate the energy produced in one day if the wind blows continuously between 15 and 20 m/s all day
   c. Can the energy produced in one year be determined if you are told that the average wind speed is 14 m/s? Explain why.

Problem 3:
Consider an anemometer mounted at a height of 10 m with a 20-m/s average wind speed
   a. Estimate the average wind power at a height of 10 m, assuming Rayleigh statistics and under the following weather conditions
      • 15°C
      • -5°C
   b. Suppose a 1300-kW wind turbine with 60-m rotor diameter is located in those winds with speed computed in the first condition of part (a). Determine the annual energy production with a 30% wind turbine efficiency