

**King Fahd University of Petroleum & Minerals**  
**Electrical Engineering Department**  
**EE 360: Home Work #4**  
**Due Dates (Nov. 18<sup>th</sup> for UT Classes & Nov. 19<sup>th</sup> for SMW Classes)**

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From the text book: 7.7(a, b, c), 8.1, 8.8, 8.10(a, b, c), 8.22.

**Problem 1**

A 5-hp 120-V 41-A 1800 r/min shunt dc motor is operating at full load. Its armature resistance is 0.30 ohm, and its field resistance is 120 ohm.

- a) What is the efficiency of this motor? What is its total rotational loss?
- b) Assuming constant rotational losses and a linear magnetization curve, what will the machine's speed be after a 1 percent increase in field resistance?