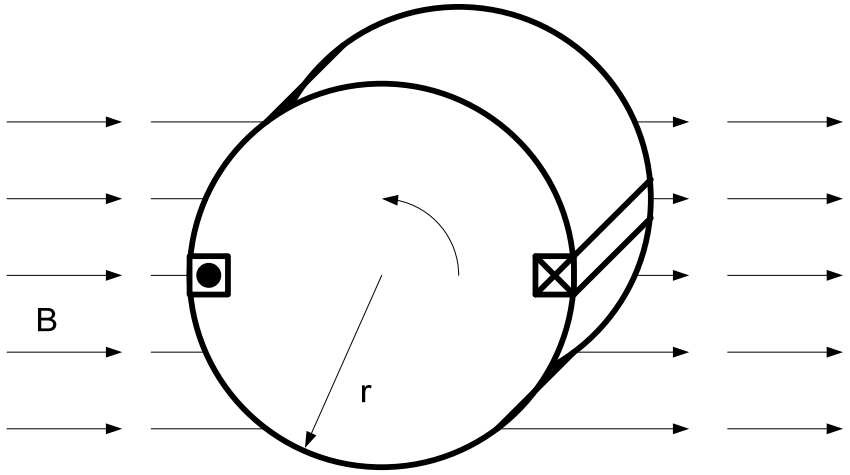
ECE 320 / ECE 329 NAME _____

Quiz 6 2 March 2012

Introduction to DC Machines

1. (6 points) A 0.2 meter long conductor inside a rotor with a 0.1 meter radius rotates counterclockwise at an angular velocity of 200 radians/second in a uniform, constant magnetic field of 0.25 Wb/m^2 directed into the page. The conductor returns on the other side of the rotor.
   a. (3 points) Determine the magnitude of the induced voltage.



   b. (3 points) The conductor is connected to a 0.05 Ohm resistor. For the voltage that you found in part a and the current direction as shown, determine the magnitude and direction of the induced torque. If you didn't find a voltage in part a, make one up.

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2. (4 points) For the electric motor shown on the video monitor, identify the parts of the machine indicated.

   A. _____

   B. _____

   C. _____

   D. _____