**ELG2336 Midterm 2**

**Question 1 (5 marks):** Draw the circuit for a delta to star (V= 210 volts) transformer connected to a load (10 + j 20) Ohm. The impedance of the transmission line is 0.1 + j0.2) Ohm.

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Questions will be given during the test.

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**QUESTION 2 (5 marks):** The following Figure shows a simplified rotor and stator for a DC motor. The mean path length of the stator is 50 cm, and its cross-sectional area is 12 cm2. The mean path length of the rotor is 5 cm, and its cross-sectional area may also be assumed to be 12 cm2. Each air gap between the rotor and the stator is 0.05 cm wide, and the cross-sectional area of each air gap (including fringing) is 14 cm2. The iron of the core (for both the stator and the rotor) has a relative permeability of 2000 and there are 50 turns of wire on the core. The current in the wire is adjusted to be 4 A.

*lr* = 5 cm

*N* = 50 turns

*lc* = 50 cm

*A* = 12 cm2

*i* = 4 A

*l*= 0.05 cm

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