

**KING FAHD UNIVERSITY OF PETROLEUM & MINERALS**

**Electrical Engineering Department**

**EE 306 (01): Quiz # 1**

**2nd Major Exam: December 10, 2007**

---

**Student Name:**

**ID #**

---

**Solve Q1 and select either Q2 or Q3**

**Q1) [50 points]**

A 220/110 V, 10 kVA 1-phase transformer has a primary resistance of 0.4 ohms and a secondary resistance of 0.08 ohms (based on its own side).

Determine the total transformer power loss when operating at 80 percent of rated load and unity pf.

**Q2) [50 pts]**

A 200 V series motor has an armature resistance of 0.1 ohm and a field winding resistance of 0.04 ohms. It develops its full load torque at a speed of 600 rpm when the motor armature current is 55 A. If the motor operates at its 1/2 load torque, calculate:

- a) the current drawn by the motor,
- b) the speed of the motor.

**Q3) [50 pts]**

A 4-pole shunt generator with lap-connected armature having field and armature resistance of 50 and 0.1 ohm respectively. The generator supplies 60 lamps rated at 100-V, 40 W. Calculate:

- a) the total armature current,
- b) the generated emf.