**EEE 326 ELECTRICAL MACHINES TUTORIAL – WORKED EXAMPLE II**

**Q1. A 460V(line – to – line), 8 pole, Y – connected induction motor is operated at 4% slip and has the following parameters:**

**The core losses (losses in the stator and rotor core laminations), friction losses(bearing losses) and the windage losses(wind and air resistance) are 700 W.**

**Using the equivalent circuit of the IEEE recommended model, calculate the following:**

1. **the stator input current**
2. **the air – gap power**
3. **the rotor copper loss**
4. **the gross mechanical power**
5. **the shaft output power**
6. **label the circuit diagrams with appropriate parameters**

SOLUTION TO TUTORIAL QUESTION

Zin

Given parameters

**Line voltage,**

**No. of poles = 8**

**Slip, s = 4%**

**Total losses = 700W**

**Recall these basic equations;**

**……………………………(1)**

**…………………………….. (2)**

**……………………………………..(3)**

**………………………..(4)**

**…………………………(5)**

**………………(6)**

**To determine the air - gap power, subtract the stator loss from the input power or**

**The developed power or gross mechanical power is**

**From the current divider rule,**

**(ii) Air – gap Power**

**;**

**(iii) Rotor Copper loss, =**

**(iv)**

**(v) OR**