

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

Electrical Engineering Department

EE 306 : Electromechanical Devices

Exam # 1: November 3, 2007

Instructor: Dr. Zakariya Al-Hamouz

Q1) A three phase load consists of a resistance of 20Ω and a reactance of 15Ω are connected in star to 400 V, 3-phase, 60- Hz supply. Calculate:

- (a) the line current, (b) power supplied to the load, and (c) the power factor.
- (d) If three equal capacitors are connected in delta to the same supply so as to form parallel circuit with the three phase load, calculate the capacitance of each capacitor to obtain a resulting power factor of 0.95.

Q2) The figure shows a ferromagnetic core with an air gap of 0.05 cm. The relative permeability of the core is 2000.

- a) draw an equivalent magnetic circuit.
- b) Calculate the current I needed to produce a flux density of 0.4 Tesla in the air gap.

