KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

ELECTRICAL ENGINEERING DEPARTMENT

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EE-463 -131

Key Solutions

Quiz 1 ser#: I.D.: Name:

Q.1 An inductive load consisting of R and X in parallel feeding from a 2400-V rms supply absorbs 288 kW at a lagging power factor of 0.8. Determine R and X.

a. R = 26.7 Ohm ; X = 20.0 Ohm

b. R = 20.0 Ohm ; X = 26.7 Ohm

c. R = 0.05 Ohm ; X = 0.0375 Ohm

d. R = 0.0375 Ohm ; X = 0.05 Ohm

Q.2 A 40-MVA, 20-kV/400-kV, single-phase transformer has the following series impedances: $Z_1 = 0.9 + j1.8$ Ohm (referred to the low-voltage side) and $Z_2 = 128 + j288$ Ohm (referred to the high-voltage side). Using the transformer rating as base, determine the per unit equivalent impedance of the transformer referred to the low-voltage side. Compute the per unit equivalent impedance using the ohmic value referred to the high-voltage side.

a. 1.22 + j 2.52 ; 488 + j 1008

b. 0.122 + j 0.252 ; 4.88 + j 100.8

c. 0.122 + j 0.252 ; 0.122 + j 0.252

d. 4.88 + j 100.8 ; 4.88 + j 100.8