KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

ELECTRICAL ENGINEERING DEPARTMENT

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EE-306

Key Solution

Quiz 1   Sec.: 3   I.D.:   Name:

A three-phase substation bus supplies a wye-connected load through a three-phase feeder with impedance of 0.5 + j 2.0 Ohm per phase. The load draws 36 kVA at 0.9 leading power factor. The line-to-line voltage at the load is 460 V.

The impedance for each phase of the load is

   a. $Z_L = 5.88\angle 25.8^o\,\Omega$

   b. $Z_L = 5.88\angle -25.8^o\,\Omega$

   c. $Z_L = 3.4\angle 25.8^o\,\Omega$

   d. $Z_L = 3.4\angle -25.8^o\,\Omega$

$I = 36\,/\,(\text{sqrt}(3)*460) = 45.18\angle 25.8^o$ A

$Z_L = (\,460\,/\,\text{sqrt}(3)\,)\,/\,45.18\angle 25.8^o = 5.88\angle -25.8^o\,\Omega$