KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

ELECTRICAL ENGINEERING DEPARTMENT

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EE-306

Key Solution

Quiz 1a Ser. #: I.D.: Name:

Q.1 Three identical impedances of 4 - *j*3 Ohm are delta-connected and supplied from a three-phase source of 208-V line-line. The phase and line currents absorbed by the load are

a. $I_{ph} = 41.6 \angle - 36.87^o$ A ; $I_{Line} = 72.05 \angle - 66.87^o$ A

b. $I_{ph} = 41.6 \angle + 36.87^o$ A ; $I_{Line} = 72.05 \angle + 6.87^o$ A

c. $I_{ph} = 24.02 \angle - 36.87^o$ A ; $I_{Line} = 41.6 \angle - 36.87^o$ A

d. $I_{ph} = 24.06 \angle + 36.87^o$ A ; $I_{Line} = 41.6 \angle + 6.87^o$ A

Q.2 A three-phase substation bus supplies two wye-connected loads that are connected in parallel. Load 1 draws 50 kW at 0.866 leading power factor, and load 2 draws 36 kVA at 0.9 lagging power factor. The line-to-line voltage at the loads is 460 V.

Total real and reactive power supplied by the substation bus is

a. P = 98.4 kW ; Q = 78.9 kVAR (inductive)

b. P = 98.4 kW ; Q = 13.17 kVAR (capacitive)

c. P = 82.4 kW ; Q = 78.9 kVAR (inductive)

d. P = 82.4 kW ; Q = 13.17 kVAR (capacitive)