

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

ELECTRICAL ENGINEERING DEPARTMENT

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EE-306 (141)

Key Solutions

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

Q.1 Three-phase 230-V source is connected via a transmission line to a Y-connected load. The per-phase impedance of the transmission line is 1 Ohm. The per-phase impedance of the load is $3 + j4$ Ohm. The phase and line currents of the load are

- a. $I_{ph} = 23.48 \angle -45^\circ \text{ A}$; $I_{Line} = 23.48 \angle -45^\circ \text{ A}$
- b. $I_{ph} = 23.48 \angle -45^\circ \text{ A}$; $I_{Line} = 40.67 \angle -75^\circ \text{ A}$
- c. $I_{ph} = 40.67 \angle -75^\circ \text{ A}$; $I_{Line} = 40.67 \angle -75^\circ \text{ A}$
- d. $I_{ph} = 26.56 \angle -53.13^\circ \text{ A}$; $I_{Line} = 26.56 \angle -53.13^\circ \text{ A}$

Q.2 Three-phase 230-V source is connected via a transmission line to a Y-connected load. The per-phase impedance of the transmission line is 1 Ohm. The per-phase impedance of the load is $3 + j4$ Ohm. The phase and line voltages of the load are

- a. $V_{ph} = 132.7 \angle 0^\circ \text{ V}$; $V_{Line} = 230 \angle 30^\circ \text{ V}$
- b. $V_{ph} = 117.4 \angle 8.13^\circ \text{ V}$; $V_{Line} = 117.4 \angle 8.13^\circ \text{ V}$
- c. $V_{ph} = 117.4 \angle 8.13^\circ \text{ V}$; $V_{Line} = 203 \angle 38.13^\circ \text{ V}$
- d. $V_{ph} = 203 \angle 38.13^\circ \text{ V}$; $V_{Line} = 203 \angle 38.13^\circ \text{ V}$