KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

ELECTRICAL ENGINEERING DEPARTMENT
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Quiz 4   ser#:   I.D.:   Name:

Q.1 The phase "a" zero and positive sequence components of an unbalanced set of voltages are
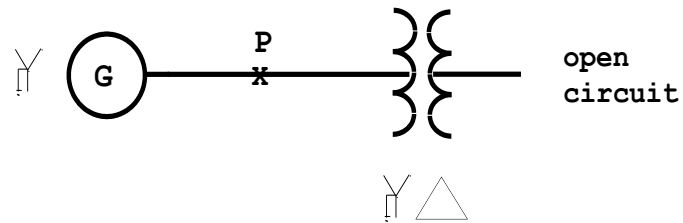
$$V^o = 0.5 - j\,0.866 \qquad\qquad V^1 = 2.0$$

The phase "a" voltage is

$$V_a = 3.0$$

Obtain the negative sequence component and the "b" and "c" phase voltages.

Q.2 Consider the one-line diagram of a line connected between a generator and a transformer as shown below. For a line-to-ground fault at point P (in the middle of the line), find the faulted current. (Use the impedance method for fault analysis.) All numbers on the one-line diagram indicate the values of the reactances in per unit on a common system base.

$X^1 = X^2 = j\, 0.1$ pu, $X^0 = j\, 0.05$ pu   (for the Generator)

$X^1 = X^2 = j\, 0.4$ pu, $X^0 = j\, 0.8$ pu   (for the Line)

$X^1 = X^2 = X^0 = j\, 0.05$ pu   (for the Transformer)