For a 75-kVA, 60-Hz, 4600/240 V distribution transformer whose resistances and leakage reactances are (in ohms):

$$R_1 = 0.846,\ R_2 = 0.00261,\ X_1 = 26.8,\ X_2 = 0.0745,\ R_c = 220000,\ X_\mu = 112000$$

Write a computer program to perform the following:

For LV side operating at 240 V:

a. Plot the HV side terminal voltage as a function of the power factor angle at full-load as the load power factor varies from 0.6 pf leading through unity pf to 0.6 pf lagging.
b. Plot the efficiency and regulation for the same pf range at full-load, half-load and quarter-load conditions.

If the HV transformer tappings is limited to ±5%, comment on the results above.