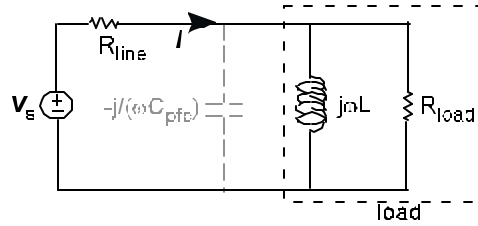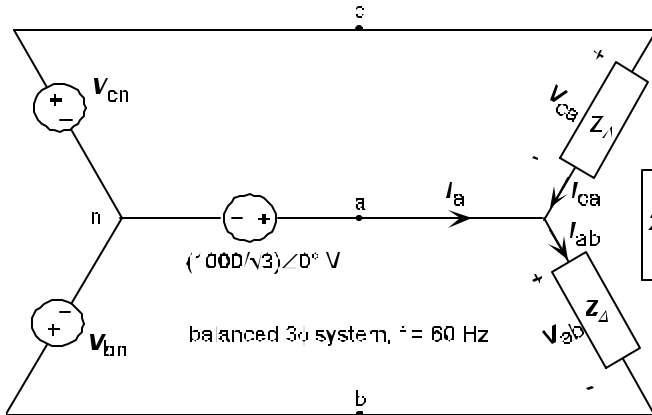Mark *each* True/False as either *T* or *F*. (1pt each)

for the next THREE questions

$R_{line} \ll R_{load}$

___ To achieve a given power factor, the required C_{pfc} increases as L decreases.
Why or why not? _____
_____

___ As the pf is increased toward 1, |*I*| will decrease which will increase the %VR.
___ Decreasing R_{line} will allow a smaller C_{pfc} to be used to achieve a given %η and %VR.

$Z_\Lambda = 100\angle 45°\ \Omega$ for the next FIVE questions

balanced 3φ system, f = 60 Hz

___ The instantaneous power delivered to the 3φ load is independent of time.
___ V_{bn} = (1000/√3)∠-120° V and V_{ab} = 1000∠30° V
___ I_{ab} = 10∠-45° A
___ $v_{ca}(t) = 1000\sqrt{2}\ \cos\left(2p60t + 150°\right)$ V
___ P_{3f} = 10 cos 45° KW
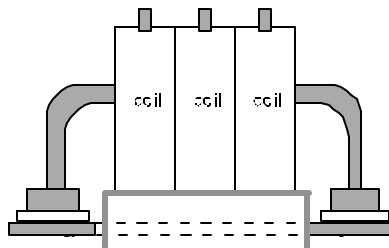
system used for
the next two questions

___ Suppose an electromagnet is energized with 10VDC. Its lifting ability would be lower if it were
energized with an AC voltage of 10 V.
Why or why not? _____
_____

___ Suppose that, with a given current, an electromagnetic with 3 identical coils exerts a 9N force.
With the same current, an electromagnet with 2 of the same coils could only exert 6N.