

Example: Transformer

Find the equivalent circuit of a 50 kVA, 2400/240 V transformer. The following readings were obtained from short circuit and open circuit tests:

Test	V-meter (V)	A-meter (A)	W-meter (W)
Short Circuit	48	20.8	617
Open Circuit	240	5.41	186

If rated voltage is available at the load terminals, calculate the transformer efficiency at

- (a) full load at 0.8 lagging and unity power factor **[Answer: 98.03%, 98.4%]**
- (b) 60% load at 0.8 lagging p.f. **[Answer: 98.33%]**
- (c) What is the maximum efficiency of the transformer, and at what % of full load does it occur? **[Answer: 98.67%, at 55% load]**
- (d) What is the voltage at the primary HV terminals of the transformer when it is 60% loaded with 0.8 p.f. lagging? **[Answer: 2427.9 V]**