Supplementary practice problems for the final exam

March 14, 2012

1 From the book:

Chapter 24, #1, 17, 18

2 More problems:

2.1

A transformer consists of a 500-turn primary coil and a 2 000-turn secondary coil. If the current in the secondary is 3.00 A, what is the primary current?

2.2

An AC adapter for a telephone-answering unit uses a transformer to reduce the line voltage of 120 V (rms) to a voltage of 9.0 V. The rms current delivered to the answering system is 400 mA.

(a) If the primary (input) coil in the transformer in the adapter has 240 turns, how many turns are there on the secondary (output) coil?

(b) What is the rms power delivered to the transformer? Assume an ideal transformer.

2.3

What is the resistance of a lightbulb that uses an average power of 75.0 W when connected to a 60-Hz power source with an peak voltage of 170 V?

2.4

What is the maximum current delivered to a circuit containing a 2.20-F capacitor when it is connected across

(a) an outlet having Vmax 120 V and f 60.0 Hz? and

(b) an outlet having Vmax 240 V and f 50.0 Hz?