Higher AC Circuits Answers

1. a) $V_p = 1.25V$.

b) $V_{rms} = 0.88V$.

c) f = 20Hz.

d) The number of waves would half from 2 to 1.

2. a) Defined as being equal to the value of the direct voltage or current, which gives rise to the same heating effect, i.e power output.

b) 12V ac power supply is the rms voltage. Equivalent DC voltage = 12V.

3. a) 230V ac.

b) $V_p = 325V$.

c) The average ac voltage would technically be 0V. i.e the positive and negative parts of the wave would cancel each other out.

4. a) An oscilloscope.

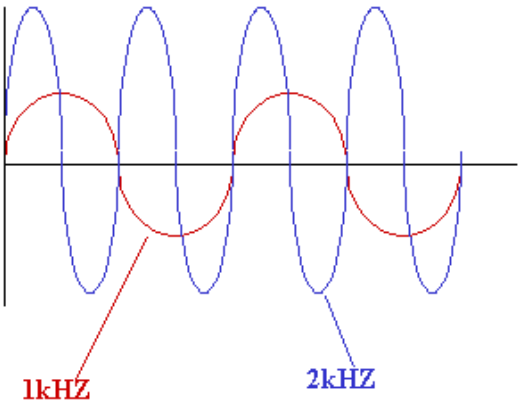
b) An ac voltmeter.

c) An oscilloscope or a dc voltmeter.

5. a) $I_p = 7.07A$.

b) P = 40W.

6. To increase the current in the circuit, as the supply frequency is increased, the voltage across the resistor must increase.



7. a) V_{rms} = 7.07V.

b) f = 625Hz.

8. a) f = 100Hz.

b) The amplitude of the waves displayed on the oscilloscope will be unchanged,

though five complete waves will now appear on the screen.

9. a) i) Y- gain = 5V div^{-1}.

ii) f = 400Hz.

10. The effective resistance of the capacitor in the circuit decreases as the frequency of the supply increase. As the resistance decreases the current in the circuit increases and the lamp glows more brightly.