**Chapter 33. Alternating Current Circuits**

St. ID: , Name:

1. The current in the circuit shown in Figure P32.3 equals 60.0% of the peak current at *t* = 7.00 ms. What is the lowest source frequency that gives this current.

Ans: f = 14.6 Hz

1. In the AC circuit shown in Figure P32.3, *R* = 70.0 V and the output voltage of the AC source is ∆*V*max sin *ωt.* (a) If ∆*VR* = 0.250 ∆*V*max for the first time at *t* = 0.010 0 s, what is the angular frequency of the source? (b) What is the next value of *t* for which ∆*VR* = 0.250 ∆*V*max?

Ans: (a) ω= 25.3 rad/s (b) t= 0.114 s

1. What is the maximum current in a 2.20-*m*F capacitor when it is connected across (a) a North American electrical outlet having ∆*V*rms = 120 V and *f* = 60.0 Hz and (b) a European electrical outlet having ∆*V*rms = 240 V and *f* = 50.0 Hz?

Ans: (a) Imax = 141mA (b) Imax = 235 mA

1. An AC source with ∆*V*max = 150 V and *f* = 50.0 Hz is connected between points *a* and *d* in Figure P32.16. Calculate the maximum voltages between (a) points *a* and *b*, (b) points *b* and *c*, (c) points *c* and *d*, and (d) points *b* and *d.*

Ans: (a) 146V (b) 212V (c) 179V (d) 33.4V