Attribution Nidhal Abdulaziz

Tutorial 8 additional solutions

Question 8

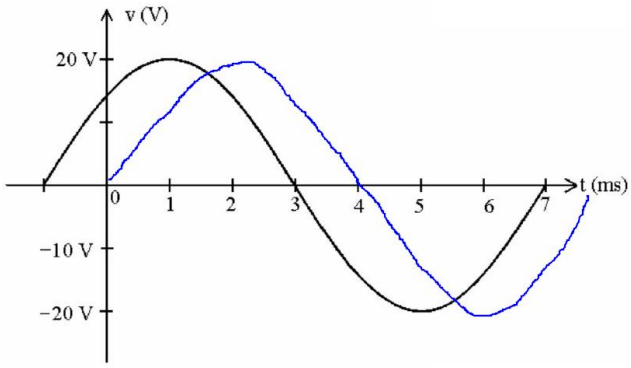

Figure 13.4

8) See Figure 13.4. Write the general voltage equation that describes this waveform. 8) $20 \sin(250 \pi)t + 45$

Q-8

$V = V_p \sin(\omega t + \theta)$

$V = 20 \sin(2\pi \cdot f + \theta)$

$f = \frac{1}{T} = \frac{1}{8 \text{ msec}} = 125 \text{ Hz}$

$\theta = \frac{\Delta t}{T} \times 360^\circ = \frac{1 \text{ div}}{8 \text{ div}} \times 360^\circ$

$\theta = 45^\circ$

$V = 20 \text{ V} \sin(2\pi \times 125 t + 45^\circ)$

Question 22

$30 + j40 \leftarrow N \angle \theta^\circ$

$V_p = \sqrt{30^2 + 40^2} = 50\,V$

$\theta = \tan^{-1}\frac{40}{30} = 53.1^\circ$

$V = 50 \angle 53.1^\circ$

Question 39

Q.39 $V = \underset{\text{r.m.s}}{25} \angle 30^\circ$

$f = 1000\,Hz.$

$V_p = V_{r.m.s}\sqrt{2}$

$= 25 \times \sqrt{2} = 35$

$V = V_p \sin(\omega t + \theta)$

$V = 35 \sin(2\pi \times 1000 t + 30^\circ)\ (V)$

$V = 35 \sin(2000\pi t + 30^\circ)$