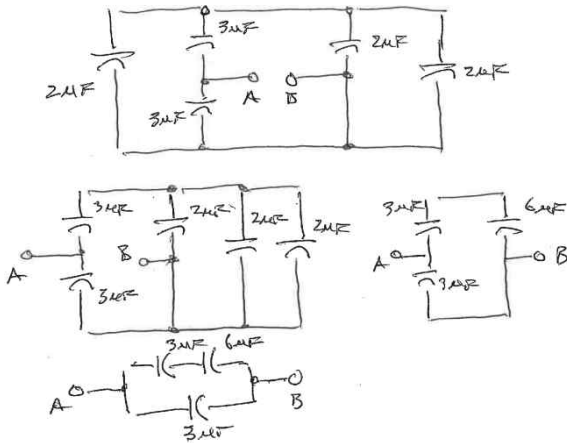
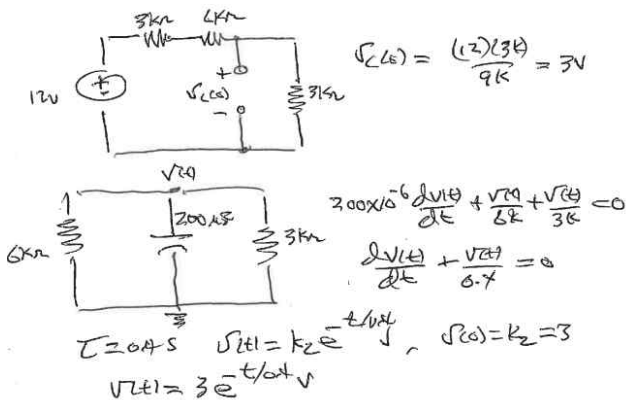


4.6



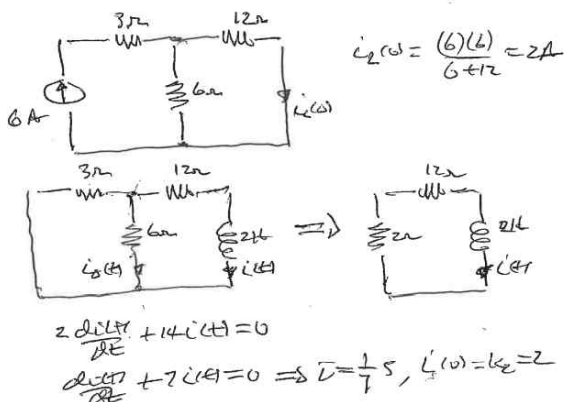
$$\therefore C_{AB} = 5 \mu F$$

4.22



$$\therefore i_o(t) = v(t)/3k = 1 e^{-t/0.4} mA$$

4.42



$$\therefore i(t) = 2 e^{-7t} A, i_o(t) = -i(t) \frac{3}{3+6} = -\frac{2}{3} e^{-7t} A$$

4.54

The characteristic Equation is

$$s^2 + \frac{R}{L}s + \frac{1}{LC} = 0$$

$$s^2 + 8s + 20 = 0$$

$$(s+4-j2)(s+4+j2) = 0$$

$$i(t) = e^{-4t} [k_1 \cos 2t + k_2 \sin 2t]$$

$$i(0) = 2 = k_1$$

$$\frac{di(t)}{dt} = e^{-4t} [-4 \sin 2t + 2k_2 \cos 2t]$$

$$-4 e^{-4t} [2 \cos 2t + k_2 \sin 2t]$$

$$\frac{dv(0)}{dt} = 2k_2 - 8$$

$$KVL \quad R i(0) + L \frac{di(0)}{dt} + v(0) = 0$$

$$(2)(2) + \frac{1}{4} \frac{dv(0)}{dt} + 8 = 0$$

$$\frac{dv(0)}{dt} = -32 = 2k_2 - 8$$

$$k_2 = -12$$

$$\therefore i(t) = 2 e^{-4t} \cos 2t - 12 e^{-4t} \sin 2t V$$