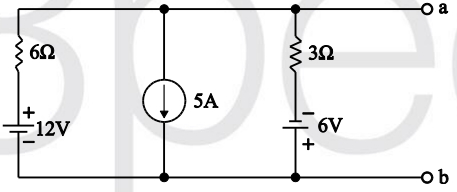
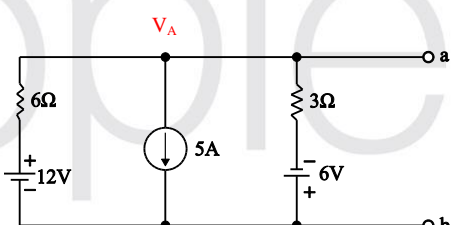


T054E20-1_《基本電學》_修訂表

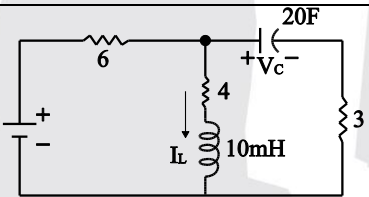
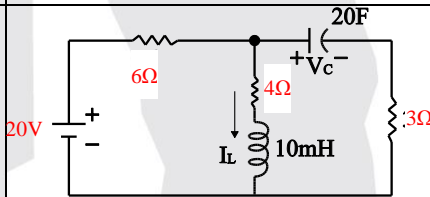
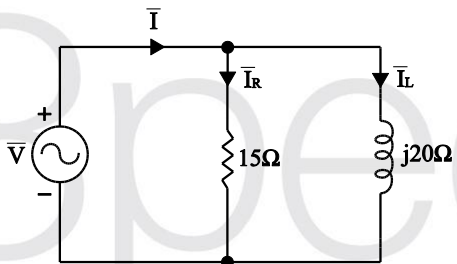
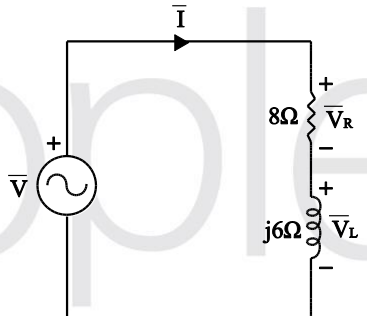
【十版_2020/01/17】

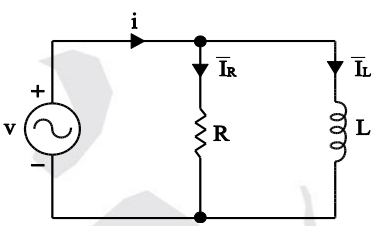
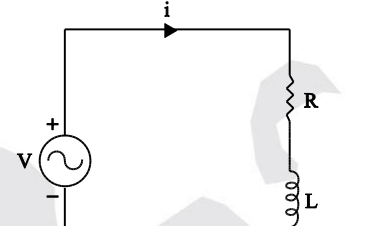
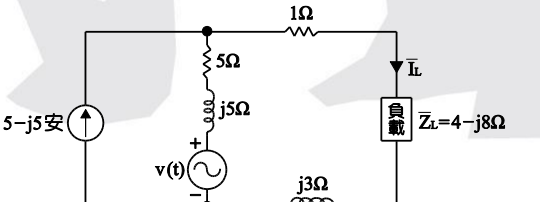
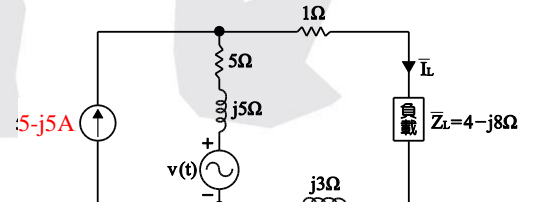
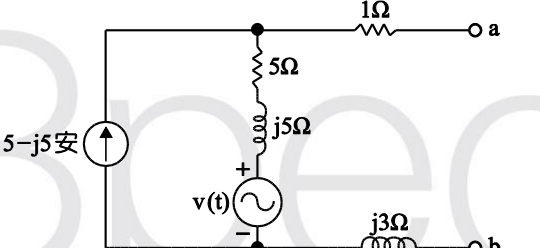
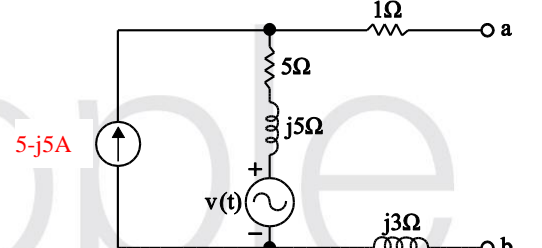
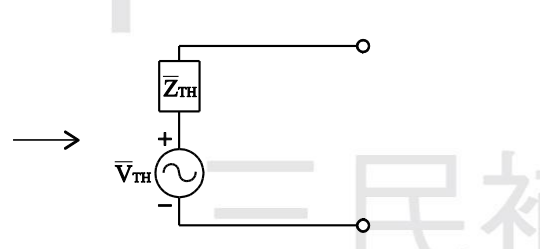
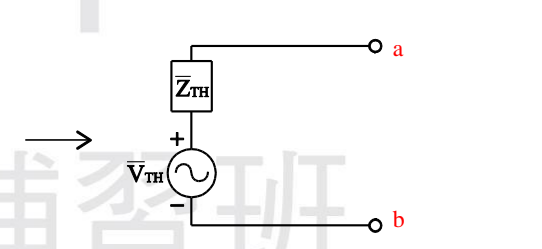
頁數	修訂處	原文	修正	備註
13	實戰模擬 檢測解析 Q10	$5 \times 10^{-3} \times t = 4 \times 10^{18} \times 1.62 \times 10^{-19}$ $\Rightarrow t \approx 128.2$	$5 \times 10^{-3} \times t = 4 \times 10^{18} \times 1.602 \times 10^{-19}$ $\Rightarrow t \approx 128.2$	
	實戰模擬 檢測解析 Q13	$\eta_T = \eta_1 \times \eta_2 \times \eta_3 = 0.9 \times 0.9 \times 0.9 = 0.729$ $\cong 0.732$	$\eta_T = \eta_1 \times \eta_2 \times \eta_3 = 0.9 \times 0.9 \times 0.9 = 0.729$ $\cong 0.73$	
	實戰模擬 檢測解析 Q15	$W = P \cdot t = 3000 \times 1 \times 30 = 90 \text{ kW/hr} = 90 \times 2 = 180 \text{ 元}$	$W = P \cdot t = 3000 \times 1 \times 30 = 90 \text{ kW/hr} \Rightarrow 90 \times 2 = 180 \text{ 元}$	
	實戰模擬 檢測解析 Q16	$W = Pt = 100 \times 20 = 2 \text{ (kW/hr)}$	$W = Pt = 100 \times 20 = 2000 \text{ (W/hr)} = 2 \text{ (kW/hr)}$	
14	二、決定電 阻值大小 的因素	(三) $R = \rho \frac{l}{A}$	(三) $R = \rho \frac{l}{A}$	
24	實戰模擬 檢測解析 Q1	$R_A = \rho \frac{l}{A} = 100 \Omega \cdot R_B = \rho \frac{l}{4A} = 12.5 \Omega$	$R_A = \rho \frac{l}{A} = 100 \Omega \cdot R_B = \rho \frac{l}{4A} = 12.5 \Omega$	
	實戰模擬 檢測解析 Q7	$P_{\text{loss}} = I^2 R = I^2 \times 5 = 5 \text{ W}$	$P_{\text{loss}} = I^2 R = I^2 \times 5 = 5 \text{ W}$	
	實戰模擬 檢測解析 Q11	$5^2 \times 20 \times 50 \times 60 \times 0.24 = 3600 \times 1 \times (T - 20)$ $\Rightarrow T = 30$	$5^2 \times 20 \times 5 \times 60 \times 0.24 = 3600 \times 1 \times (T - 20)$ $\Rightarrow T = 30$	
	實戰模擬 檢測解析 Q12	歐姆：電阻單；安培：電流；焦耳：能量。	歐姆：電阻；安培：電流；焦耳：能量。	

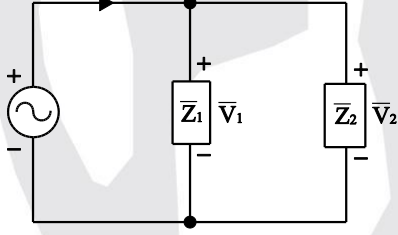
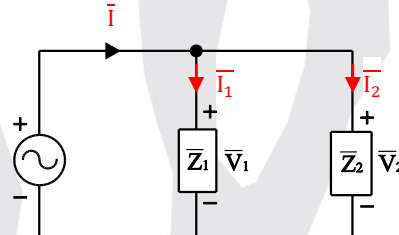
25	實戰模擬 檢測解析 Q17	$\frac{10}{12} = \frac{\frac{1}{\alpha_0} + 20}{\frac{1}{\alpha_0} + 50}$ 解之 $\frac{1}{\alpha_0} = \frac{1}{130} = 0.0077$	$\frac{10}{12} = \frac{\frac{1}{\alpha_0} + 20}{\frac{1}{\alpha_0} + 50} \Rightarrow \alpha_0 = \frac{1}{130} = 0.0077$	
41	實戰模擬 檢測解析 Q6	$I = \frac{20 - 4}{2k + 6k} = 2mA \quad \therefore R = \frac{4}{2m} = 2k\Omega$	$I = \frac{20 - 4}{2k + 6k} = 2mA \quad \therefore R = \frac{4}{2m} = 2k\Omega$	
	實戰模擬 檢測解析 Q14	$V_b = 12 \times \frac{4}{8 + 4} = 4V$ $\Rightarrow V_a - V_b = 8 - 4 = 4B$	$V_b = 12 \times \frac{4}{8 + 4} = 4V$ $\Rightarrow V_a - V_b = 8 - 4 = 4V$	
42	實戰模擬 檢測解析 Q24	$V_x = -10 \times \frac{20}{15 + 10 + 5 + 20} = -4V$	$V_x = -10 \times \frac{20}{15 + 10 + 5 + 20} = -4V$	
	實戰模擬 檢測解析 Q27	$V_{R_2} = 40 \times \frac{R_2}{R_1 + R_2} = \frac{40}{6}$	$V_{R_2} = 40 \times \frac{R_2}{R_1 + R_2} = \frac{40}{6}$	
	實戰模擬 檢測解析 Q30	a、b 兩點間為 短路 $\therefore V_b = V_a = 60V$	a、b 兩點間為 斷路 $\therefore V_b = V_a = 60V$	
48	範例練習 解析	(4)將上式分別代入(1)式得： $\frac{24 - V_A}{6} = \frac{V_A + 12}{2} = \frac{V_A}{3}$	(4)將上式分別代入(1)式得： $\frac{24 - V_A}{6} = \frac{V_A + 12}{2} + \frac{V_A}{3}$	
49	範例練習 解析	(4)依歐姆定律並代入上式可得： $\frac{V_B}{3} = \frac{V_B + 6}{2} = \frac{12 - V_B}{6}$	(4)依歐姆定律並代入上式可得： $\frac{V_B}{3} + \frac{V_B + 6}{2} = \frac{12 - V_B}{6}$	
56	範例練習 解析	 依節點電壓法： $\frac{V_A - 12}{6} + \frac{V_A + 6}{3} + 5 = 0$	 依節點電壓法： $\frac{V_A - 12}{6} + \frac{V_A + 6}{3} + 5 = 0$	
61	第二行下 的圖說	戴維寧等效 網路 諾頓等效 網路	戴維寧等效 電路 諾頓等效 電路	

65	二、公式	$V_{ab} = \frac{\frac{E_1}{R_1} + \frac{E_2}{R_2} + \frac{E_2}{R_2} + \frac{E_2}{R_2} + \dots + \frac{E_2}{R_2}}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4} + \dots + \frac{1}{R_N}}$ $= \frac{\sum_{k=1}^N \frac{E_k}{R_k}}{\sum_{k=1}^N \frac{1}{R_k}} = \frac{\sum_{k=1}^N E_k \times G_k}{\sum_{k=1}^N G_k}$	$V_{ab} = \frac{\frac{E_1}{R_1} + \frac{E_2}{R_2} + \frac{E_3}{R_3} + \frac{E_4}{R_4} + \dots + \frac{E_N}{R_N}}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4} + \dots + \frac{1}{R_N}}$ $= \frac{\sum_{k=1}^N \frac{E_k}{R_k}}{\sum_{k=1}^N \frac{1}{R_k}} = \frac{\sum_{k=1}^N E_k \times G_k}{\sum_{k=1}^N G_k}$	
66	第一行	$\Rightarrow V_{ab} = \frac{\frac{E_1}{R_1} + \frac{E_2}{R_2} + \frac{E_2}{R_2} + \frac{E_2}{R_2} + \dots + \frac{E_2}{R_2}}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4} + \dots + \frac{1}{R_N}}$	$\Rightarrow V_{ab} = \frac{\frac{E_1}{R_1} + \frac{E_2}{R_2} + \frac{E_3}{R_3} + \frac{E_4}{R_4} + \dots + \frac{E_N}{R_N}}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4} + \dots + \frac{1}{R_N}}$	
	第三行	$V_{ab} = \frac{I_1 + I_2 + I_3 + \dots + I_N}{\frac{1}{R_1} + \frac{1}{R_1} + \frac{1}{R_1} + \frac{1}{R_1} + \dots + \frac{1}{R_1}}$ $= \frac{I_1 + I_2 + I_3 + \dots + I_N}{G_1 + G_2 + G_3 + \dots + G_N}$	$V_{ab} = \frac{I_1 + I_2 + I_3 + \dots + I_N}{\frac{1}{R_1} + \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \dots + \frac{1}{R_N}}$ $= \frac{I_1 + I_2 + I_3 + \dots + I_N}{G_1 + G_2 + G_3 + \dots + G_N}$	
66	範例練習 解析	<p>(1)利用密爾門定理：</p> $V_{ab} = \frac{\frac{24}{6} + \frac{36}{12} + \frac{0}{3} + \frac{20}{4}}{\frac{1}{6} + \frac{1}{12} + \frac{1}{3} + \frac{1}{4}}$ $= \frac{4 + 3 + 0 - 5}{\frac{2 + 1 + 4 + 3}{12}} = 2.4 \text{ (V)}$ <p>(2)先將 a、b 斷路，再利用密爾門定理求 V_{TH}：</p> $V_{TH} = \frac{\frac{24}{6} + \frac{36}{12} + \frac{20}{4}}{\frac{1}{6} + \frac{1}{12} + \frac{1}{4}} = \frac{4 + 3 - 5}{\frac{2 + 1 + 3}{12}} = 4 \text{ (V)}$	<p>(1)利用密爾門定理：</p> $V_{ab} = \frac{\frac{24}{6} + \frac{36}{12} + \frac{0}{3} - \frac{20}{4}}{\frac{1}{6} + \frac{1}{12} + \frac{1}{3} + \frac{1}{4}}$ $= \frac{4 + 3 + 0 - 5}{\frac{2 + 1 + 4 + 3}{12}} = 2.4 \text{ (V)}$ <p>(2)先將 a、b 斷路，再利用密爾門定理求 V_{TH}：</p> $V_{TH} = \frac{\frac{24}{6} + \frac{36}{12} - \frac{20}{4}}{\frac{1}{6} + \frac{1}{12} + \frac{1}{4}} = \frac{4 + 3 - 5}{\frac{2 + 1 + 3}{12}} = 4 \text{ (V)}$	
73	實戰模擬 檢測解析 Q4	<p>由節點電壓法可得</p> $\frac{V - 16}{4} + \frac{V - 24}{3} + \frac{V - 6}{12} = 0 \Rightarrow V = 13V$	<p>由節點電壓法可得</p> $\frac{V - 16}{4} + \frac{V - 12}{6} + \frac{V - 6}{12} = 0 \Rightarrow V = 13V$	
	實戰模擬 檢測解析 Q9	$\frac{1}{500K} = \frac{1}{2K} + \frac{1}{4K} + \frac{1}{R} \Rightarrow R = 800\Omega$	$\frac{1}{0.5K} = \frac{1}{2K} + \frac{1}{4K} + \frac{1}{R} \Rightarrow R = 800\Omega$	
74	實戰模擬 檢測解析 Q19	<p>利用節點電壓法</p> $i_1 + \frac{V}{2} + 2i_1 + 4 \Rightarrow i_1 = \frac{V}{6} \cdot \text{可得 } V = 12V$	<p>利用節點電壓法</p> $\begin{cases} i_1 + \frac{V}{2} = 2i_1 + 4 \\ i_1 = \frac{V}{6} \end{cases} \cdot \text{可得 } V = 12(V)$	

	實戰模擬 檢測解析 Q20	$R_{TH} = (6 \parallel 4) + (3 \parallel 2) = \frac{8}{5} \Omega$	$R_{TH} = (6 \parallel 4) + (3 \parallel 2) = \frac{18}{5} (\Omega)$	
	實戰模擬 檢測解析 Q21	$R_{TH} = 6 \parallel 4 = \frac{12}{8} = 1.5 \Omega$	$R_{TH} = 6 \parallel 2 = \frac{12}{8} = 1.5 \Omega$	
	實戰模擬 檢測解析 Q22	此為惠斯登電橋，對 2Ω 電阻而言，電壓源為提供電能，故可以只考慮電流源的部分。	此為惠斯登電橋，對 2Ω 電阻而言，電壓源未提供電能，故可以只考慮電流源的部分。	
81	範例練習 解析	(3) $1\mu\text{F}$ 充電電量 $Q_1 = 100 \times 1 = 100\mu\text{C}$ $2\mu\text{F}$ 充電電量 $Q_1 = 100 \times 2 = 200\mu\text{C}$ $6\mu\text{F}$ 充電電量 $Q_2 = 50 \times 6 = 300\mu\text{C}$	(3) $1\mu\text{F}$ 充電電量 $= 100 \times 1 = 100\mu\text{C}$ $2\mu\text{F}$ 充電電量 $= 100 \times 2 = 200\mu\text{C}$ $6\mu\text{F}$ 充電電量 $= 50 \times 6 = 300\mu\text{C}$	
85	範例練習 第三題(4)	求電登平均消耗功率。	求電容平均消耗功率。	
89	實戰模擬 檢測解析 Q8	$C = \epsilon \frac{A}{d} = 8.85 \times 10^{-12} \times \frac{3 \times 10}{0.1} = 26.6\text{PF}$	$C = \epsilon \frac{A}{d} = 8.85 \times 10^{-12} \times \frac{3 \times 10 \times 10^{-4}}{0.1 \times 10^{-2}} = 26.6\text{PF}$	
90	實戰模擬 檢測解析 Q19	$\therefore C_2 = \frac{10\mu}{5} = 2\mu\text{F}$	$\therefore C_3 = \frac{10\mu}{5} = 2\mu\text{F}$	
	實戰模擬 檢測解析 Q24	$W = QV \times V \Rightarrow V = 1\text{V}$	$W = Q \times V \Rightarrow V = 1\text{V}$	
105	實戰模擬 檢測解析 Q7	$\frac{N_1}{N_2} = \frac{V_1}{V_2} \Rightarrow \frac{100}{10} = \frac{240}{V_2}$ $\therefore V_2 = 24\text{V}$ $\frac{N_1}{N_2} = \frac{i_2}{i_1} \Rightarrow \frac{100}{10} = \frac{240}{i_1}$ $\therefore i_1 = 0.01\text{A}$	$\frac{N_1}{N_2} = \frac{V_1}{V_2} \Rightarrow \frac{100}{10} = \frac{240}{V_2}$ $\therefore V_2 = 24\text{V}$ $\frac{N_1}{N_2} = \frac{i_2}{i_1} \Rightarrow \frac{100}{10} = \frac{0.1}{i_1}$ $\therefore i_1 = 0.01\text{A}$	
106	實戰模擬 檢測解析 Q13	$W = \frac{1}{2} L_1 L_2^2 - M I_1 I_2 = 325 - 255 = 70\text{J}$	$W = \frac{1}{2} L_1 I_1^2 + \frac{1}{2} L_2 I_2^2 - M I_1 I_2 = 325 - 255 = 70\text{J}$	

	實戰模擬 檢測解析 Q14	$\frac{16}{4} = \frac{500^2}{D} \Rightarrow D = 250$	$\frac{16}{4} = \left(\frac{500}{D}\right)^2 \Rightarrow D = 250$	
	實戰模擬 檢測解析 Q17	因 L 與 N 成反比 $\frac{10}{2.5} = \frac{100^2}{N} \Rightarrow N = 50$	因 L 與 N 成反比 $\frac{10}{2.5} = \left(\frac{100}{N}\right)^2 \Rightarrow N = 50$	
110	範例練習 解析	(1) $\tau = RC = 50 \times 10 \times 10^{-6} = 2$ 秒	(1) $\tau = RC = 50 \times 10 \times 10^{-6} = 5 \times 10^{-4}$ 秒	
123	第 8 題			
126	實戰模擬 檢測解析 Q11	$I_{2\Omega} = \frac{5 + 6 \times 3}{2 + 3} = 4.6V$	$I_{2\Omega} = \frac{5 + 6 \times 3}{2 + 3} = 4.6A$	
	範例練習 一解析	$(3)v\left(\frac{1}{120}\right) = 100 \sin\left(360^\circ \times 60^\circ \times \frac{1}{120} + 30^\circ\right)$	$(3)v\left(\frac{1}{120}\right) = 100 \sin\left(360^\circ \times 60 \times \frac{1}{120} + 30^\circ\right)$	
131	範例練習 二解析	(2) $f = \frac{377}{2\pi} = 60\text{Hz} \quad \therefore T = \frac{1}{f} = \frac{1}{50}$ 秒 (3) $v\left(\frac{1}{150}\right) = 100 \sin\left(360^\circ \times 50 \times \frac{1}{150} - 30^\circ\right)$ $= 100 \sin(120^\circ) = 50\sqrt{3}V$	(2) $f = \frac{314}{2\pi} = 50\text{Hz} \quad \therefore T = \frac{1}{f} = \frac{1}{50}$ 秒 (3) $v\left(\frac{1}{150}\right) = 100 \sin\left(360^\circ \times 50 \times \frac{1}{150} - 60^\circ\right)$ $= 100 \sin(60^\circ) = 50\sqrt{3}V$	
145	範例一			

146	範例二			
	範例二 解析	(4) $PF = \cos\theta = \frac{R}{Z} = \cos 60^\circ = 0.866$	(4) $PF = \cos\theta = \frac{R}{Z} = \cos 30^\circ = 0.866$	
149	倒數二行	$\frac{1}{Z} = \frac{1}{R} - j\frac{1}{X_L} = \frac{1}{R} + \frac{1}{jX_L} = \frac{R \cdot jX_L}{R + jX_L}$	$\frac{1}{Z} = \frac{1}{R} - j\frac{1}{X_L} = \frac{1}{R} + \frac{1}{jX_L} = \frac{R + jX_L}{R \cdot jX_L}$	
151	範例練習 二、解析	<p>(1) $\vec{I}_R = \frac{\vec{V}}{R} = \frac{120\angle 30^\circ}{\frac{15}{\sqrt{3}}} = 20\sqrt{3}\angle 30^\circ \text{ A}$</p> <p>$X_L = \omega L = 500 \times 20 \times 10^{-3} = 10\Omega$</p> <p>$\vec{I}_L = \frac{\vec{V}}{X_L \angle 90^\circ} = \frac{200\angle 30^\circ}{10\angle 90^\circ} = 20\angle -60^\circ \text{ A}$</p> <p>$I = \sqrt{(20\sqrt{3})^2 + 20^2} = 40\text{ A} \Rightarrow \vec{I} = 40\angle 0^\circ \text{ A}$</p> <p>$\therefore i = 40\sqrt{2}\sin 500t$</p> <p>(2) \vec{I} 滯後 \vec{V} 30°</p>	<p>(1) $\vec{I}_R = \frac{\vec{V}}{R} = \frac{200\angle 30^\circ}{\frac{10}{\sqrt{3}}} = 20\sqrt{3}\angle 30^\circ \text{ A}$</p> <p>$X_L = \omega L = 500 \times 20 \times 10^{-3} = 10\Omega$</p> <p>$\vec{I}_L = \frac{\vec{V}}{X_L \angle 90^\circ} = \frac{200\angle 30^\circ}{10\angle 90^\circ} = 20\angle -60^\circ \text{ A}$</p> <p>$I = \sqrt{(20\sqrt{3})^2 + 20^2} = 40\text{ A} \Rightarrow \vec{I} = 40\angle 0^\circ \text{ A}$</p> <p>$\therefore i = 40\sqrt{2}\sin 500t$</p> <p>(2) \vec{I} 滯後 \vec{V} 30°</p>	
	範例練習 題目			
158	範例練習 解析(1)左 圖			
	範例練習 解析(1)右 圖			

	範例練習 解析(3)	(3) $\vec{V}_{TH} = \vec{V}_{ab} = (5 - j5)(5 + j5) + 50\angle 0^\circ = 100\angle 0^\circ V$	(3) $\vec{V}_{TH} = \vec{V}_{ab} = (5 - j5)(5 + j5) + 50\angle 0^\circ = 100\angle 0^\circ V$	
160	範例練習 解析(2)	$\vec{I}_N = 10\angle 0^\circ \times \frac{-j6}{j8 - j6} = -30\angle 0^\circ = 10\angle 0^\circ V$	$\vec{I}_N = 10\angle 0^\circ \times \frac{-j6}{j8 - j6} = -30\angle 0^\circ = 30\angle 180^\circ A$	
168	實戰模擬 檢測解析 Q18	$\vec{V} = 100\angle -10^\circ V$ $\vec{I} = \frac{\vec{V}}{R} = \frac{100\angle -10^\circ}{10} = 10\angle -10^\circ A$ $\therefore i = 10\sin(377t - 10^\circ)$	$\vec{V} = \frac{100}{\sqrt{2}} \angle -10^\circ V$ $\vec{I} = \frac{\vec{V}}{R} = \frac{\frac{100}{\sqrt{2}} \angle -10^\circ}{10} = \frac{10}{\sqrt{2}} \angle -10^\circ A$ $\therefore i = 10\sin(377t - 10^\circ)$	
169	實戰模擬 檢測解析 Q20	$\vec{V}_C = 5\angle 0^\circ \times 25\angle -90^\circ = 125\angle -90^\circ$ $\therefore V_C(t) = 125\sin(377t - 90^\circ)$	$\vec{V}_C = \frac{5}{\sqrt{2}} \angle 0^\circ \times 25\angle -90^\circ = \frac{125}{\sqrt{2}} \angle -90^\circ$ $\therefore V_C(t) = 125\sin(377t - 90^\circ)$	
171	(二)標題 第一行	(-) $X_L > X_C$	(-) $X_L < X_C$	
178	並聯電路 分流定則			
185	實戰模擬 檢測解析 Q16	二阻抗分別為 $Z_1 = 3\angle 30^\circ$ 、 $Z_2 = 3\angle 90^\circ$ ，串聯後 阻抗為 (A) $6\angle 120^\circ$ (B) $6\angle 60^\circ$ (C) $33\angle 60^\circ$ (D) $3\angle 60^\circ$	二阻抗分別為 $Z_1 = 3\angle 30^\circ$ 、 $Z_2 = 3\angle 90^\circ$ ，串聯後 阻抗為 (A) $6\angle 120^\circ$ (B) $6\angle 60^\circ$ (C) $3\sqrt{3}\angle 60^\circ$ (D) $3\angle 60^\circ$	
	解析 Q16	$Z = 3\angle 30^\circ + 3\angle 90^\circ = 33\angle 60^\circ$	$Z = 3\angle 30^\circ + 3\angle 90^\circ = 3\sqrt{3}\angle 60^\circ$	
197	範例二 解析(4)	(4) $PF = \frac{P}{S} = \frac{600}{\sqrt{750^2 + 1000^2}} = 0.6$ 滯後	(4) $PF = \frac{P}{S} = \frac{750}{\sqrt{750^2 + 1000^2}} = 0.6$ 滯後	
203	實戰模擬 檢測解析 Q16	$P = \frac{1}{2} VI \cos\theta = \frac{1}{2} \times 50 \times 16 \times \cos 30^\circ = 346.3W$	$P = \frac{1}{2} VI \cos\theta = \frac{1}{2} \times 50 \times 16 \times \cos 30^\circ = 346.4W$	
	實戰模擬 檢測解析 Q19	$pf = \frac{8}{\sqrt{8^2 + 6^2}} = 0.8$	$PF = \frac{8}{\sqrt{8^2 + 6^2}} = 0.8$	

207	範例二 解析(1)	$\therefore L = \frac{1}{2\pi \times 100} = \frac{1}{\pi} \text{H}$	$\therefore L = \frac{200}{2\pi \times 100} = \frac{1}{\pi} \text{H}$	
105-7	7 題	$\eta = 0.8 \times 0.75 = 0.6 = \frac{P_{in}}{600}$ $\Rightarrow P_{in} = 1000(\text{W}) \cdot$ 故選(D)。	$\eta = 0.8 \times 0.75 = 0.6 = \frac{600}{P_{in}}$ $\Rightarrow P_{in} = 1000(\text{W}) \cdot$ 故選(D)。	
105-27	27 題			
106-3	13 題			
106-30	10 題 解析			
107-1	1 題			
107-4	22 題			
107-29	36 題			

107-45	21 題		
107-46	24 題		
107-49	44 題		
108-4	20 題		
108-5	23 題		
108-30	27 題		

108-38	16 題		
108-46	6 題		
108-72	15 題		

(更新日期：2021-04-23)

3people

三民補習班

更新紀錄

- 2021/04/21 新增第 151 頁、185 頁修訂。
- 2020/03/03 新增第 74 頁修訂。
- 2020/04/22 新增第 13、24、25、41、56、61、74、123、145、146、158、171、178、105-7、105-27、106-3、106-30、107-1、107-4、107-29、107-45、107-46、107-49、108-4、108-5、108-30、108-38、108-46、108-72 頁修訂。
- 2020/05/08 新增第 41、42、48、49、65、66、73、74、81、85、89、90、105、106、110、123、126、131、149、158、160、168、169、197、203、207



3people

三民補習班