

练习二（计算题）

1. $A+B=11+j2$, $A-B=5+j10$, $A*B=48-j14$, $A/B=j2$
2. $i_1+i_2=10\sqrt{2}\sin(\omega t+120^\circ)\text{ A}$
3. $I=2\text{ A}$, $P=200\text{ W}$
4. $x_L=50\ \Omega$, $u=141.4\sin(500t+60^\circ)\text{ V}$, $Q=200\ \text{乏}$
5. $x_C=10\ \Omega$, $i=15\sqrt{2}\sin(1000t+135^\circ)\text{ A}$, $Q_C=2250\ \text{乏}$
6. $Z_a=5+j=5.1\angle 11.31^\circ$, $Z_b=150/41+j120/41=3.66+j2.93=4.68\angle 38.58^\circ$
7. $L=0.064\text{ H}=64\text{ mH}$
8. $R=6\ \Omega$, $L=0.015\text{ H}$
9. $U=100\text{ V}$, $u_L=80\sqrt{2}\sin(314t+90^\circ)\text{ V}$
10. $\dot{I}=2\angle 0^\circ\text{ A}$, $\dot{U}=400\angle 60^\circ\text{ V}$
 $u_R=200\sqrt{2}\sin 500t\text{ V}$, $u_L=546\sqrt{2}\sin(500t+90^\circ)\text{ V}$, $u_C=200\sqrt{2}\sin(500t-90^\circ)\text{ V}$
11. $V_0=100\sqrt{2}\text{ V}$
12. $V=100\sqrt{5}=223.6\text{ V}$, $P=400\text{ W}$, $\cos\varphi=0.89$
13. $A_0=\sqrt{2}\text{ A}$, $\cos\varphi=0.707$
14. $R=40\ \Omega$, $x_L=30\ \Omega$, $\cos\varphi=0.8$
15. $R=65.8\ \Omega$, $L=0.369\text{ H}$
16. $R=x_L=141.4\ \Omega$, $L_0=0.185\text{ H}$
17. $\varphi=\psi_u-\psi_i=70^\circ-40^\circ=30^\circ$, $S=50\text{ VA}$, $P=43.3\text{ W}$, $Q=25\text{ Var}$
18. $R=11\ \Omega$, $L=0.061\text{ H}$, $\cos\varphi=0.5$
19. $I=10\sqrt{2}\text{ A}$, $R=x_C=10\sqrt{2}\ \Omega$, $x_L=5\sqrt{2}\ \Omega$
20. $\dot{E}_0=\frac{Z_3}{Z_1+Z_3}\dot{E}_1=50\text{ V}$, $Z_0=Z_1\parallel Z_3=10+j10\ \Omega$, $i_2=5\sqrt{2}\sin(1000t-60^\circ)\text{ A}$
21. $i_3=2.5\sqrt{2}\sin(1000t-90^\circ)\text{ A}$
22. $\dot{I}_3=j2.22=2.22\angle 90^\circ\text{ A}$
24. $K_{VS}=-8.89$
25. $Q_L=69.3\ \text{乏}$, $Q=19.4\ \text{乏}$, $Q_C=49.9\ \text{乏}$, $C=3.28\text{ 微法}$
26. $Q_L=266.7\ \text{乏}$, $Q=123.9\ \text{乏}$, $Q_C=142.8\ \text{乏}$, $C=9.4\text{ 微法}$
27. (1) $f_0=79.6\text{ Hz}$, $Q=100$ (2) $U=1000\text{ mV}$
28. $R=20\ \Omega$, $Q=50$, $x_L=1000\ \Omega$
29. $f_L=419.6\text{ kHz}$, $f_H=1592\text{ kHz}$
30. $\omega_0=\frac{1}{\sqrt{LC}}\cdot\sqrt{1-\frac{CR^2}{L}}$
31. $I_{\text{相}}=22\text{ A}$, $\cos\varphi=0.8$, $P_{\text{相}}=3872\text{ W}$, $P_{\text{总}}=3 P_{\text{相}}=11616\text{ W}$, $I_N=0$
32. (1) $\dot{E}_A=22\angle 0^\circ\text{ A}$, $\dot{E}_B=11\sqrt{2}\angle -165^\circ\text{ A}$, $\dot{E}_C=11\sqrt{2}\angle 165^\circ\text{ A}$, $\dot{E}_N=8.25\angle 0^\circ\text{ A}$
 (2) $\dot{U}_{N'}=-40.26\angle 0^\circ\text{ V}$, $\dot{E}_A=26.1\angle 0^\circ\text{ A}$, $\dot{E}_B=14.4\angle -204.8^\circ\text{ A}$, $\dot{E}_C=14.4\angle 204.8^\circ\text{ A}$