4-4

$$G(j\omega)=\frac{5}{0.25j\omega+1}$$

$$A(\omega)=\frac{5}{\sqrt{(0.25\omega)^2+1}}$$

$$\phi(\omega)=-\arctan(0.25\omega)$$

由 $x_i(t)=5\cos(4t-30^\circ)$

$$5A(4)=5\times\frac{5}{\sqrt{(0.25\times4)^2+1}}=\frac{25}{2}\sqrt{2}$$

$$\phi(4)=-\arctan(0.25\times4)-30^\circ=-75^\circ$$

得 $x_o(t)=\frac{25\sqrt{2}}{2}\cos(4t-75^\circ)$

4-6

a) $$\frac{1000\left(\frac{1}{400}s+1\right)}{\left(\frac{1}{2}s+1\right)\left(\frac{1}{20}s+1\right)\left(\frac{1}{4000}s+1\right)}$$

b) $$\frac{3.98}{\frac{1}{100}s+1}$$

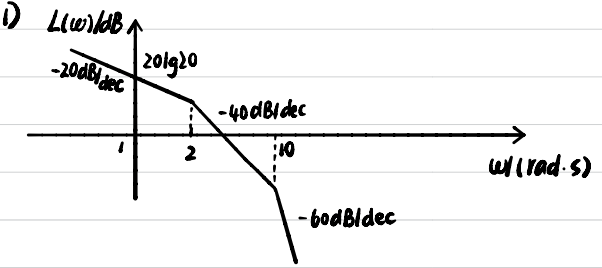
c) $$\frac{100\left(\frac{1}{100}s+1\right)}{s^2\left(\frac{1}{1000}s+1\right)}$$

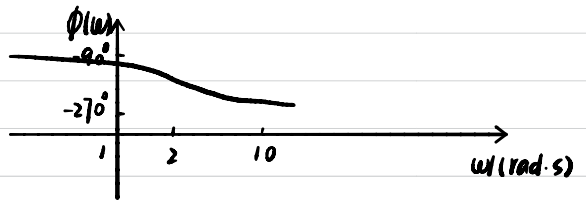
d) $$\frac{100\left(\frac{1}{10}s+1\right)}{s\left(\frac{1}{2}s+1\right)\left(\frac{1}{80}s+1\right)\left(\frac{1}{200}s+1\right)}$$

e) $$\frac{10(2s+1)}{(20s+1)(10s+1)}$$

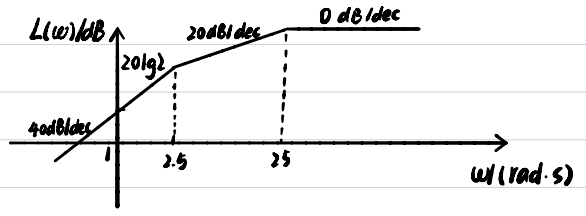
4-8

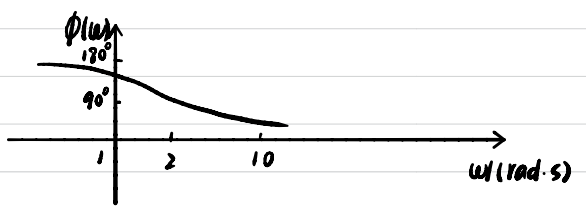
1)



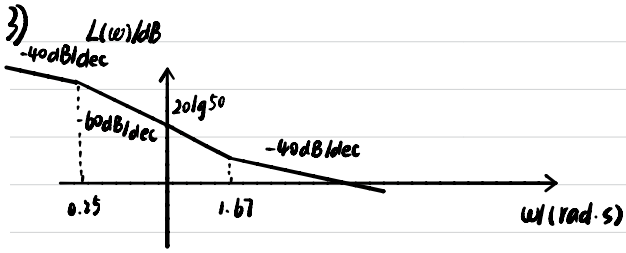


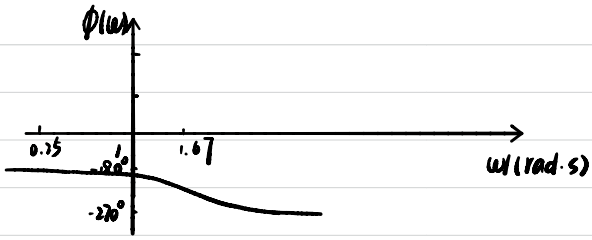
2)



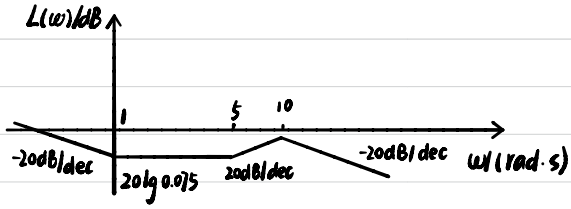


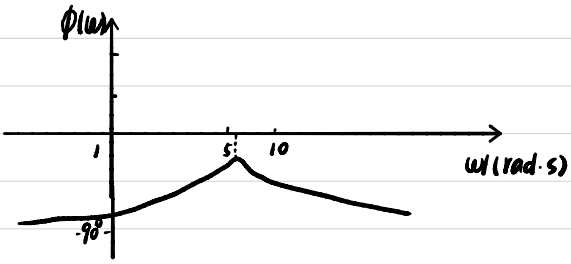
3)





4)





4-11

1) a+j 高通、超前网络
2) d+l 低通、滞后网络
3) e+k 高通、超前网络
4) f+h 高通、超前网络
5) g+i 带组、超前-滞后组合网络