4.4 The frequency response is

$$H(e^{j\omega T}) = a + b\,e^{-j\omega T} + c\,e^{-j2\omega T} + b\,e^{-j3\omega T} + a\,e^{-j4\omega T} =$$

$$= e^{-j2\omega T}\,[a\,e^{-j2\omega T} + b\,e^{j\omega T} + c + b\,e^{-j\omega T} + a\,e^{-j2\omega T}] =$$

$$= e^{-j2\omega T}\,[a\,cos(2\omega T) + c + b\,cos(\omega T)]$$

$$\Phi(\omega T) = arg\{\,[cos(2\omega T) - j\,sin(2\omega T)]\,\} \pm n\pi = arctan\{\frac{-sin(2\omega T)}{cos(2\omega T)}\} \pm n\pi$$

$$\Phi(\omega T) = -\,2\omega T \pm n\pi \qquad\qquad \text{Linear phase}$$

$$\tau_g(\omega T) = -\,\frac{\partial \Phi(\omega T)}{\partial \omega} = -\,2\,T \qquad\qquad \text{Constant group delay}$$