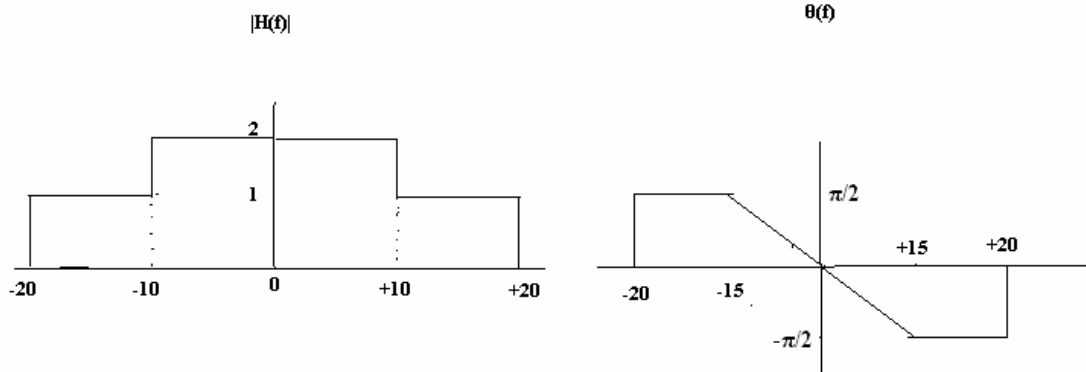


## TUTORIAL - 7

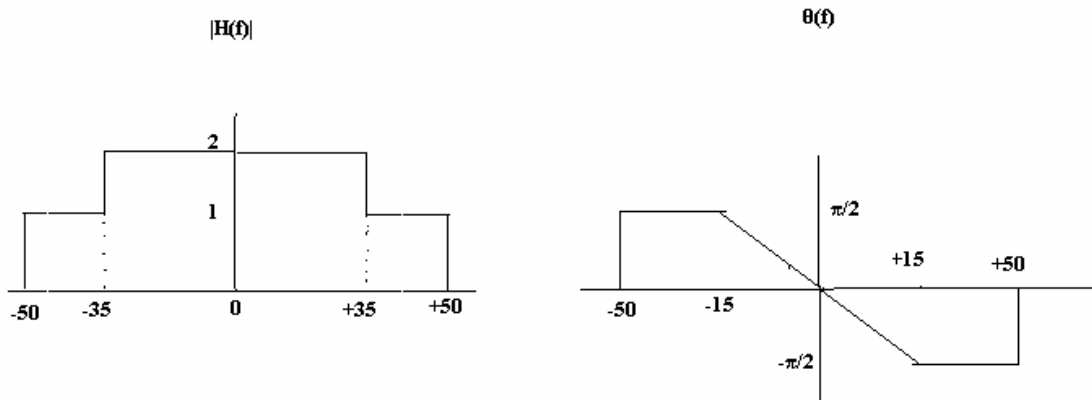
**Q.1.** Consider the system  $H(f)$  with magnitude and phase response as shown in figure below. Find the output for the given inputs and check what type of distortion is present at the output? Find the delay introduced by the system to the inputs given.

a)  $x_1(t) = 2\cos 10\pi t + \sin 26\pi t$

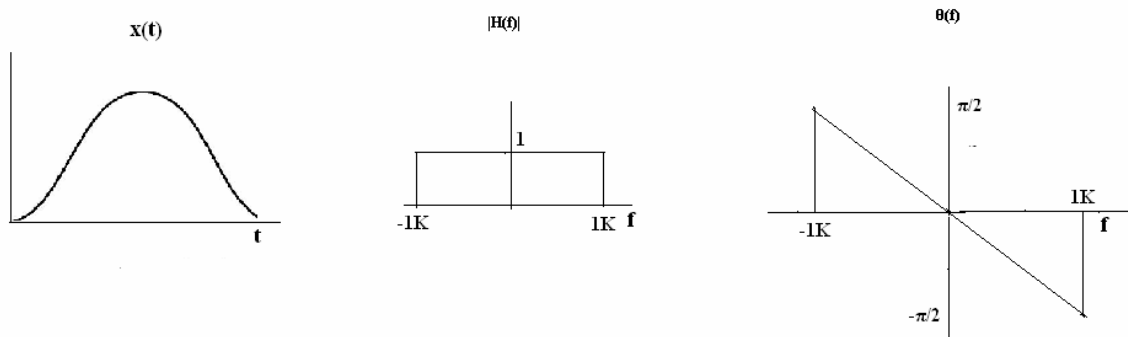
b)  $x_2(t) = 4\cos 5\pi t + \sin 60\pi t$



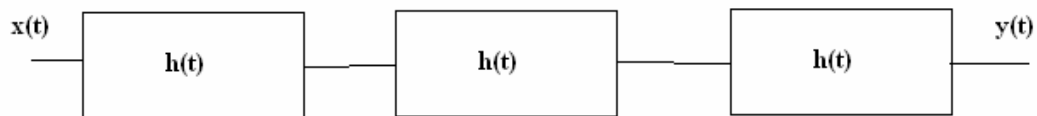
**Q.2.** Find the outputs for the same set of inputs with a different system whose  $|H(f)|$  and  $\theta(f)$  are shown below. Find the delay introduced by the system to both the input signals.



**Q.3.** The signal  $x(t)$  is given as shown in the figure below. The maximum frequency present in the signal is **100Hz**. Find the output when the signal is passed through a system with  $|H(f)|$  and  $\theta(f)$  as shown below.



**Q.4.** For the system shown in figure if  $x(t) = \cos t$  and  $h(t) = 1/\pi t$  then find the output  $y(t)$ ?



**Q.5.** Find the Fourier Transform of the Hilbert Transform of  $1/(1+t^2)$