

## ECE 232 Homework 2

**Due date for the homework: 26-05-2014**

Q-1- The transfer function of a system is given by the formula

$$H(s) = \frac{2}{1 + 10^{-2}s^2 + 10^{-1}s}$$

- Find the magnitude response and draw it (with full details)
- Find the phase response and draw it (with full details)

Q-2- The frequency response of a system is given by the formula

$$H(j\omega) = \frac{100 - \omega^2}{100 - \omega^2 + 15j\omega}$$

- Find the magnitude response and draw it (with full details).
- Find the phase response and draw it (with full details).

Q-3- A circuit has the following impulse response  $h(t) = e^{-t}u(t)$ . This circuit is fed by an input  $x(t)$  where  $x(t) = e^{-t}u(t)$ . Use convolution integral to find the output

$$y(t) \text{ where } y(t) = \int_{-\infty}^t x(\tau)h(t - \tau)d\tau$$

Q-4- What is the convolution of two unit step functions,  $y(t) = \int_{-\infty}^t u(\tau)u(t - \tau)d\tau$   
Show the computation with full details!