

## Quiz 4, CHE4400

March 21, 2001

1. Below is the Bode diagram of my process.

Suppose my input is oscillating at the amplitude of 6 and the frequency of 100 rad/min. What will be *the amplitude and the frequency* of the oscillation seen in the output? By how much (in terms of time unit) will the output response lag the input forcing?

2. Match the transfer functions on the left-hand side with the Bode Diagrams on the right-hand side.

(a)  $\frac{(10s+1)}{(s+1)(100s+1)}$

(b)  $\frac{(-10s+1)}{(s+1)(100s+1)}$

(c)  $\frac{(100s+1)}{(s+1)(10s+1)}$

(d)  $\frac{1}{(s+1)^3}$

(e)  $\frac{1}{s^2+0.01s+1}$

(f)  $\frac{(1e^{-2s})}{(s+1)^3}$