Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Quiz 11:

## Problem 1:

Are the following true or false?

Question	True	False
A linear system is controllable if the dynamic matrix has full rank The controllability matrix is $C = \begin{bmatrix} b & Ab & \cdots & A^{n-2}b & A^{n-1}b \end{bmatrix}$ A linear state space model is asymptotically stable if $\det(\lambda I - A) \neq 0$ for all $\lambda \in \mathbb{C}$ with $Be(\lambda) \ge 0$ (real part of $\lambda$ is larger or equal than 0)		
State feedback control allows to assign the poles of the closed loop without any restrictions		
It is possible to apply state feedback control to instable systems		

## Problem 2:

Sketch the block diagram for the state feedback control of a linear system with the state equations

$$\dot{x}(t) = A x(t) + b u(t)$$
$$y(t) = c^T x(t) + d u(t)$$