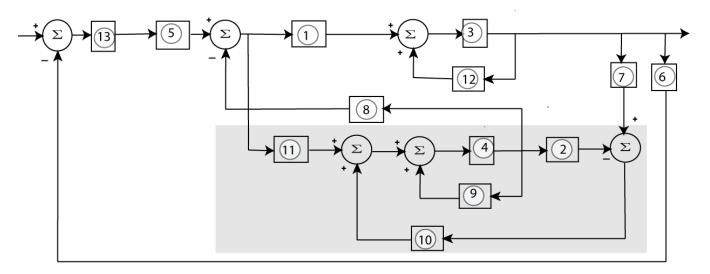Name _____ CM_____

ECE-320 Quiz #8

We would like to implement a state variable feedback system with a full order observer to estimate the states and integral control to produce zero steady state error for a step input. The equations we would like to implement are:

$$\dot{x}(t) = Ax(t) + Bu(t)$$

$$u(t) = -K\tilde{x}(t) + K_I \xi(t)$$

$$\dot{\xi}(t) = r(t) - C_y x(t)$$

$$\dot{\tilde{x}}(t) = A\tilde{x}(t) + Bu(t) + K_e(Cx(t) - C\tilde{x}(t))$$

We will implement these equations using the following Simulink model

You need to indicate the content of each of the blocks in the figure above.

Your choices are: $A, B, C, C_y, D, K, K_e, K_I, \dfrac{1}{s}$ You may use each symbols as often as necessary.

1=_____ 2=_____ 3=_____ 4=_____ 5=_____ 6=_____ 7=_____

8=_____ 9=_____ 10=_____ 11=_____ 12=_____ 13=_____