

ECE 365 Q3 02/01/00

KEY

A second-order system is operating with damping ratio 0.75 and settling time of 3 seconds. The system has steady-state value of 75.

- (a) Write the Transfer function.
(b) Draw the step response.

$$\zeta = 0.75 \quad T_s = 3$$

$$t_s = 4/3 \omega_n$$

$$\Rightarrow \omega_n = 1.78$$

$$T_p = 2.67 \text{ s}$$

$$OS = 2.8\%$$

$$G(s) = 75 \cdot \frac{3.17}{s^2 + 2.67s + 3.17}$$

