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Section : 09
CSE461 Quiz 2

(1) (a) Overshoot $= \dfrac{9.2 - 6}{6} * 100\% = 53.3\%$.

     rise time $= t2 - t1$

                $= 0.18 - \cancel{0.120} \, 0.05$

                $= \cancel{0.123} \, 0.13s$

     settling time $= 1.6s$

$6 \pm (0.04 * 6)$

$= 6 \pm 0.24$

(b)

$$\underbrace{\dfrac{Y(s)}{E(s)}}_{\text{input frequency}} = \overbrace{\left(\underbrace{K_p + \dfrac{K_i}{s} + sK_D}_{\text{gain}} \right)}^{\text{output frequency}}$$

$K_p + \dfrac{K_i}{s} + sK_D = $ resulting gain $= 5$

$E(s) = \dfrac{1}{2} = 0.5$

$\therefore Y(s) = 0.5 \times 5 \Rightarrow Y(s) = 2.5$