SEHS4653 Control System Analysis Suggested Answer for past exam paper (Semester 2, 2023/24)

Question 1	$y(t) = \frac{4}{5}(e^{3t} - e^{-2t})$
Question 2	
	$R(s) \longrightarrow \boxed{\begin{array}{c} [1+G_1(s)][G_2(s)-G_3(s)]\\ \hline 1+G_2(s)H_1(s) \end{array}} \longrightarrow C(s)$
Question 3(a)	$K_P = 91, \ K_D = 2.375$
Question 3(b)	$e(\infty) = 0.0521$
Question 4(a)	0 < K < 116
Question 4(c)	$s = -1.1 \pm j2.9$
Question 4(d)	$t_p = 1.09 \mathrm{s}, \qquad t_r = 0.67 \mathrm{s}$
Question 5(a)	$K_C \alpha = 0.4$
Question 5(c)	$G_C(s) = 1.11 \frac{s + 4.686}{s + 12.98}$