1) Draw the small-signal equivalent circuit. (4 marks)
2) Find the mid-band gain $A_v$. (4 marks)
3) Find the mid-band $R_{in}$. (2 marks)
4) Find the mid band $R_{out}$ (include $r_{o2}$, and $r_{o2}$). (3 marks)
5) Find the $\omega_L$’s for the circuit (do not solve for $\omega_L$ associated with $C_2$) (4 marks)
6) Find the $\omega_H$’s for the circuit. (4 marks)
7) Given that $V_{cc} = 15V$, $\beta_1=50$, $\beta_2=100$, adjust resistor sizes $R_1$ through $R_6$ such that currents $I_{C1} = 0.5$ mA and $I_{C2} = 2$ mA, voltages on emitters are $V_{E1} = 12V$, $V_{E2} = 3V$, collector voltage on $Q_2$ is $V_{C2} = 9V$, and current through $R_3$ is 0.1 mA. (4 marks)

Miller’s Theorem: $Y_1 = Y \left(1-\frac{V_o}{V_1}\right)$, $Y_2 = Y \left(1-\frac{V_i}{V_2}\right)$