Sheet 7

**Frequency Response**

1) Find the analytical expression of the magnitude frequency response and the phase frequency response for a system $G(S) = \frac{1}{S^2 + 2}$. Also, draw both the separate magnitude and phase diagrams.

2) a. Find analytical expressions for the magnitude and phase responses of

$$G(S) = \frac{1}{(S+2)(S+4)}$$

b. Make plots of the log-magnitude and the phase, using log-frequency in rad/s as the ordinate.

3) Draw the Bode plots for the system shown in the figure where $G(S) = \frac{K(S+3)}{[S(S+1)(S+2)]}$. [FIGURE: Closed-loop unity feedback system]

4) Draw the Bode log-magnitude and phase plots of $G(S)$ for the unity feedback system where $G(S) = \frac{(S+3)}{(S+2)(S^2 + 2S + 25)}$.

5) Find the transfer function of the subsystem whose Bode plots are shown in the following figure.