Unit -> 2

Subject -> Analog ckt

Faculty -> Dr. Nidhi chauhan

Paper code -> BT-402

Lecture 7 -> gain margin and phase margin

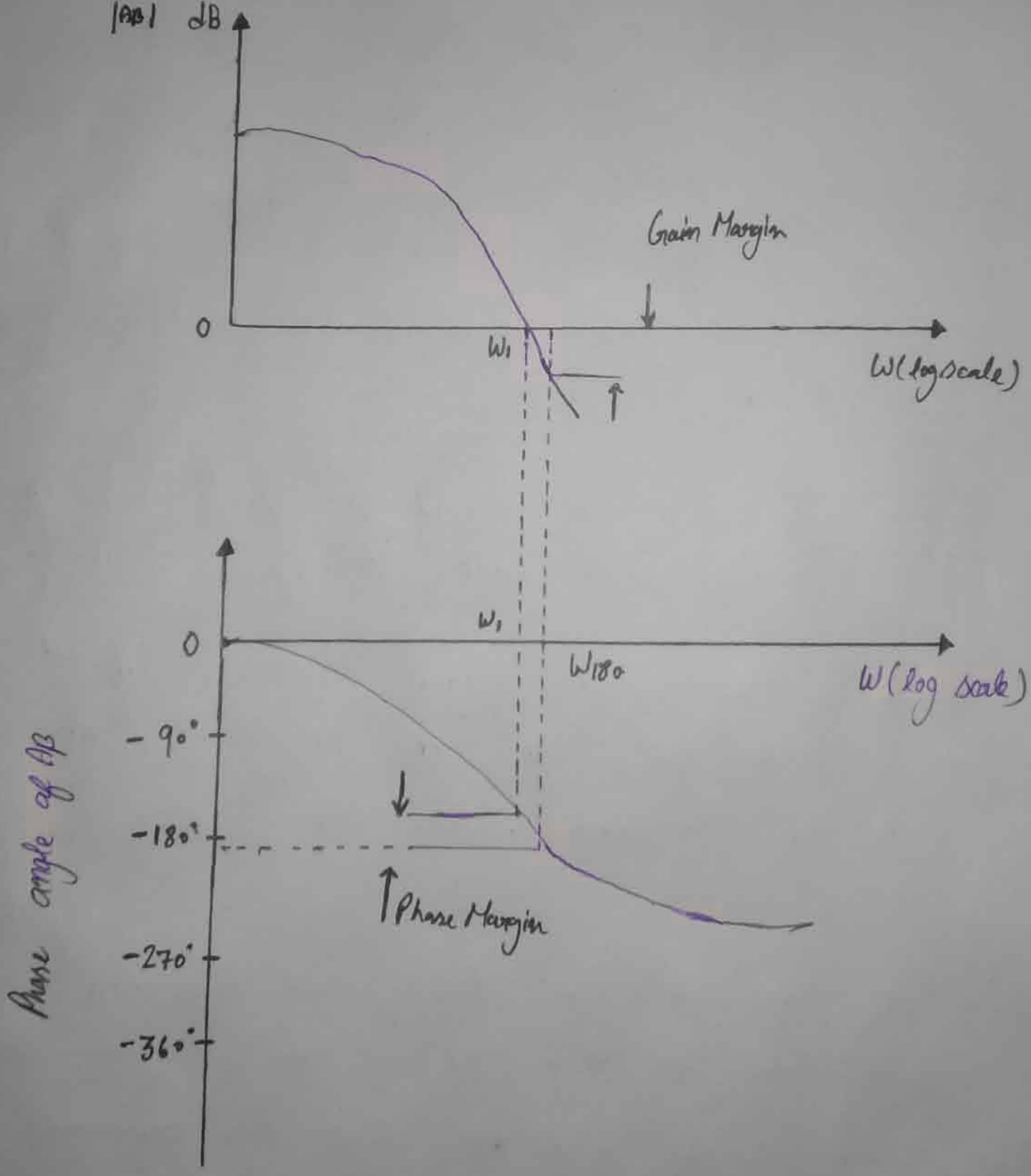
Gain Margin and Phase Margin

We know that One Can Determine wheather a feedback amplifier is Or is not stable by Examinging its loop gain $A\beta$ as a function of freequency. One of the Simplest and most Effective means for Doing this is through the use of a bode plot for $A\beta$, such as the One shown in fig. 1 that can because the Phase approaches -36° the network eximined is a fourth - One Oder One). The feedback amplifier whose loop gain is plotted in fig will be stable, since at the freequency of 180°. Phase shift, ω_{180}, the megnitude of the loop gain is less than (Negative dB). The Difference between the value of $|A\beta|$ at ω_{180} and Unity called the gain Margin, is usually expressed in decibels.

The gain margin represents the amount by which the loop gain can be increased with while stability is mainted.

Feedback amplifiers are usually designed to have sufficient gain margin to allow for the inevitable Changes in loop gain with the temperature, time and so On.

Another Way to Investigate the Stability and to Express in Degree is to examine the bode plot at the freequency for which $|A\beta|=1$, which is the point at which the megnitude plot then Crosses the 0-db line. If at this freequency the phase angle is (less) { In Magnitude } than 180°, then the amplifier is stable. this is the situation illustrated in Fig. " The Difference between the phase angle at the frequency and 180° is termed the Phase Margin". On the other hand, If at the frequency of unity loop gain magnitude, the phase lag is in excess of 180° the amplifier will be Unstable.



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