Feedback and its Applications

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FEEDBACK

- It is the process of taking part of the output signal and feeding it back to the input circuit.

- The fed back signal can be in phase with or out of phase with the original input signal.

- The amplifier that operates on the principle of feedback is known as feedback amplifier.

TYPES OF FEEDBACK

1. Positive feedback (Regenerative)
2. Negative feedback (Degenerative)

If the original input signal and the feedback signal are in phase, the feedback is called as positive feedback.

However if these two signals are out of phase then the feedback is called as negative feedback.
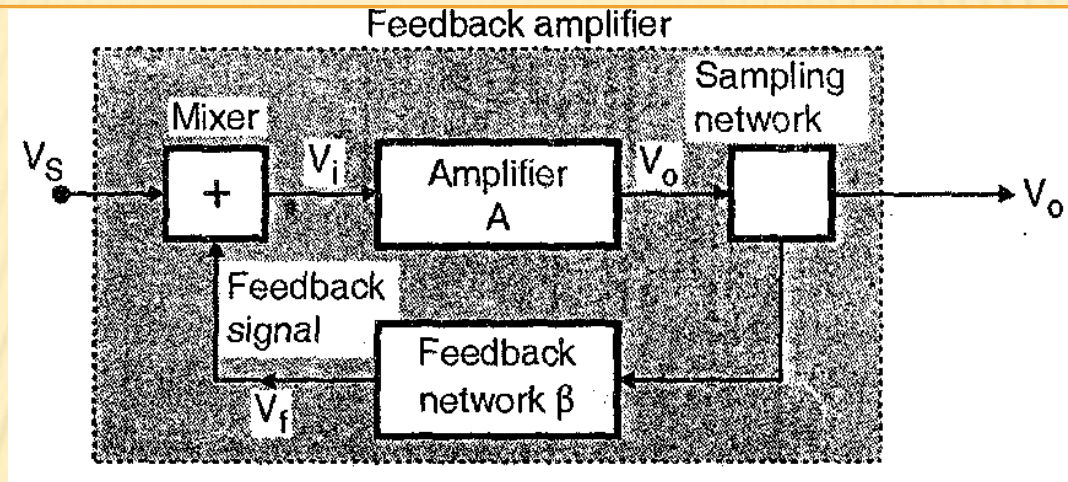
AMPLIFIER WITHOUT FEEDBACK

* The most important thing to understand from Fig. is that the output and input terminals of this amplifier are not connected to each other in any way.

* Therefore the amplifier of Fig. is an amplifier without any feedback,

Gain without feedback.

$$A = \frac{V_o}{V_i}$$
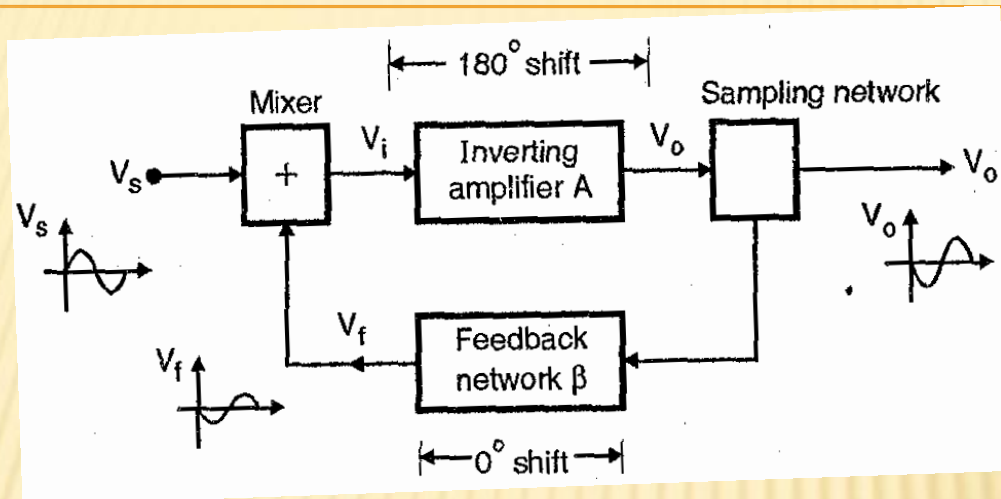
AMPLIFIER WITH FEEDBACK

Feedback amplifier

- Refer to Fig. Here the same amplifier with a gain A is being used along with a mixer network, sampling network and a feedback network.

- The voltage gain of the feedback amplifier is given by,

Gain with feedback

$$A_f = \frac{V_o}{V_S}$$

AMPLIFIER WITH A NEGATIVE FEEDBACK

✖ The block diagram of an amplifier with a Negative Feedback Fig.

$$V_f = \beta \, V_o$$

Where V_f = Feedback signal (output of the feedback network)

Feedback factor $\beta = \dfrac{V_f}{V_o}$