* Oscillators may be broadly divided into two categories Harmonic oscillators and Relaxation oscillators.
* Both types can include Active devices such as BJTs, FETs and Op-amps, and passive components such as resistors, indu and capacitors.
* In Harmonic oscillators, the energy always flows in one direc - from the active to passive components.
* In Relaxation oscillators, the energy is exchanged between the active and passive components.
* In harmonic oscillators, the frequency of oscillations is determin by the feedback path.
* In Relaxation oscillators. the frequency is determined by time constants - ~~specifi~~ specifically, the charge and discharge time cons during the exchange of energy.
* Harmonic oscillators can develop low-distortion sinusoidal output waveforms, But Relaxation oscillators can only generate non-sinus dal wave-forms. Such as ~~sharp~~ Sawtooth, Square or triangular

Operation of oscillator :-

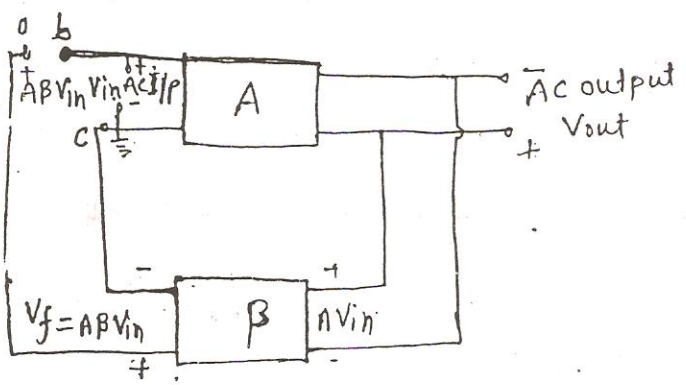


fig (a)

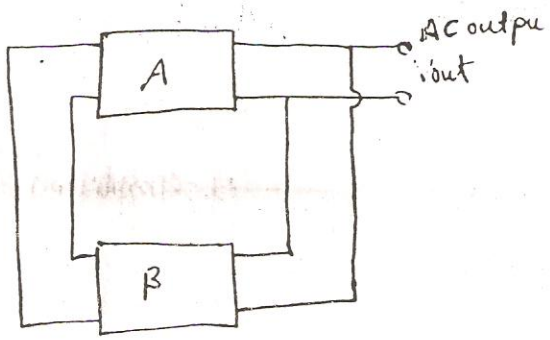


fig (b)

signal will build up. shown in fig. (d)

* If $A\beta$ is equal to unity, $A\beta V_{in}$ equals V_{in} and the output signal is a steady sinewave. Shown in fig (e)

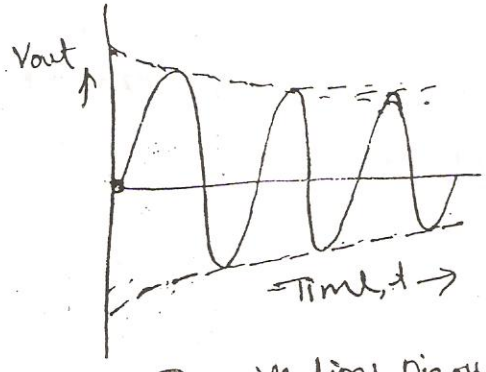


fig (c) oscillations Die out

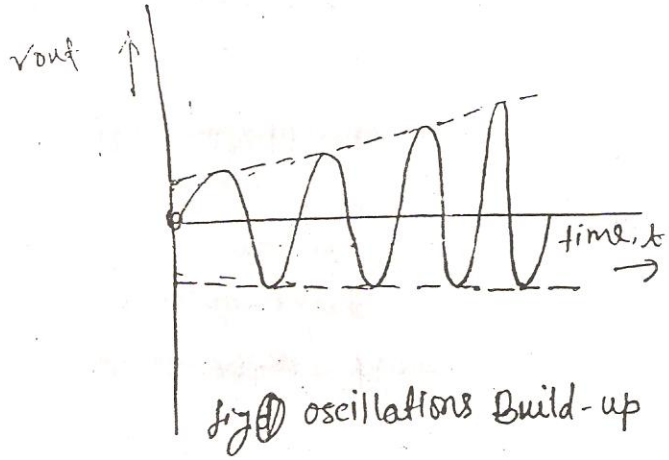
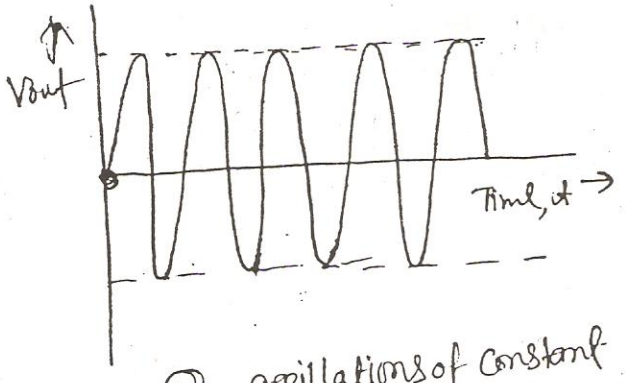


fig (d) oscillations Build-up



(e) Oscillations of constant Amplitude. (Sinewave)

L-C oscillators:- which use inductance-capacitance (L-C) circuits as their tank or oscillatory circuits are called L-C oscillators. The L-C oscillators are very popular for generating high-freq outputs. (e.g. 10KHz to 100 MHz). There is a large variety of L-C oscillators such as tuned-collector oscillators, tuned-base oscillators, colpitts oscillators, Hartley oscillators, clapp oscillators, crystal oscillators etc.