Comparator:

- A comparator compares a voltage signal applied to one input of the op-amp with a known voltage, called reference voltage applied at the other input.
- In its simplest form, the comparator consist of an op-amp operated in open loop.
- In this configuration op-amp produces one of the two saturation voltages, namely, postive & negative at the output of opamp.

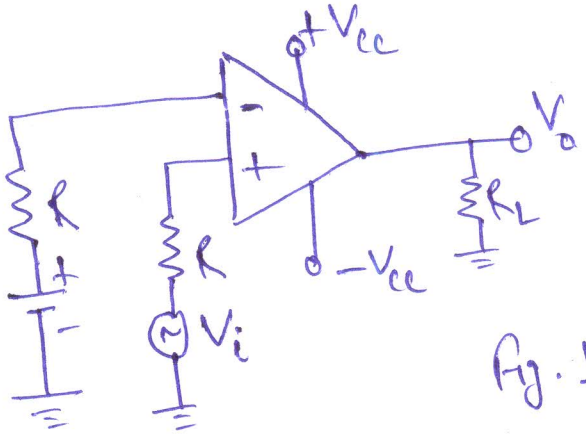

Fig. 1

- Fig 1 shows an op-amp configured for use as a non-inverting comparator.
- A fixed reference voltage V_{ref} is applied to (-) input and a time varying signal V_i is applied to (+) input.
- When the non-inverting input V_i is less than the reference voltage V_{ref}, the output voltage V_o is at $-V_{sat} \simeq -V_{EE}$.

- When V_i greater than V_{ref}, the output voltage V_o is at $+V_{sat} \approx +V_{cc}$
- Thus the output V_o changes from one saturation level to another depending on the voltage difference between V_i and V_{ref}
- Fig 2 (a) and (b) show the input and output waveform of the comparator when V_{ref} is postive and negative respective.