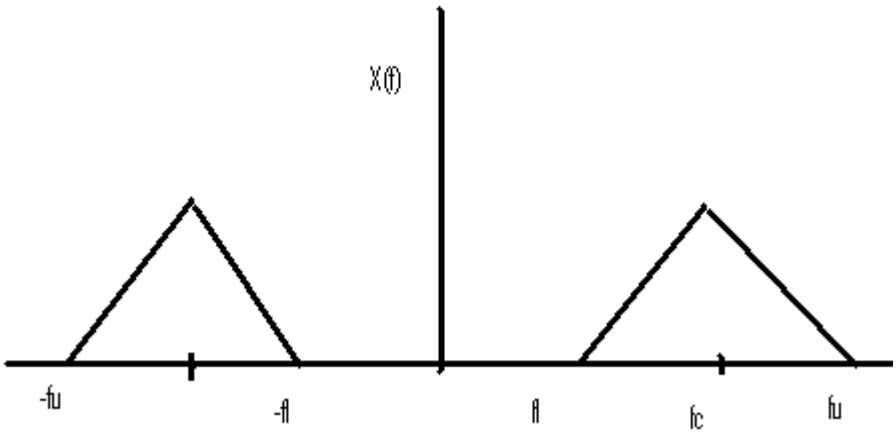
Band –pass sampling theorem

Consider a signal x(t) having a spectrum as shown in figure. The following sampling theorem gives the condition for representing x(t) by its sampled values.



. **Figure 5.19**.

The band-pass sampling theorem states that if a band pass signal x(t) has a spectrum of band width Bx and an upper frequency fu, then x can be recovered from x(nTs) by bband pass filtering if f=2fu/m, where m is an integer not exceeding fu/Bx. All higher rates areb not necesserly usable unless they exceed 2fu.

The sampling rate for a band pass signal depends on the ratio fu/Bx. If fu/Bx >>1, then the minimum sampling rate approaches 2Bx.