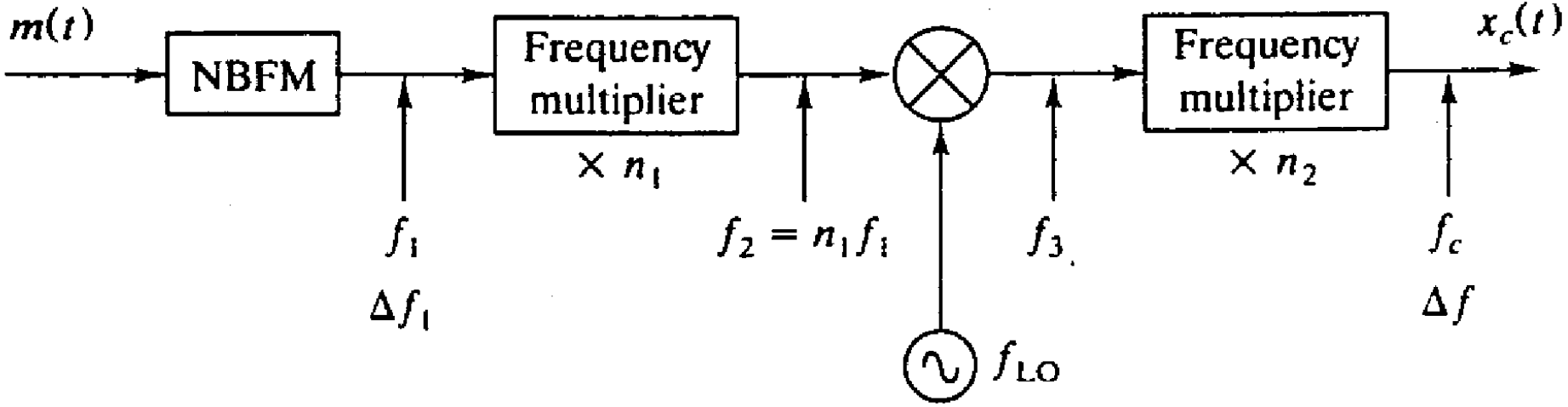
Determine the frequency deviation and carrier swing for a frequency-modulated signal which has a resting frequency of 105.000 MHz and whose upper frequency is 105.007 MHz when modulated by a particular wave. Find the lowest frequency reached by the FM wave.

An FM modulator operates at carrier frequency of 500 kHz with frequency deviation sensitivity of 1.5 kHz/V. A PM modulator also operates at carrier frequency of 500 kHz with phase deviation sensitivity of 0.75 rad/V. If both FM modulator and PM modulator are modulated by the same modulating signal having peak amplitude of 2 V and modulating frequency of 2 kHz, then find frequency deviation, phase deviation, modulation index of FM and PM

Consider the FM modulator shown in Figure. Compute the maximum frequency deviation Δf of the output of the FM modulator and the carrier frequency fc. if f1 = 200KHz, Δf1 = 25Hz, FLO = 10.8MHz, n1 = 64 and n2 = 48



$$\Delta f = (\Delta f_1)(n_1)(n_2) = (25)(64)(48)\,\text{Hz} = 76.8\,\text{kHz}$$

$$f_2 = n_1 f_1 = (64)(200)(10^3) = 12.8(10^6)\,\text{Hz} = 12.8\,\text{MHz}$$

$$f_3 = f_2 \pm f_{LO} = (12.8 \pm 10.8)(10^6)\,\text{Hz} = \begin{cases} 23.6 & \text{MHz} \\ 2.0 & \text{MHz} \end{cases}$$

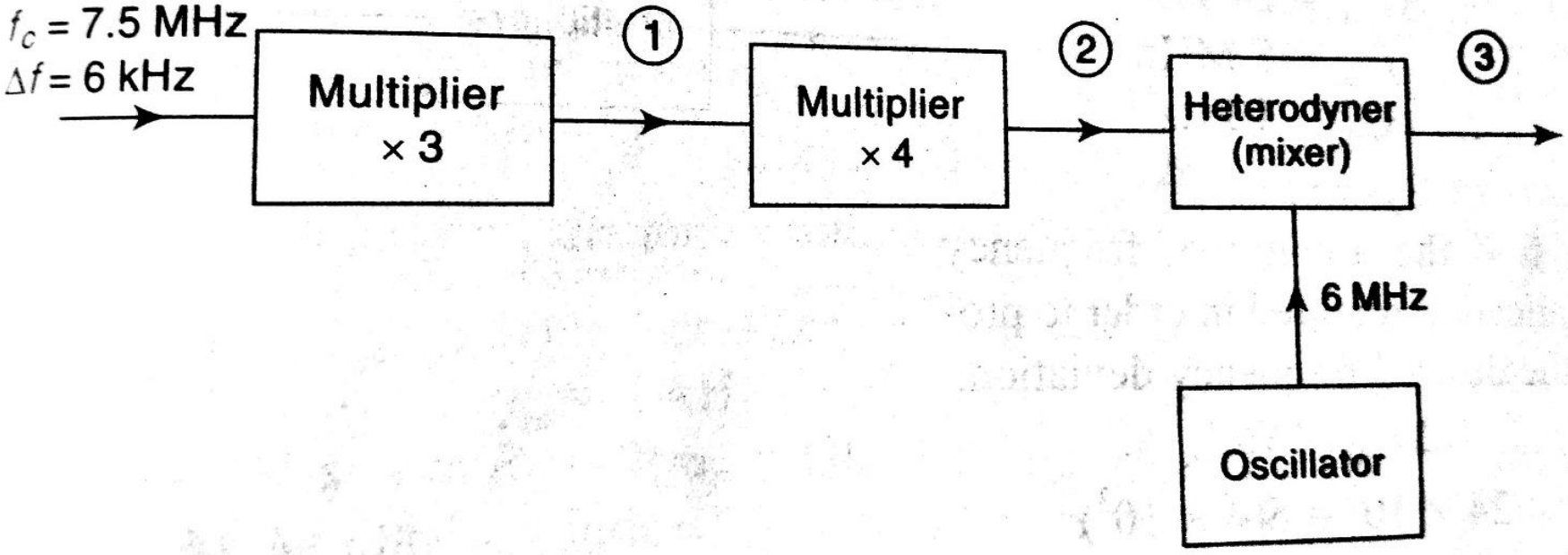
Thus, when $f_3 = 23.6\,\text{MHz}$, then

$$f_c = n_2 f_3 = (48)(23.6) = 1132.8\,\text{MHz}$$

When $f_3 = 2\,\text{MHz}$, then

$$f_c = n_2 f_3 = (48)(2) = 96\,\text{MHz}$$

Consider the FM transmitter shown in figure. Find the carrier frequency and frequency deviation of each of the points 1, 2, and 3



Consider an angle-modulated signal $x_c(t) = 20 \cos [100 \times 10 \pi t + 5 \sin (2 \times 10 \pi t)]$ using phase-modulation technique. Find the carrier-signal frequency and the maximum phase deviation

A PM signal is given as

$v_{PM}(t) = 20 \cos [2\pi \times 10^6 t + 0.1 \sin(10^3 \pi t)]$.

Given kp = 10, determine the frequency of the modulating signal.

Find n1, n2 and FLo