Acropolis Institute of Technology and Research, Indore

CSIT 402: Analog and Digital Communication

Class: CSIT- II Year

Reference questions- Unit 3

1. Derive the equation for single tone FM. Also draw the time domain FM and PM wave.
2. Explain the generation of FM using parameter variation method.
3. Explain the Armstrong method of generation of wideband FM.
4. What is the Carson's rule for finding bandwidth of an FM signal.
5. Explain the demodulation of FM using slope detector.
6. Explain the Foster Seeley discriminator method and ratio detector for FM detection.
7. An angle modulated signal with carrier frequency $\omega_c = 2\pi \times 10^5$ is described by the equation

$S(t)= 10 \cos(\omega_c t +5\sin 3000t + 10\sin 2000\pi t)$

i) Find the power of the modulated signal
ii) Find the frequency deviation
iii) Find the deviation ratio

8. A modulating signal $5 \cos (2\pi\ 15 \times 10^3 t)$, angle modulates a carrier $A\cos \omega_c t$-
   i) Find the modulation index and the bandwidth for FM and PM system
   ii) Determine the change in the bandwidth and the modulation index for both FM and PM, if f_m is reduced to 5 kHz.
9. How the FM signal can be generated from PM signal? Explain with block diagram.
10. What do you mean by pulse modulation
11. Given an angle modulated signal

$s(t)= 10 \cos(\omega_c t +3\sin \omega_m t)$ Assume PM and f_m= 1kHz. Calculate the modulation index and find the bandwidth when i) f_m is doubled and ii) f_m is decreased by one-half.