

Acropolis Institute of Technology and Research, Indore

CSIT 402: Analog and Digital Communication

Class: CSIT II Year

Assignment- Unit 2

1. What is modulation? Discuss the need of modulation.
2. Explain the working of ring modulator for DSB-SC generation with proper mathematical equations.
3. Explain the working of square law modulator used for generation of AM.
4. What are the drawbacks of TRF receiver? Explain the working of Superhetrodyne receiver with the help of proper block diagram.
5. Derive the relation of single tone modulated AM signal and draw its frequency spectrum.
6. Derive the relation between total power and carrier power for amplitude modulated wave.
7. Find total modulated power, sideband power, and net modulation index for the AM signal given below:
$$S(t) = 10\cos(2\pi \cdot 10^6 t) + 5\cos(2\pi \cdot 10^6 t)\cos(2\pi \cdot 10^3 t) + 2\cos(2\pi \cdot 10^6 t) 10\cos(4\pi \cdot 10^3 t)$$
8. Compare the various amplitude modulation systems.
9. Explain the drawbacks of frequency selective method of generation of SSB and also explain the working of phase shift method of generation.
10. Explain the working of envelope detector and give the condition of its time constant.
11. An AM transmitter radiates 9 kW of power when the carrier is unmodulated and 10.125 kW when the carrier is sinusoidally modulates. Determine the modulation index, percentage modulation. Now, if another sine wave corresponding to 40 percent modulation is transmitted simultaneously, then calculate the total radiated power.
12. Write short notes on Low level and High level AM modulators.
13. Explain Vestigial Sideband modulation in detail giving its applications.