

DRONACHARYA GROUP OF INSTITUTIONS, GREATER NOIDA

QUESTION BANK

POC (EEEC-502)

UNIT I

PART- A (2 MARKS)

1. Define amplitude modulation?
2. What is AM envelope?
3. Write the bandwidth of AM?
4. What is the need of modulation index?
5. Which one is called as percent modulation?
6. Define low level modulation?

Give various generation methods for DSB-FC,DSB-SC,SSB-FC,SSB-SC signals.

7. Define heterodyning?
8. Calculate the BW of FM signal whose frequency deviation is 75 KHZ and signal frequency is 2.5 KHZ?
9. What are the two major limitations of the standard form of amplitude modulation?
10. Define modulation index for AM?

PART- B (5 MARKS)

1. Draw the amplitude modulated wave equation and explain each term with the help of frequency spectrum?
2. Define amplitude modulation. Derive an expression for the AM wave.
3. Explain in detail about AM voltage distribution?
4. Draw the block diagram high level AM transmitter and explain the function of each

block?

5. Derive the waveform of power relation between carrier power and total transmitter power of AM signal.

6. Explain the working of square law demodulator for detection of AM wave?

7. Draw the waveform AM signal for over modulation, under modulation and 100% modulation

8. With the help of neat block diagram explain functioning of a super heterodyne receiver list out significance.

9. Give brief summary of DSB-SC signal. Explain the working principle of a balanced modulator.

10. How a SSB-SC signal can be generated. Give the main difference between frequency discrimination method and phase shift method.

11. Give expression for Hilbert Transform.

12. Derive the mathematical expression for square law modulator.

PART- C (10 MARKS)

13. A 75 MHz carrier signal having an amplitude of 50 V is modulated by a # KHz audio signal having an amplitude of 20 V.

- i). Sketch the audio signal
- ii). Sketch the carrier signal.
- iii). Construct the modulated wave.
- iv). Determine the modulation index.
- v). Find USB and LSB.

14. The total power content of an AM signal is 1000W. determine the power being transmitted at the carrier frequency and at each sidebands when the modulation index is 80%.

15. Determine the modulation index of an AM wave which has a power content at the carrier of 8 KW and 2 KW in each of its sidebands when the carrier is modulated by a simple audio tone.

16. Compare between various AM signals in terms of bandwidth, generation, detection, power, application, fading, efficiency.

17. Derive the efficiency for transmission efficiency for various AM waves.

19. State the advantage, disadvantage and applications of AM.
20. Explain the working of a modulator for generating AM wave.
21. With the help of block diagram explain the operation of a low level AM transmitter.
22. Explain the detection of AM signals using envelope detector.
23. Mention the draw backs of a TRF Receiver?
24. Explain Vestigial Sideband Modulation. Give its generation method.
25. Draw the frequency spectrum of SSB-SC signal.
26. Give the mathematical expression for various AM signals.
27. Explain the process of generating and detecting DPSK signal with the help of block diagram and given binary data sequence assigning starting reference bit as one 0010010011.
28. Explain BPSK transmitter and receiver with the help of block diagrams.
29. a) Illustrate the basic idea of correlative coding by considering the specific example of duo binary signaling.
30. Mention the major drawback of detecting original binary sequence from the duo binary coder output and suggest a practical means of avoiding that drawback
31. Explain the generation and detection of DPSK signal.
32. With block diagram explain M-ary PSK Receiver. Compare M-ARY Modulation schemes?