- 1. Which modulation technique utilizes both upper and lower sidebands along with a carrier signal?
- a) Amplitude Modulation (AM)
- b) Frequency Modulation (FM)
- c) Phase Modulation (PM)
- d) Pulse Code Modulation (PCM)

Answer: a) Amplitude Modulation (AM)

Explanation: Amplitude Modulation (AM) involves varying the strength (amplitude) of a carrier signal in proportion to the waveform being sent. This modulation technique produces both upper and lower sidebands around the carrier frequency.

- 2. What does DSB-C stand for in the context of modulation?
- a) Double Side Band with Carrier
- b) Double Side Band without Carrier
- c) Digital Signal Broadcasting with Carrier
- d) Direct Single Band Carrier

Answer: a) Double Side Band with Carrier

Explanation: DSB-C refers to Double Side Band with Carrier modulation, where both sidebands are transmitted along with the carrier signal.

- 3. Which modulation technique only transmits the sidebands without the carrier signal?
- a) DSB-C
- b) DSB-SC

- c) SSB-SC
- d) VSB-SC

Answer: b) DSB-SC

Explanation: DSB-SC (Double Side Band Suppressed Carrier) modulation only transmits the sidebands while suppressing the carrier signal.

- 4. Which modulation technique offers improved bandwidth efficiency by transmitting only one sideband along with the carrier?
- a) DSB-C
- b) DSB-SC
- c) SSB-SC
- d) VSB-SC

Answer: c) SSB-SC

Explanation: Single Side Band Suppressed Carrier (SSB-SC) modulation transmits only one sideband along with the carrier, thereby offering improved bandwidth efficiency compared to DSB-SC.

- 5. What is the main advantage of SSB-SC modulation over DSB-SC modulation?
- a) Reduced bandwidth requirement
- b) Higher signal-to-noise ratio
- c) Simplified demodulation process
- d) Increased transmission range

Answer: a) Reduced bandwidth requirement

Explanation: SSB-SC modulation requires less bandwidth compared to DSB-SC modulation because it transmits only one sideband along with the carrier.

- 6. Which modulation technique is commonly used in television broadcasting to conserve bandwidth?
- a) DSB-C
- b) DSB-SC
- c) SSB-SC
- d) VSB-SC

Answer: d) VSB-SC

Explanation: Vestigial Side Band Suppressed Carrier (VSB-SC) modulation is commonly used in television broadcasting to conserve bandwidth while maintaining signal integrity.

- 7. What is the purpose of generating Vestigial Side Band (VSB) in communication systems?
- a) To reduce signal distortion
- b) To increase transmission speed
- c) To conserve bandwidth
- d) To enhance encryption

Answer: c) To conserve bandwidth

Explanation: Vestigial Side Band (VSB) modulation is used to conserve bandwidth in communication systems by transmitting only a portion of one sideband along with the carrier.

8. Which modulation technique involves transmitting both sidebands but only a portion of the carrier signal?

- a) DSB-C
- b) DSB-SC
- c) SSB-SC
- d) VSB-SC

Answer: d) VSB-SC

Explanation: Vestigial Side Band Suppressed Carrier (VSB-SC) modulation involves transmitting both sidebands along with a portion of the carrier signal, which is why it is termed "vestigial."

- 9. In which modulation technique is the carrier signal completely eliminated during transmission?
- a) DSB-C
- b) DSB-SC
- c) SSB-SC
- d) VSB-SC

Answer: b) DSB-SC

Explanation: Double Side Band Suppressed Carrier (DSB-SC) modulation completely eliminates the carrier signal during transmission.

- 10. Which modulation technique is preferred for long-distance radio communication due to its efficient use of power?
- a) DSB-C
- b) DSB-SC
- c) SSB-SC

d) VSB-SC

Answer: c) SSB-SC

Explanation: Single Side Band Suppressed Carrier (SSB-SC) modulation is preferred for long-distance radio communication due to its efficient use of power and bandwidth.

- 11. What is the primary disadvantage of DSB-SC modulation?
- a) High bandwidth requirement
- b) Poor signal-to-noise ratio
- c) Complex demodulation process
- d) Reduced transmission range

Answer: a) High bandwidth requirement

Explanation: DSB-SC modulation requires a high bandwidth due to the transmission of both sidebands without the carrier signal.

- 12. Which modulation technique is most susceptible to frequency selective fading in wireless communication?
- a) DSB-C
- b) DSB-SC
- c) SSB-SC
- d) VSB-SC

Answer: a) DSB-C

Explanation: Double Side Band with Carrier (DSB-C) modulation is more susceptible to frequency selective fading because it relies on the transmission of both sidebands along with

the carrier signal.

- 13. Which modulation technique offers improved efficiency in terms of power consumption compared to DSB-SC?
- a) DSB-C
- b) SSB-SC
- c) VSB-SC
- d) PCM

Answer: b) SSB-SC

Explanation: Single Side Band Suppressed Carrier (SSB-SC) modulation offers improved efficiency in terms of power consumption compared to DSB-SC modulation.

- 14. Which modulation technique is commonly used in voice transmission over long-distance radio communication?
- a) DSB-C
- b) DSB-SC
- c) SSB-SC
- d) VSB-SC

Answer: c) SSB-SC

Explanation: Single Side Band Suppressed Carrier (SSB-SC) modulation is commonly used in voice transmission over long-distance radio communication due to its efficiency in power and bandwidth usage.

15. Which modulation technique requires complex demodulation processes at the receiver?

- a) DSB-C
- b) DSB-SC
- c) SSB-SC
- d) VSB-SC

Answer: a) DSB-C

Explanation: Double Side Band with Carrier (DSB-C) modulation requires complex demodulation processes at the receiver to extract the original signal.

- 16. In SSB-SC modulation, what happens to the lower sideband during transmission?
- a) It is transmitted along with the carrier.
- b) It is transmitted with reduced power.
- c) It is completely suppressed.
- d) It is inverted before transmission.

Answer: c) It is completely suppressed.

Explanation: In Single Side Band Suppressed Carrier (SSB-SC) modulation, one sideband (either upper or lower) is completely suppressed during transmission to conserve bandwidth.

- 17. What is the primary purpose of modulation in communication systems?
- a) To increase the power of the signal
- b) To reduce the bandwidth requirement
- c) To improve the clarity of the signal
- d) To simplify the demodulation process

Answer: b) To reduce the bandwidth requirement

Explanation: The primary purpose of modulation in communication systems is to reduce the bandwidth requirement while preserving the integrity of the transmitted signal.

- 18. Which modulation technique is commonly used in AM radio broadcasting?
- a) DSB-C
- b) DSB-SC
- c) SSB-SC
- d) VSB-SC

Answer: a) DSB-C

Explanation: Double Side Band with Carrier (DSB-C) modulation is commonly used in AM (Amplitude Modulation) radio broadcasting.

- 19. What is the main advantage of VSB-SC modulation in television broadcasting?
- a) Improved signal quality
- b) Reduced interference
- c) Higher transmission speed
- d) Increased coverage area

Answer: b) Reduced interference

Explanation: Vestigial Side Band Suppressed Carrier (VSB-SC) modulation reduces interference in television broadcasting, resulting in improved signal quality.

20. Which modulation technique is used in digital communication systems to convert analog signals into digital format?

- a) DSB-C
- b) PCM
- c) SSB-SC
- d) VSB-SC

Answer: b) PCM

 $\label{prop:equation:pulse} \textbf{Explanation: Pulse Code Modulation (PCM) is used in digital communication systems to} \\$ 

convert analog signals into digital format for transmission and processing.