

Beasley/Electronic Communications

Chapter 2: Amplitude Modulation

Multiple Choice Questions

1. What law is represented when current flow through a device increases in direct proportion to voltage?
 - A. Hartley's law
 - B. Plank's law
 - C. **Ohm's law**
 - D. Henry's law

2. What situation occurs if the modulating signal amplitude continues to increase?
 - A. Maximum amplitude
 - B. **Overmodulation**
 - C. Sideband splatter
 - D. Odd harmonics

3. A transmitter modulator circuit combines carrier and intelligence signals that are widely separated in _____.
 - A. **frequency**
 - B. amplitude
 - C. harmonics
 - D. voltage

4. Which of the following is the most important advantage of SSB systems?
 - A. Reducing the noise present at receiver by half.
 - B. All information is contained within varying-amplitude sidebands.
 - C. **More effective utilization of the available frequency spectrum.**
 - D. The carrier amplitude and frequency always remain constant.

5. Which of the following is the term that defines when two signals at different frequencies are combined in a nonlinear device?
 - A. Aliasing
 - B. **Mixing**
 - C. Foldover distortion
 - D. Fluctuating

6. A phasor rotating at a constant rate will generate a(n)_____.

- A. **sine wave**
 - B. angular velocity
 - C. waveform
 - D. amplitude
7. In an AM transmission, why does the carrier contain no information?
- A. It is always changing.
 - B. It is related to sine-wave frequency.
 - C. **It never changes.**
 - D. The signal is a low frequency compared to the carrier.
8. Mixing (modulation) is achieved when signals are applied to a(n) _____.
- A. **nonlinear device**
 - B. sideband
 - C. linear device
 - D. intermod
9. The _____ produces side frequencies or sidebands, one on each side of the carrier.
- A. phasors' angular velocity
 - B. vector sum
 - C. pure sine wave
 - D. **modulated AM signal**
10. The rate of phasor rotation is called angular _____.
- A. **velocity**
 - B. sidebands
 - C. sine waves
 - D. frequencies
11. Which of the following is an example of an application where double-sideband, full-carrier (DSBFC) AM would be used?
- A. Marine and citizens band (CB) radios
 - B. Military services
 - C. **Aircraft-to-tower communication**
 - D. Amateur (ham) radios
12. What is the carrier's job in the modulator?
- A. Calculation of the modulation index
 - B. **Frequency translation**

- C. Aliasing
 - D. Transmitting
13. What was ultimately developed in the search for a communications technique that was immune to noise?
- A. **FM**
 - B. AM transmitter
 - C. Bandwidth
 - D. Frequency spectrum
14. All information contained at the output of the AM modulator is contained within the _____.
- A. balanced modulators
 - B. bandwidth
 - C. transmitter
 - D. **sidebands**
15. Why are SSB receivers more difficult to tune than conventional AM receivers?
- A. **Need for carrier reinsertion**
 - B. Bandwidth required by SSB cut in half
 - C. Complete signal cancellation may result
 - D. Overcrowded high-frequency spectrum
16. What type of sideband is used for analog television video transmissions?
- A. Amplitude-compandored
 - B. **Vestigial**
 - C. ISB transmission
 - D. Pilot carrier
17. Which of the following would be a reason why double-sideband AM is still so widely used?
- A. **SSB systems more complex**
 - B. Power-savings
 - C. Noise advantages
 - D. Effective utilization of available frequency spectrum
18. Conventional AM transmitters are rated in terms of _____.
- A. bandwidth
 - B. amplitude modulating signals
 - C. modulated waveforms

D. carrier power output

19. Transmission of a modulated signal with both the carrier and one sideband removed produces what type of signal?
- A. **SSB**
 - B. AM
 - C. FM
 - D. HF
20. The increase and decrease in the AM waveform's amplitude is caused by the frequency difference in the _____.
- A. intelligence signals
 - B. bandwidth
 - C. **side frequencies**
 - D. sine waves
21. Undesired frequencies in close proximity to desired ones, such as a difference frequency appearing within the baseband, are difficult if not impossible to identify and remove after they have been created. What does this occurrence represent?
- A. Modulation envelope
 - B. Pure sine-wave intelligence
 - C. **Foldover distortion**
 - D. Modulating signal frequency
22. Three characteristics of a sine wave carrier are amplitude, frequency, and _____.
- A. **phase**
 - B. intelligence
 - C. voltage
 - D. bandwidth
23. What is the gap called that produces distortion and results in the transmission of frequencies outside a station's normal allocated range?
- A. Odd harmonics
 - B. **Sideband splatter**
 - C. Square waves
 - D. Intermod
24. What is the term for undesired mixing?
- A. **Intermod**

- B. Peak envelope power
- C. ISB transmission
- D. Amplitude

25. Noise is directly proportional to _____.

- A. total power output
- B. peak envelope power
- C. available frequency spectrum
- D. **bandwidth**