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**