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Continuing Education Course #079  
DSSS Digital Communication

1. Shannon's equation shows that channel capacity depends on:
  - a. the channel bandwidth,
  - b. the channel Signal-to-Noise Ratio (SNR),
  - c. both of the above.
2. Shannon's equation reveals how to achieve the channel capacity:
  - a. True,
  - b. False.
3. Shannon's equation infers that Signal-to-Noise Ratio (SNR) is proportional to the channel capacity to Bandwidth ratio of a channel:
  - a. True,
  - b. False.
4. The original Weaver architecture uses suppressed carrier modulation :
  - a. True,
  - b. False.
5. The analog multiplication of two sine wave signals produces a result at the sum of the individual frequencies:
  - a. True,
  - b. False.
6. The Weaver modulator produces single sideband suppressed carrier from double sideband suppressed carrier signals:
  - a. True,
  - b. False.
7. The digital Weaver modulator has fewer high order harmonics than the analog version:
  - a. True,
  - b. False.
8. Filters are used to suppress harmonic energy in the Weaver architecture:
  - a. True,
  - b. False.
9. Phase modulation of the Weaver architecture supports selection of upper or lower sideband outputs by changing either channel phase by 180 degrees:
  - a. True,
  - b. False.
10. The Weaver modulator can be used as a transmitter, a receiver, or both in a single sideband communications system:

- a. True,
- b. False.

11. A reduced Weaver modulator produces QPSK using the following modulation:

- a. Phase modulation of I & Q channels,
- b. Amplitude modulation of I & Q channels,
- c. all of the above.
- d. none of the above.

12. A reduced Weaver modulator producing QPSK has independent I and Q channels:

- a. True,
- b. False.

13. In the QPSK scheme in the example constellation, the bit rate and baud rate are identical:

- a. True,
- b. False.

14. In the QPSK receiver in the example, the I and Q channels are reconstructed without any uncertainties:

- a. True,
- b. False.

15. The suppressed carrier frequency from a double sideband suppressed carrier cannot be reconstructed from the signal:

- a. True,
- b. False.

16. The techniques used in the example employed frequencies that are close to each other for illustration purposes:

- a. True,
- b. False.

17. A Pseudo-Random Binary Sequence is also called a Pseudo-Noise (PN) sequence..

- a. True,
- b. False.

18. One technique for PN generation uses a shift-register implementation.

- a. True,
- b. False.

19. A PN sequence has good autocorrelation behavior for spread spectrum purposes.

- a. True,
- b. False.

20. PN sequences have good cross-correlation behavior for channel separation in spread spectrum systems.

- a. True,
- b. False.

21. A Walsh sequence has good autocorrelation behavior for spread spectrum purposes.

- a. True,
- b. False.

22. Walsh sequences have good cross-correlation behavior for channel separation in spread spectrum systems.

- a. True,
- b. False.

23. The “Correlator” is an inferior structure to edge detection for PN sequence synchronization

- a. True,
- b. False.

24. The “Correlator” is a matched filter for a PN sequence.

- a. True,
- b. False.

25. Digital communication technology supports error free communication under some circumstances.

- a. True,
- b. False.

26. Uncertainty of data polarity can be eliminated by using:

- a. a Manchester code,
- b. a delay modulation code,
- c. either of the above.
- d. none of the above.

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