

MULTIPLE CHOICE QUESTIONS IN DATA COMMUNICATIONS AND NETWORKING

A Complete Chapter Quiz

Digital Transmission

Compilation of all the quizzes (MCQs) for each and every chapters in the book of Data Communications and Networking 4th Edition by Behrouz A. Forouzan.

1. Which of the following encoding methods does not provide for synchronization?

- A) RZ
- B) NRZ-L**
- C) NRZ-I
- D) Manchester

2. If the frequency spectrum of a signal has a bandwidth of 500 Hz with the highest frequency at 600 Hz, what should be the sampling rate, according to the Nyquist theorem?

- A) 200 samples/s
- B) 500 samples/s
- C) 1000 samples/s
- D) 1200 samples/s**

3. In asynchronous transmission, the gap time between bytes is _____.

- A) variable**
- B) fixed
- C) zero
- D) a function of the data rate

4. _____ substitutes eight consecutive zeros with 000VB0VB.

- A) B4B8
- B) B8ZS**
- C) HDB3
- D) none of the above

5. The most common technique to change an analog signal to digital data is called _____.

- A) sampling
- B) PAL
- C) PCM**
- D) none of the above

6. The minimum bandwidth of Manchester and differential Manchester is _____ that of NRZ.

- A) the same as
- B) twice**
- C) thrice
- D) none of the above

7. The signal rate is sometimes called the _____ rate.

- A) bit
- B) baud**
- C) signal
- D) none of the above

8. Unipolar, bipolar, and polar encoding are types of _____ encoding.

- A) line**
- B) block
- C) NRZ
- D) Manchester

9. _____ is normally referred to as mB/nB coding; it replaces each m-bit group with an n-bit group.

- A) Line coding
- B) Block coding**
- C) Scrambling
- D) None of the above

10. In _____ schemes, the voltages are on the both sides of the time axis. For example, the voltage level for 0 can be positive and the voltage level for 1 can be negative.

- A) unipolar
- B) bipolar
- C) polar**
- D) all of the above

11. The _____ rate defines the number of data elements sent in 1s; the _____ rate is the number of signal elements sent in 1s.

- A) signal; data
- B) data; signal**

- C) baud; bit
D) none of the above
12. The idea of RZ and the idea of NRZ-L are combined into the _____ scheme.
A) Manchester
B) differential Manchester
C) both (a) and (b)
D) neither (a) nor (b)
13. _____ provides synchronization without increasing the number of bits.
A) Line coding
B) Block coding
C) Scrambling
D) None of the above
14. The Nyquist theorem specifies the minimum sampling rate to be_____.
A) equal to the lowest frequency of a signal
B) equal to the highest frequency of a signal
C) twice the bandwidth of a signal
D) twice the highest frequency of a signal
15. PCM is an example of _____ conversion.
A) analog-to-analog
B) analog-to-digital
C) digital-to-digital
D) digital-to-analog
16. There are three sampling methods: _____.
A) ideal, natural, and flat-top
B) ideal, sampled, and flat-top
C) quantized, sampled, and ideal
D) none of the above
17. In _____ encoding, we use three levels: positive, zero, and negative.
A) unipolar
B) polar
C) bipolar
D) none of the above
18. Block coding can help in _____ at the receiver.
A) Synchronization
B) Error detection
C) Attenuation
D) (a) and (b)
19. In Manchester and differential Manchester encoding, the transition at the middle of the bit is used for _____.
A) bit transfer
B) synchronization
C) baud transfer
D) none of the above
20. _____ encoding has a transition at the beginning of each 0 bit.
A) Differential Manchester
B) Manchester
C) RZ
D) All the above
21. In _____, the change or lack of change in the level of the voltage determines the value of the bit.
A) NRZ-L
B) NRZ-I
C) both (a) and (b)
D) neither (a) nor (b)
22. In _____ there is always a transition at the middle of the bit, but the bit values are determined at the beginning of the bit. If the next bit is 0, there is a transition; if the next bit is 1, there is none.
A) Manchester

B) differential Manchester

C) both (a) and (b)

D) neither (a) nor (b)

23. In _____ encoding, the duration of the bit is divided into two halves. The voltage remains at one level during the first half and moves to the other level in the second half. The transition at the middle of the bit provides synchronization.

A) Manchester

B) differential Manchester

C) both (a) and (b)

D) neither (a) nor (b)

24. The _____ mode provides synchronization for the entire stream of bits must. In other words, it guarantees that the data arrive at a fixed rate.

A) isochronous

B) synchronous

C) asynchronous

D) none of the above

25. The idea of RZ and the idea of NRZ-I are combined into the _____ scheme.

A) Manchester

B) differential Manchester

C) both (a) and (b)

D) neither (a) nor (b)

26. In decoding a digital signal, the receiver calculates a running average of the received signal power, called the _____.

A) base

B) line

C) baseline

D) none of the above

27. In _____ transmission, we send bits one after another without start or stop bits or gaps. It is the responsibility of the receiver to group the bits.

A) synchronous

B) asynchronous

C) isochronous

D) none of the above

28. _____ finds the value of the signal amplitude for each sample; _____ finds the change from the previous sample.

A) DM; CM

B) DM; PCM

C) PCM; DM

D) none of the above

29. _____ substitutes four consecutive zeros with 000V or B00V.

A) HDB3

B) B4B8

C) B8ZSf

D) none of the above

30. The _____ scheme uses three levels (+V, 0, and -V) and three transition rules to move between the levels.

A) 4B5B

B) MLT-3

C) 2B1Q

D) none of the above

31. While there is (are) only _____ way(s) to send parallel data, there is (are) _____ subclass(es) of serial transmission.

A) one; two

B) one; three

C) two; three

D) none of the above

32. Which quantization level results in a more faithful reproduction of the signal?

- A) 2
B) 8
C) 16
D) 32
33. A _____ digital signal includes timing information in the data being transmitted.
A) self-synchronizing
B) self-transmitted
C) self-modulated
D) none of the above
34. In _____ transmission, bits are transmitted over a single wire, one at a time.
A) asynchronous serial
B) synchronous serial
C) parallel
D) (a) and (b)
35. The first step in PCM is _____.
A) quantization
B) sampling
C) modulation
D) none of the above
36. _____ encoding has a transition at the middle of each bit.
A) Manchester
B) Differential Manchester
C) RZ
D) All the above
37. In _____ transmission, we send 1 start bit (0) at the beginning and 1 or more stop bits (1s) at the end of each byte.
A) synchronous
B) asynchronous
C) isochronous
D) none of the above
38. In _____ transmission, bits are transmitted simultaneously, each across its own wire.
A) Asynchronous serial
B) Synchronous serial
C) Parallel
D) (a) and (b)
39. Which encoding method uses alternating positive and negative values for 1s?
A) AMI
B) RZ
C) NRZ-I
D) Manchester
40. The data rate is sometimes called the _____ rate.
A) bit
B) baud
C) signal
D) none of the above
41. _____ provides redundancy to ensure synchronization and inherent error detection.
A) Line coding
B) Block coding
C) Scrambling
D) None of the above
42. In _____ transmission, a start bit and a stop bit frame a character byte.
A) synchronous serial
B) asynchronous serial
C) parallel
D) (a) and (b)
43. Two common scrambling techniques are _____.
A) B8ZS and HDB3
B) AMI and NRZ
C) NRZ and RZ

D) Manchester and differential Manchester

44. _____ conversion involves three techniques: line coding, block coding, and scrambling.

A) Analog-to-analog

B) Analog-to-digital

C) Digital-to-analog

D) Digital-to-digital

45. The _____ scheme uses data patterns of size 2 and encodes the 2-bit patterns as one signal element belonging to a four-level signal.

A) MLT-3

B) 4B5B

C) 2B1Q

D) none of the above

46. In _____, the level of the voltage determines the value of the bit.

A) NRZ-I

B) NRZ-L

C) both (a) and (b)

D) neither (a) nor (b)

47. _____ is the process of converting digital data to a digital signal.

A) Line coding

B) Block coding

C) Scrambling

D) None of the above

48. In a _____ scheme, all the signal levels are on one side of the time axis, either above or below.

A) unipolar

B) polar

C) bipolar

D) all of the above