All the Multiple Choice Question and Answer (MCQs) have been compiled from the books of Data Communication and Networking by The well known author behrouz A forouzan.

This Data Communication and Networking – "**Digital Transmission**" multiple choice Based Questions and Answers PDF cover the below lists of topic.

1. Digital Transmission,parallel or serial in mode,asynchronous serial transmission,synchronous serial transmission multiple choice Based Questions and Answers.
2. Line coding methods,unipolar, polar, or bipolar multiple choice Based Questions and Answers.
3. polar encoding methods , NRZ, RZ, Manchester, and differential Manchester encoding multiple choice Based Questions and Answers.
4. bipolar encoding method , AMI multiple choice Based Questions and Answers.
5. Block coding methods, 4B/5B, 8B/10B, and 8B/6T multiple choice Based Questions and Answers.
6. PCM (pulse code modulation),sampling, quantizing, and line coding multiple choice Based Questions and Answers.
7. Nyquist theorem multiple choice Based Questions and Answers.
8. Shannon capacity multiple choice Based Questions and Answers.
9. Attenuation, distortion, and noise multiple choice Based Questions and Answers.
10.   Throughput, propagation speed, and propagation time ,wavelength of a frequency multiple choice Based Questions and Answers.

Digital Transmission multiple choice Questions and Answers
MCQ Set-1

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

    A. line
    B. block
    C. NRZ
    D. Manchester

2. _____ encoding has a transition at the middle of each bit.

    A. RZ
    B. Manchester
    C. Differential Manchester
    D. All the above

3. _____ encoding has a transition at the beginning of each 0 bit.

    A. RZ
    B. Manchester
    C. Differential Manchester
    D. All the above

4. PCM is an example of _____ conversion.

    A. digital-to-digital
    B. digital-to-analog
    C. analog-to-analog
    D. analog-to-digital

5. 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

6. 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

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

    A. NRZ-L
    B. RZ
    C. NRZ-I
    D. Manchester

8. Which encoding method uses alternating positive and negative values for 1s?

    A. NRZ-I
    B. RZ
    C. Manchester

D. AMI

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

A. 2
B. 8
C. 16
D. 32

10. Block coding can help in _____ at the receiver.

A. Synchronization
B. Error detection
C. Attenuation
D. (a) and (b)

Answer key for MCQ SET- 1	
Q-1	Correct Answer :line
Q-2	Correct Answer :All the above
Q-3	Correct Answer :Differential Manchester
Q-4	Correct Answer :analog-to-digital
Q-5	Correct Answer :1200 samples/s
Q-6	Correct Answer :twice the highest frequency of a signal
Q-7	Correct Answer :NRZ-L
Q-8	Correct Answer :AMI
Q-9	Correct Answer :32
Q-10	Correct Answer :(a) and (b)

Digital Transmission multiple choice Questions and Answers
MCQ Set-2

1. In _____ transmission, bits are transmitted simultaneously, each across its own wire.

    A. Asynchronous serial
    B. Synchronous serial
    C. Parallel
    D. (a) and (b)

2. 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)

3. In _____ transmission, a start bit and a stop bit frame a character byte

    A. asynchronous serial
    B. synchronous serial
    C. parallel
    D. (a) and (b)

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

    A. fixed
    B. variable
    C. a function of the data rate

D. zero

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

    A. Analog-to-digital
    B. Digital-to-analog
    C. Analog-to-analog
    D. Digital-to-digital

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

    A. Block coding
    B. Line coding
    C. Scrambling
    D. None of the above

7. _____ provides redundancy to ensure synchronization and inherent error detection.

    A. Block coding
    B. Line coding
    C. Scrambling
    D. None of the above

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

    A. Block coding
    B. Line coding
    C. Scrambling
    D. None of the above

9. _____ provides synchronization without increasing the number of bits.

 A. Scrambling
 B. Line coding
 C. Block coding
 D. None of the above

10. Two common scrambling techniques are _____

 A. NRZ and RZ
 B. AMI and NRZ
 C. B8ZS and HDB3
 D. Manchester and differential Manchester

Answer key for MCQ SET- 2	
Q-1	Correct Answer :Parallel
Q-2	Correct Answer :(a) and (b)
Q-3	Correct Answer :asynchronous serial
Q-4	Correct Answer :variable
Q-5	Correct Answer :Digital-to-digital
Q-6	Correct Answer :Line coding
Q-7	Correct Answer :Block coding
Q-8	Correct Answer :Block coding
Q-9	Correct Answer :Scrambling
Q-10	Correct Answer :B8ZS and HDB3

Digital Transmission multiple choice Questions and Answers
MCQ Set-3

1. 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. synchronous
    B. asynchronous
    C. isochronous
    D. none of the above

2. A _____ digital signal includes timing information in the data being transmitted.

    A. self-synchronizing
    B. self-modulated
    C. self-transmitted
    D. none of the above

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

    A. baseline
    B. base
    C. line
    D. none of the above

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

    A. PAL

B. PCM
C. sampling
D. none of the above

5. The first step in PCM is _____

A. quantization
B. modulation
C. sampling
D. none of the above

6. There are three sampling methods: _____

A. quantized, sampled, and ideal
B. ideal, sampled, and flat-top
C. ideal, natural, and flat-top
D. none of the above

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

A. DM; PCM
B. PCM; DM
C. DM; CM
D. none of the above

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

A. one; two
B. two; three
C. one; three
D. none of the above

9. 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

10. 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

Answer key for MCQ SET- 3	
Q-1	Correct Answer :isochronous
Q-2	Correct Answer :self-synchronizing
Q-3	Correct Answer :baseline
Q-4	Correct Answer :PCM
Q-5	Correct Answer :sampling
Q-6	Correct Answer :ideal, natural, and flat-top
Q-7	Correct Answer :PCM; DM
Q-8	Correct Answer :one; three
Q-9	Correct Answer :asynchronous
Q-10	Correct Answer :synchronous

Digital Transmission multiple choice Questions and Answers
MCQ Set-4

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

    A. data; signal
    B. signal; data
    C. baud; bit
    D. none of the above

2. The signal rate is sometimes called the _____ rate

    A. baud
    B. bit
    C. signal
    D. none of the above

3. The data rate is sometimes called the ____ rate

    A. baud
    B. bit
    C. signal
    D. none of the above

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

    A. polar

B. bipolar
C. unipolar
D. all of the above

5. 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. polar
B. bipolar
C. unipolar
D. all of the above

6. 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)

7. In _____, the change or lack of change 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)

8. 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)

9. 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)

10. 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)

Answer key for MCQ SET- 4	
Q-1	Correct Answer :data; signal
Q-2	Correct Answer :baud
Q-3	Correct Answer :bit
Q-4	Correct Answer :unipolar
Q-5	Correct Answer :polar
Q-6	Correct Answer :NRZ-L
Q-7	Correct Answer :NRZ-I

Q-8	Correct Answer :Manchester
Q-9	Correct Answer :differential Manchester
Q-10	Correct Answer :both (a) and (b)

Digital Transmission multiple choice Questions and Answers
MCQ Set-5

1. 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)

2. In Manchester and differential Manchester encoding, the transition at the middle of the bit is used for _____

A. bit transfer
B. baud transfer
C. synchronization
D. none of the above

3. 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

4. In _____ encoding, we use three levels: positive, zero, and negative

    A. unipolar
    B. bipolar
    C. polar
    D. none of the above

5. 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. 4B5B
    B. 2B1Q
    C. MLT-3
    D. none of the above

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

    A. 4B5B
    B. 2B1Q
    C. MLT-3
    D. none of the above

7. _____ substitutes eight consecutive zeros with 000VB0VB

    A. B4B8
    B. HDB3
    C. B8ZS
    D. none of the above

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

A. B4B8
B. HDB3
C. B8ZSf
D. none of the above

Answer key for MCQ SET- 5	
Q-1	Correct Answer :differential Manchester
Q-2	Correct Answer :synchronization
Q-3	Correct Answer :twice
Q-4	Correct Answer :bipolar
Q-5	Correct Answer :2B1Q
Q-6	Correct Answer :MLT-3
Q-7	Correct Answer :B8ZS
Q-8	Correct Answer :HDB3
Q-9	
Q-10	