MC questions for Unit 11

Question 1

A modulation scheme uses 8 voltage levels, which we will call 0 through 7. Each voltage level is used to represent 3 bits according to its binary representation, e.g., voltage level 3 means " 0 1 1".*What sequence of voltage levels is used to send the bit sequence 010010001111?*

- (•) 2 2 1 7
- ( ) 1 1 1 7
- ( ) 8 2 3 3
- ( ) 0 1 0 1 0 1

Question 2

An 8 level signaling scheme is used to send information in a 5 MHz frequency band. What is the maximum bit rate at which data can be transferred? Use the Nyquist signaling rate.

- ( ) 80 Mbps
- (•) 30 Mbps
- ( ) 20 Mbps
- ( ) 10 Mbps

Question 3

A wireless channel has 20 MHz of bandwidth. Assume that signals are received with a signal-to-noise ratio (SNR) of roughly 1000. What is the maximum rate at which information can be sent over the wireless link? Use the Shannon limit.

- 20 Gbps
- 60 Mbps
- 200 Mbps
- 400 Mbps

Question 4

A sequence of bits is 4B/5B mapped before it is sent. The result is: 1110011110. What were the original bits?

- 01111110
- 11110001
- 11100000
- 00001110

Question 5

Which encoding type always has a nonzero average amplitude?

- unipolar
- bipolar
- differential
- all of the above

Question 6

Which modulation technique encodes three bits into a signal with different phase shifts and constant amplitude?

- 8-ASK
- 8-PSK
- 3-PSK
- 1-ASK

Question 7

Which one of the following encoding type has the self-synchronization property?

- Unipolar NRZ
- Polar NRZ
- Polar NRZ-I
- Polar RZ

Question 8

On-Off Keying is a special case of _____

- PSK
- FSK
- ASK
- OSK