Week 2 : Assignment 2

The due date for submitting this assignment is 23:59 IST.

1. In the channel model (awgn channel), we discard the NF part, the coefficient(s) of the channel are:
   a. Roll and constant
   b. Roll and phase
   c. Roll and dummy
   d. Complete and dummy
   
   **Answer:** b

2. The noise in an incoherent communication system is:
   a. Additive white noise
   b. impulse noise
   c. multiplicative noise
   d. AWGN
   
   **Answer:** a

3. The last block of a coding circuit in the receiver for getting the digitized data is composed of:
   a. 1 bit
   b. 16 bit
   c. 8 bit
   d. 4 bit
   
   **Answer:** b

4. The transfer function of the channel is:
   a. $H(z)$ = $\frac{1}{z^2}$
   b. $H(z)$ = $\frac{1}{z}$
   c. $H(z)$ = $\frac{1}{z^3}$
   d. $H(z)$ = $\frac{1}{z^4}$
   
   **Answer:** c

5. The noise in the channel is:
   a. Additive noise
   b. impulse noise
   c. multiplicative noise
   d. AWGN
   
   **Answer:** a

6. The transfer function of the channel is:
   a. $H(z)$ = $\frac{1}{z^2}$
   b. $H(z)$ = $\frac{1}{z}$
   c. $H(z)$ = $\frac{1}{z^3}$
   d. $H(z)$ = $\frac{1}{z^4}$
   
   **Answer:** c

7. For a distance of 5 km, the average of the coherence length with widths drops from 2.42 m to
   a. 2.35 m
   b. 2.25 m
   c. 2.15 m
   d. 2.05 m
   
   **Answer:** b

8. In the time domain of a channel model, tap $[h_1, h_2, h_3]$. For a fixed number of channel taps, ignoring phase, the channel can be approximated as
   a. Digital FIR filter
   b. All pass filter
   c. Not
   
   **Answer:** c

9. The process of quantization in digital sampling for wireless channel model, can be of
   a. Down sampling and high pass filtering
   b. Down sampling and low pass filtering
   c. Down sampling and high pass filtering
   d. Down sampling and low pass filtering
   
   **Answer:** b

10. The key distinctions/differences between NR and digital views for channel models are
    a. NR channel is non-uniform and Digital channel is also non-uniform
    b. NR channel is uniform and Digital channel is non-uniform
    c. NR channel is non-uniform and Digital channel is uniform
    d. Neither
    
    **Answer:** c

11. Consequence of high sampling digitally, the impact in the NR channel taps is
    a. The number of NR channel taps increases
    b. The number of NR channel taps decreases
    c. The number of NR channel taps remain constant
    d. Both digital taps and NR taps increase in number
    
    **Answer:** a

12. The different time delay is in channel given by $[\tau_1, \tau_2, \tau_3, \tau_4]$. The 5 kHz bandwidthbound of the channel is $0.1$ millisecond.
    a. $\tau_1$ kHz
    b. $\tau_2$ kHz
    c. $\tau_3$ kHz
    d. $\tau_4$ kHz
    
    **Answer:** b