**CSCI 367 - Computer Networks I**

Data Transmission & Transmission Media

1. See Figure 3.4 below. Consider the generated analog signal over time: s(t) = (4/π) X [sin(2πft) + (1/3) sin(2π(3f) t)]. This analog signal is a combination of \_\_\_\_\_\_\_\_\_ frequencies. (two)
2. See Figure 3.4 below. Consider the generated analog signal over time: s(t) = (4/π) X [sin(2πft) + (1/3) sin(2π(3f) t)]. The second frequency is a \_\_\_\_\_\_\_\_\_ of the first. (multiple)
3. See Figure 3.4 below. Consider the generated analog signal over time: s(t) = (4/π) X [sin(2πft) + (1/3) sin(2π(3f) t)]. The fundamental frequency is given by \_\_\_\_\_\_\_\_\_. (f)
4. See Figure 3.4 below. Consider the generated analog signal over time: s(t) = (4/π) X [sin(2πft) + (1/3) sin(2π(3f) t)]. This signal is made of a fundamental frequency and a \_\_\_\_\_\_\_\_\_ frequency. (harmonic)
5. See Figure 3.4 below. Consider the generated analog signal over time: s(t) = (4/π) X [sin(2πft) + (1/3) sin(2π(3f) t)]. The signal’s period is based on the \_\_\_\_\_\_\_\_\_ frequency. (fundamental)
6. See Figure 3.4 below. Consider the generated analog signal over time: s(t) = (4/π) X [sin(2πft) + (1/3) sin(2π(3f) t)]. The fundamental frequency’s period T is \_\_\_\_\_\_\_\_\_\_\_\_. (1/f)
7. See Figure 3.5a below. Consider the generated analog signal over time: s(t) = (4/π) X [sin(2πft) + (1/3) sin(2π(3f) t)]. In this case, the frequency domain consists of \_\_\_\_\_\_\_\_\_\_\_\_ frequencies. (2)
8. Any analog signal can be constructed from individual analog signal’s \_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_. (amplitude, frequency, phase)
9. Signals can be studied from two perspectives: \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_ domains. (frequency, time)
10. The time domain function s(t) specifies the \_\_\_\_\_\_\_\_\_\_\_\_ of the signal over time. (amplitude)
11. See Figure 3.5a below. The frequency domain function s(f) specifies the \_\_\_\_\_\_\_\_\_\_\_\_ of the signal over the frequency domain. (peak amplitude).
12. A signal’s spectrum delimits the \_\_\_\_\_\_\_\_\_\_\_\_\_. (range of frequencies)
13. A signal’s absolute bandwidth is the \_\_\_\_\_\_\_ of the signal’s spectrum. (width)
14. Consider the generated analog signal over time: s(t) = (4/π) X [sin(2πft) + (1/3) sin(2π(3f) t)]

By adding the sine wave frequencies f and 3f, the resulting wave form approaches a \_\_\_\_\_\_\_\_\_\_\_\_. (square-wave)

1. See Figure 3.6 below. Consider the generated analog signal over time: s(t) = 1 + (4/π) X [sin(2πft) + (1/3) sin(2π(3f) t)]. The value 1 represents a direct current (dc) signal of frequency 0 that’s added to the analog signal. This dc component effects the analog signal’s average \_\_\_\_\_\_\_\_. (amplitude)
2. See Figure 3.4c below. The signal spectrum extends from \_\_\_\_\_\_\_\_\_\_\_. (f to 3f)
3. See Figure 3.4c below. The width (absolute bandwidth) of the signal spectrum is \_\_\_\_\_\_\_\_\_\_\_. (2f)
4. Even though a signal contains frequencies over a broad range, the effective \_\_\_\_\_\_\_\_\_\_\_ is the band within which most of the signal energy is concentrated. (bandwidth)
5. The higher the fundamental frequency, the higher the resulting bandwidth needed to approximate a square wave (remember, a square wave represents a digital (binary) value). But with higher fundamental frequencies, the higher the potential \_\_\_\_\_\_\_\_\_\_. (data rate)
6. See Figure 3.7 below. A square wave can be approximated by adding scaled multiples of the \_\_\_\_\_\_\_\_\_\_ frequency. (fundamental)
7. Electromagnetic waves are guided along between a transmitter and receiver by \_\_\_\_\_\_\_\_\_\_. (copper twisted-pair, copper coaxial cable, optical fiber)
8. The most common types of copper twisted pair are \_\_\_\_\_\_\_\_\_\_\_. (Cat 5e, Cat 6)
9. \_\_\_\_\_\_\_\_\_\_ uses FDM (Frequency Division Multiplexing). (copper coaxial cable)
10. Concerns with twisted-pair and coaxial cable are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (attenuation, crosstalk)
11. Wireless transmission relies on \_\_\_\_\_\_\_\_\_\_\_\_ at the transmitter and receiver. (antennas)
12. Transmitter antennas radiate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy. (electromagnetic)
13. An isotropic antenna radiates electromagnetic waves in \_\_\_\_\_\_\_\_\_\_\_\_\_ directions. (all)
14. A parabolic antenna radiates electromagnetic waves in a \_\_\_\_\_\_\_\_\_\_ direction. (particular)
15. Antenna gain is a measure of the \_\_\_\_\_\_\_\_ of an antenna. (directionality)
16. A communication satellite is used to \_\_\_\_\_\_\_\_ signals between ground-based transmitters and receivers.

f4.pdf

f5.pdf

f6.pdf

f7.pdf