KNOWLEDGE PROBE 5: INTRODUCTION TO WIRELESS TECHNOLOGY
The Electronics of Wireless

Learning Objectives

1. Identify terms associated with wireless communication.
2. Distinguish between different types of receivers.

1. A receiver that converts the incoming signal down to a lower frequency is called a
   a. Dynamotor
   b. Homodyne
   c. Superheterodyne
   d. Synchrodyne

2. What circuit converts the incoming signal down to an IF?
   a. Demodulator
   b. LNA
   c. Local oscillator
   d. Mixer

3. Why is the input signal downconverted?
   a. Get rid of noise
   b. Increase signal strength
   c. Make tuning easier
   d. Provide better selectivity

4. A receiver has an incoming signal of 3.5 MHz. The local oscillator frequency is 3.955 MHz. What is the IF?
   a. 455 kHz
   b. 3.955 MHz
   c. 7.455 MHz
   d. 10.7 MHz

5. In a receiver, if the received signal is digital, what circuit is used after demodulation to recover the original signal?
   a. Analog-to-digital converter
   b. Band pass filter
   c. Demultiplexer
   d. Digital-to-analog converter

6. Why is a LNA used in a receiver?
   a. Amplify the very weak signal
   b. Improve selectivity
   c. Mitigate the noise
   d. Mix the input with the LO signal

7. A radio the uses DSP for some signal processing is called a
   a. Modulated receiver
   b. Software-defined radio
   c. Superheterodyne
   d. Tuned radio frequency receiver

8. Which of the following is NOT usually preformed in a DSP?
   a. Amplification
   b. Demodulation
   c. Filtering
   d. Mixing

9. In a basic transmitter, the frequency of operation is set by
   a. Dielectric resonator
   b. LC resonant circuit
   c. Quartz crystal
   d. RC time constant

10. What signal source is used to select multiple frequencies in a transmitter?
    a. Crystal oscillator
    b. Frequency synthesizer
    c. LC oscillator
    d. RC oscillator

11. A mixer can be used for upconversion as well a downconversion.
    a. True
    b. False

12. What is the final stage of a transmitter that drives the antenna?
    a. Frequency synthesizer
    b. LNA
    c. Modulator
    d. Power amplifier

13. What usually controls the frequency synthesizer in a transmitter?
    a. Flip flop
    b. Embedded microcontroller
    c. Crystal oscillator
    d. Modulator

14. To use DSP in a transmitter or receiver, it must first be preceded by a(n)
    a. Analog-to-digital converter
    b. Band pass filter.
    c. Digital-to-analog converter
    d. Power amplifier