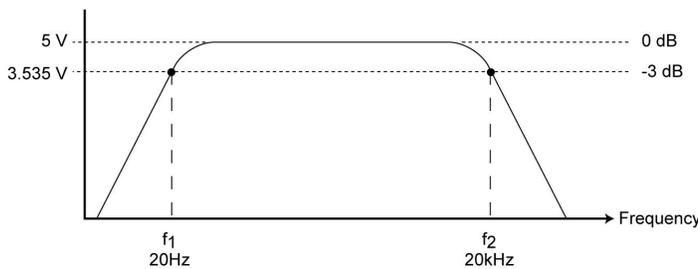


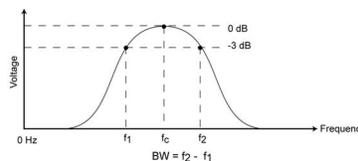
## Frequency Domain View of Electronic Signals: Practical Application of the Fourier Theory

Objectives: Bandwidth

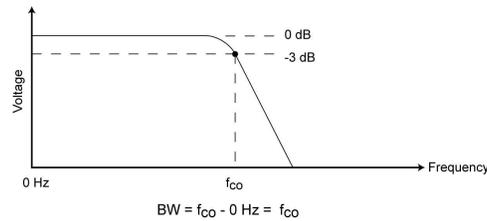
1. Identify the plot that defines the spectrum of a binary signal.
  2. Define the term bandwidth and state a way to calculate it for a rectangular pulse signal.
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1. The range of frequencies over which a circuit operates or which a transmission medium passes is the
    - a. Bandwidth
    - b. Cut-off frequency
    - c. Filter
    - d. Frequency content



2. What is the bandwidth of the circuit shown here?
  - a. -3db
  - b. 3.535 volts
  - c. 19,980 Hz
  - d. 20,020 Hz
  
3. In a \_\_\_\_\_ the bandwidth is just the value of the upper cut-off frequency  $f_{co}$ .
  - a. Band pass filter
  - b. Low pass filter
  
4. In a \_\_\_\_\_, the bandwidth is the difference between the upper ( $f_2$ ) and lower ( $f_1$ ) cut-off frequencies.
  - a. Band pass filter
  - b. Low pass filter



5. This figure represents a \_\_\_\_\_
  - a. Band pass filter
  - b. Low pass filter



6. This figure represents a \_\_\_\_\_
- Band pass filter
  - Low pass filter
7. If the \_\_\_\_\_ and the \_\_\_\_\_ of the input signal are compatible, the circuit will pass all of the components of the signal including most of the harmonics it contains.
- Bandwidth, frequency content
  - Bandwidth, signal
  - Frequency content, harmonics
  - Harmonics, signal
8. If the circuit has a \_\_\_\_\_, it will act as a \_\_\_\_\_. Some of the parts of the signal, typically the upper level harmonics, will not be passed. As a result, the output signal will be a distorted version of the input.
- Limited bandwidth, amplifier
  - Limited bandwidth, filter
  - Wide bandwidth, cut-off amplifier
  - Wide bandwidth, filter
9. The formula for finding bandwidth is
- $BW = 0.35 + t_r$
  - $BW = 0.35 - t_r$
  - $BW = 0.35 / t_r$
  - $BW = 0.35 t_r$
10. If a low pass filter with a square wave input produces an output pulse with a rise time for 750 nS, the bandwidth is:
- 4.67 kHz
  - 46.70 kHz
  - 466.67 kHz
  - 467.67 Hz