

KNOWLEDGE PROBE 3: SYSTEMS VIEW OF ELECTRONICS

Circuit/Equipment Specifications

Learning Objectives

1. Describe the characteristics or specifications that must be considered when connecting circuits together in a system.
 2. Solve for gain when given inputs and outputs.
 3. Calculate attenuation when given a circuit's resistance and voltage.
 4. Determine load impedance.
-
1. Gain is usually defined as the
 - a. Input times a constant
 - b. Input times the output
 - c. Output divided by a constant
 - d. Output divided by input
 2. An amplifier has an input of 20 mV and output of 50 mV. Its gain is
 - a. 2.5
 - b. 4
 - c. 30
 - d. 100
 3. An amplifier has an output of 40 watts. Its gain is 120. The input is
 - a. 0.03333 watts
 - b. 3 watts
 - c. 0.3333 watts
 - d. 6 watts
 4. Three amplifiers with gains of 6, 14, and 23 are cascaded. The total gain is
 - a. 84
 - b. 194
 - c. 762
 - d. 1932
 5. An amplifier has a voltage gain of 700. The gain in dB is
 - a. 17.8
 - b. 28.45
 - c. 56.9
 - d. 69.2



6. An amplifier has a power gain of 30 dB. The input is 2 mW. The output power is
 - a. 2 watts
 - b. 20 watts
 - c. 30 watts
 - d. 60 watts
7. What is the approximate attenuation in dB of a circuit with an input of 8 volts and an output of 16 mV?
 - a. 27 dB
 - b. -36 dB
 - c. 48 dB
 - d. -53.9
8. Four circuits are in cascade with gains of 3, -10, 7, and -1 dB. The overall gain is
 - a. 21 dB
 - b. 1 dB
 - c. -1 dB
 - d. -11 dB
9. What characteristic does a circuit with a gain of 0 dB have?
 - a. More voltage than power
 - b. Output is the same as the input
 - c. Zero output
 - d. Zero voltage gain
10. The combined resistance and reactance as seen by a driving circuit is called the
 - a. Input impedance
 - b. Load
 - c. Output impedance
 - d. Reactance
11. When one circuit drives another, what circuit is formed by the output impedance of the driving circuit and the input impedance of the other circuit?
 - a. Amplifier
 - b. Bridge circuit
 - c. Filter
 - d. Voltage divider
12. A signal generator with an output impedance of 600 ohms has an open circuit output voltage of 0.2 volts. This signal drives an amplifier with an input impedance of 1200 ohms, a gain of 100 and an output impedance of 300 ohms. What is the approximate voltage across the 900 ohm load?
 - a. 2 volts
 - b. 10 volts
 - c. 13.3 volts
 - d. 200 volts



13. To achieve maximum power transfer from a 75 ohm generator, the load impedance must be
 - a. 7.5 ohms
 - b. 50 ohms
 - c. 75 ohms
 - d. 150 ohms

14. An amplifier has a lower cut-off frequency of 39.2 kHz and an upper cut-off frequency of 42.8 kHz. The circuit bandwidth is
 - a. 3.6 kHz
 - b. 7.2 kHz
 - c. 10.8 kHz
 - d. 82 kHz

15. The bandwidth of a circuit is equal to the upper cut-off frequency if the circuit has
 - a. Direct coupled DC response
 - b. Infinite low frequency response
 - c. No lower cut-off frequency
 - d. Zero gain at DC.

16. The frequency response of an amplifier with upper and lower cut-off frequencies is similar to that of which type of filter?
 - a. Band pass
 - b. Band reject
 - c. High pass
 - d. Low pass