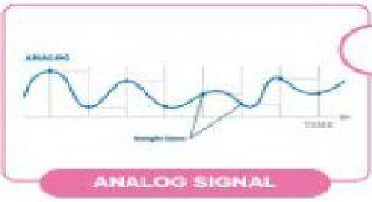
B. Look up the definition of each type of signal in the glossary. Then, match both columns using the numbers.

DIGITAL SIGNAL



ANALOG SIGNAL

ELECTRICAL SIGNAL

OPTICAL SIGNAL

1	An electromagnetic signal whose wavelength is extremely high.
2	A signal in which infomation is sent and received in electronic form as a series of the numbers 1 and 0.
3	A signal in the form of voltage or current that conveys information.
4	A signal that can take on any amplitude and is well-defined at every time.

WHILE YOU READ

C. Read the text and look at the definitions (a - g) of the words in **bold** (1 -7). Then, fill each gap with the correct number. You can use the glossary for help.

ELECTRICAL OR OPTICAL TECHNOLOGY?

1. High **throughput** (1) network systems and high-performance **operating systems** (2) have skyrocketed for the past 20 years and will continue to do so into the future. While the performance of these systems has almost doubled over the past two decades, most if not all of such improvements in the first decade were due to higher **transistors** (3) speeds.

2. Over the past 10 years, though, improvements in transistor performance have slowed down with few power improvements from one process **node** (4) to another, limiting the integration density. Multicore parallel architectures have been employed to keep up with the demand. Interconnect technology is essential in enabling these new parallel architectures to achieve their targeted performance. Limitations in the interconnect throughput, density, and latency could hinder advances for future architectures.

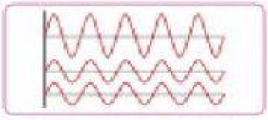
3. Optical and electrical interconnect technologies have always competed to be the solution of choice. Each offers specific trade-offs based on density, reach, reliability, cost, and power in a given application.

4. System manufacturers historically have been reluctant to replace electrical interconnects with optical solutions, due to their lower complexity and lower-cost supply chain. In most generations of high-performance systems, optics seem the best choice at first since they have a much greater **bandwidth** (5) to transmit information and are immune to electromagnetic **interference** (6), but the cost advantage of their electrical counterparts wins in the end. Therefore, optical interconnects have usually ended up to be limited to longer-distance links where the attenuation in copper cable is too high for the electrical circuits to compensate.

5. However, with the performance requirements in future systems and new interconnect technologies and **customers** (7), other factors may come into the decision-making process that can affect the old paradigms. Examining the tradeoffs of the electrical and optical interconnect solutions based on different system requirements and configurations serves as a framework for the selection of proper interconnects in next-generation systems.

Farjadrad, R. (2014). What's the Difference Between Optical and Electrical Technology for 100-Gbit/s Connectivity in Future Systems? Electronicdesign.com.
https://www.electronicdesign.com/technologies/communications/article/21800130/whats-the-difference-between-optical-and-electrical-technology-for-100gbits-connectivity-in-future-systems.

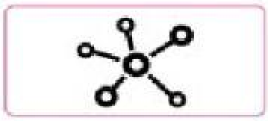
a) Transistor
A device that regulates current or voltage flow and acts as a switch or gate for electronic signals.



b) __________
Noise or other electronic signals that stop you from getting good pictures or sound on a television or radio.

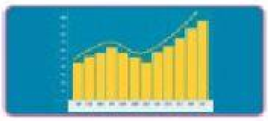
c) __________
A set of programs that control the way a computer system works, especially how its memory is used and how different programs work together.

d) __________
Someone who pays for goods or services.



e) __________
A working station or device joined to a net-work.

f) __________
The maximum amount of information that can be sent over a network connection in a given amount of time.



g) __________
The average rate of successful message delivery over a communication channel.