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| *Indicate whether the statement is true or false.* |

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| 1. After a problem and its symptoms have been identified, a theory regarding a probable cause should be established.​   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False | |

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| 2. Servers that have a NOS installed require less memory, processing power, and storage capacity than clients because servers are called on to handle only light processing loads and requests from multiple clients.​   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False | |

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| 3. The fundamental difference between a switch and a router is that a switch belongs only to its local network and a router belongs to two or more local networks.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False | |

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| 4. Static electricity is an electrical charge in motion.​   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False | |

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| 5. The protocol data unit for the Physical layer of the OSI model is payload, or data.​   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False | |

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| *Indicate the answer choice that best completes the statement or answers the question.* |

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| 6. What layer of the OSI model describes how data between applications is synced and recovered if messages don't arrive intact at the receiving application?​   |  |  |  | | --- | --- | --- | |  | a. | ​Application Layer | |  | b. | ​Presentation Layer | |  | c. | ​Session Layer | |  | d. | ​Transport Layer | |

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| 7. In what network topology are devices daisy-chained together in a single line?​   |  |  |  | | --- | --- | --- | |  | a. | ​bus topology | |  | b. | ​star topology | |  | c. | ​star bus topology | |  | d. | ​ring topology | |

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| 8. The device where a telecommunications service provider network ends and an organization's network begins is referred to as what option below?​   |  |  |  | | --- | --- | --- | |  | a. | ​demarc | |  | b. | ​last mile | |  | c. | ​local loop | |  | d. | ​point of no return | |

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| 9. ​A standard network switch operates at what layer of the OSI model?   |  |  |  | | --- | --- | --- | |  | a. | ​Layer 5 | |  | b. | ​Layer 2 | |  | c. | ​Layer 3 | |  | d. | ​Layer 7 | |

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| 10. ​Using the same network to deliver multiple types of communications services, such as video, voice, and fax, is known as:   |  |  |  | | --- | --- | --- | |  | a. | ​multi-faceted networking | |  | b. | ​convergence | |  | c. | ​multiplexing | |  | d. | ​unified networking | |

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| 11. ​Which of the following is not one of the disadvantages of peer-to-peer networks?   |  |  |  | | --- | --- | --- | |  | a. | ​They lack scalability | |  | b. | ​They are not necessarily secure | |  | c. | ​They are impractical for connecting large numbers of computers | |  | d. | ​They centralize user account logins | |

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| 12. Select the layer of the OSI model that is responsible for reformatting, compressing, and/or encrypting data in a way that the application on the receiving end can read:​   |  |  |  | | --- | --- | --- | |  | a. | ​Application | |  | b. | ​Presentation | |  | c. | ​Session | |  | d. | ​Transport | |

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| 13. What mail protocol is used to send mail messages to a server?​   |  |  |  | | --- | --- | --- | |  | a. | ​POP3 | |  | b. | ​IMAP4 | |  | c. | ​SMTP | |  | d. | ​HTTPS | |

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| 14. The segment or datagram protocol data unit exists at what layer of the OSI model?​   |  |  |  | | --- | --- | --- | |  | a. | ​Application layer | |  | b. | ​Transport layer | |  | c. | ​Network layer | |  | d. | ​Data link layer | |

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| 15. ​An open electrical circuit as a result of a failed circuit breaker is considered to be what type of failure system?   |  |  |  | | --- | --- | --- | |  | a. | ​fail-open | |  | b. | ​fail-close | |  | c. | ​fail-tolerant | |  | d. | ​fail-dynamic | |

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| 16. When using a Windows domain, what is the domain-level account for each user known as?​   |  |  |  | | --- | --- | --- | |  | a. | ​global account | |  | b. | ​universal account | |  | c. | ​domain token | |  | d. | ​principle name | |

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| 17. The proper handling procedures for substances such as chemical solvents is typically outlined in which of the following options?   |  |  |  | | --- | --- | --- | |  | a. | ​Toxic Chemical Safety Procedure (TCSP) | |  | b. | ​Dangerous and Hazardous Waste Disposal Sheet (DHWDS) | |  | c. | ​Environmental Chemical Hazard Sheet (ECHS) | |  | d. | ​Material Safety Data Sheet (MSDS) | |

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| 18. What is the name for the protocol data unit (PDU) ​of the Data Link layer?   |  |  |  | | --- | --- | --- | |  | a. | ​packet | |  | b. | ​data | |  | c. | ​bit | |  | d. | ​frame | |

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| 19. At what layer of the OSI model do the IP, ICMP, and ARP protocols operate?​   |  |  |  | | --- | --- | --- | |  | a. | ​Application | |  | b. | ​Session | |  | c. | ​Transport | |  | d. | ​Network | |

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| 20. What is the name for a client-server model with one server and many clients, such as when an application is used to watch a live sports event?​   |  |  |  | | --- | --- | --- | |  | a. | ​multicast distribution | |  | b. | ​multi-point communication | |  | c. | ​spread packet delivery | |  | d. | ​broadcast transmission | |

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| 21. ​Any computer or device on a network that can be addressed on the local network is referred to as a:   |  |  |  | | --- | --- | --- | |  | a. | ​host | |  | b. | ​node | |  | c. | ​target | |  | d. | ​subject | |

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| 22. HTTP, IMAP4, FTP, and Telnet are all examples of protocols that operate at what layer of the OSI model?​   |  |  |  | | --- | --- | --- | |  | a. | ​Layer 4 | |  | b. | ​Layer 5 | |  | c. | ​Layer 6 | |  | d. | ​Layer 7 | |

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| 23. ​What physical network topology consists of all connected devices connecting to one central device, such as a switch?   |  |  |  | | --- | --- | --- | |  | a. | ​bus topology | |  | b. | ​ring topology | |  | c. | ​hub topology | |  | d. | ​star topology | |

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| 24. The process of adding a header to the data inherited from the layer above is called what option below?​   |  |  |  | | --- | --- | --- | |  | a. | ​segmenting | |  | b. | ​encapsulation | |  | c. | ​fragmenting | |  | d. | ​appending | |

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| 25. If a Network layer protocol is aware that a packet is larger than the maximum size for its network, it will divide the packet into smaller packets in a process known as:​   |  |  |  | | --- | --- | --- | |  | a. | ​de-encapsulation | |  | b. | ​fragmentation | |  | c. | ​packet splitting | |  | d. | ​framing | |

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| *Indicate one or more answer choices that best complete the statement or answer the question.* |

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| 26. What two mail delivery protocols below can be used by a client application to receive e-mail from a server?​   |  |  |  | | --- | --- | --- | |  | a. | POP3 | |  | b. | ​SMTP | |  | c. | ​MGET | |  | d. | ​IMAP4 | |

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| 27. What are the two main Transport Layer protocols?​   |  |  |  | | --- | --- | --- | |  | a. | ​IPX | |  | b. | ​SPX | |  | c. | TCP​ | |  | d. | ​UDP | |

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| 28. Which two protocols can be used to gain remote access specifically to a server's command line interface, securely and unsecurely?   |  |  |  | | --- | --- | --- | |  | a. | ​Telnet | |  | b. | ​SSH | |  | c. | ​Remote Desktop | |  | d. | ​VNC | |

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| 29. Static electricity can cause what two types of damage in electronic components?​   |  |  |  | | --- | --- | --- | |  | a. | ​electromagnetic failure | |  | b. | ​catastrophic failure | |  | c. | ​upset failure | |  | d. | ​polarity failure | |

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| 30. What two encryption protocols are commonly used with the Hypertext Transfer Protocol?   |  |  |  | | --- | --- | --- | |  | a. | ​SSH | |  | b. | ​TLS | |  | c. | ​SSL | |  | d. | ​AES | |

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| *Enter the appropriate word(s) to complete the statement.* |

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| 31. \_\_\_\_\_\_\_\_\_\_\_ is an unsecured client server application / protocol that transfers files between two computers.​ |

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| 32. Voice and video transmissions are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, meaning you don't want to hear breaks in your conversation or see a buffering message when you watch a movie over the Internet. |

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| 33. The centralized directory database that contains user account information and security for the entire group of computers in a Windows domain is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |

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| 34. The Network layer header identifies sending and receiving hosts by their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.​ |

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| 35. The smallest network is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is a network of personal devices, such as the network you use when you sync your cell phone and your computer.​ |

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| *Match each correct item with the statement below.*​​  ​   |  |  |  |  | | --- | --- | --- | --- | | a. | ​bandwidth | b. | convergence​ | | c. | ​demarcation point | d. | electrostatic discharge (ESD)​ | | e. | ​fail close | f. | fail open​ | | g. | ​global account | h. | payload​ | | i. | ​segment | j. | upset failure | |

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| 36. ​The point of division between a telecommunications service carrier’s network and a building’s internal network. |

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| 37. ​The use of data networks to carry voice, video, and other communications services in addition to data. |

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| 38. ​(1) A unit of data that results from subdividing a larger protocol data unit. (2) A part of a network. Usually, a segment is composed of a group of nodes that share the same communications channel for all their traffic. |

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| 39. ​System default that allows access during a system or network failure. |

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| 40. The transfer of electrical charge between two bodies, such as when a technician touches a computer component. |

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| 41. ​A user’s domain-level account, also called a global username or network ID, which is assigned by the network administrator and is kept in Active Directory. |

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| 42. ​(1) The amount of traffic, or data transmission activity, on a network. (2) A measure of the difference between the highest and lowest frequencies that a medium can transmit. |

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| 43. ​Damage that can shorten the life of a component and/or cause intermittent errors. |

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| 44. System default that denies access during a system or network failure.​ |

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| 45. ​Data that is passed between applications or utility programs and the operating system, and includes control information. |

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| 46. How can you prevent damage to a component prior to touching it?​ |

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| 47. What are some general OSHA guidelines to use when using power (electric) tools or other hand tools in the workplace?​ |

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| 48. Describe how the Transmission Control Protocol (TCP) and User Datagram Protocol (UDP) differ from each other, and provide examples of where each might be used.​ |

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| 49. Explain the differences between a physical topology and a logical topology.​ |

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| 50. Explain the two different categories of Application layer protocols, and then detail the PDU used at this layer.​ |

**Answer Key**

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| 1. True |

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| 2. False |

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| 3. True |

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| 4. False |

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| 5. False |

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| 6. c |

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| 7. a |

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| 8. a |

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| 9. b |

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| 10. b |

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| 11. d |

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| 12. b |

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| 13. c |

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| 14. b |

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| 16. a |

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| 17. d |

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| 18. d |

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| 19. d |

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| 20. a |

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| 22. d |

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| 23. d |

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| 24. b |

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| 25. b |

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| 26. a, d |

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| 27. c, d |

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| 28. a, b |

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| 29. b, c |

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| 30. b, c |

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| 31. FTP​ |

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| 32. delay-sensitive​ |

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| 33. Active Directory (AD)​ |

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| 34. IP addresses​ |

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| 35. PAN (Personal Area Network)​ |

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| 36. c |

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| 37. b |

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| 38. i |

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| 39. f |

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| 40. d |

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| 41. g |

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| 42. a |

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| 44. e |

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| 45. h |

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| 46. Before touching a component, first ground yourself using one of these methods:   * Wear an ESD strap around your wrist that clips onto the chassis or computer case, which eliminates any ESD between you and the chassis and its components. * If you don’t have an ESD strap handy, be sure to at least touch the case before you touch any component inside the case. This is not as effective as wearing an ESD strap, but can reduce the risk of ESD. * To protect a sensitive component, always store it inside an antistatic bag when it’s not in use.   In addition to protecting against ESD, always shut down and unplug a computer before working inside it. |

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| 47. Some general OSHA guidelines for using power tools or other hand tools in the workplace are as follows:   * Wear personal protective equipment (PPE) to protect yourself as you work. For example, wear eye protection where dust or fumes are generated by power tools. * Keep all tools in good condition and properly store tools not in use. Examine a tool for damage before you use it. * Use the right tool for the job and operate the tool according to the manufacturer’s instructions and guidelines. Don’t work with a tool unless you are trained and authorized to use it. * Watch out for trip hazards, so you and others don’t stumble on a tool or cord. For example, keep power tool electrical extension cords out from underfoot, and don’t leave hand tools lying around unattended. |

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| 48. The Transmission Control Protocol (TCP) ​makes a connection with the end host, checks whether the data is received, and resends it if it is not. TCP is, therefore, called a connection-oriented protocol. TCP is used by applications such as Web browsers and email. Guaranteed delivery takes longer and is used when it is important to know that the data reached its destination. The User Datagram Protocol (UDP) does not guarantee delivery by first connecting and checking whether data is received; thus, UDP is called a connectionless protocol or best-effort protocol. UDP is used for broadcasting, such as streaming video or audio over the Web, where guaranteed delivery is not as important as fast transmission. UDP is also used to monitor network traffic. |

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| 49. The term physical topology, or network topology, mostly applies to hardware and describes how computers, other devices, and cables fit together to form the physical network. The term logical topology has to do with software and describes how access to the network is controlled, including how users and programs initially gain access to the network and how specific resources, such as applications and databases, are shared on the network. |

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| 50. ​Application layer protocols are used by programs that fall into two categories:   * Application programs that provide services to a user, such as a browser and Web server using the HTTP Application layer protocol * Utility programs that provide services to the system, such as SNMP (Simple Network Management Protocol) programs that monitor and gather information about network traffic and can alert network administrators about adverse conditions that need attention.   Data that is passed between applications or utility programs and the operating system is called a payload and includes control information. The two end-system computers that initiate sending and receiving data are called hosts. |