1. Which character is used within a search engine to gather data efficiently by placing the character before and after the name of a particular person?

**quotation mark (")**

: (Clone )

:: (Double clone )

; (Coma )

1. Which two types of institutions do malicious web pages often look like? (Choose two.)

bank

**financial**

Power

Non of them

All of them

1. True or False? Comma-separated values (CSV), JSON, and XML are all tools that can be used to manipulate structured data.

**True**

False

1. What is an open-source physical computing platform that can take input from a variety of switches or sensors to control physical objects?

**Arduino**

Sensor

Module

Non of them

1. Which type of network consists of wired computers in a college classroom?

**LAN**

WAN

MAN

Non of them

1. What is the largest network in existence?

**the internet**

The sensor

The controller

Non of them

1. What are three benefits of cloud computing? (Choose three.)

**It eliminates or reduces the need for onsite IT equipment, maintenance, and management.**

**It enables access to organizational data anywhere and at any time.**

**It streamlines the IT operations of an organization by subscribing only to needed services.**

It see the value of the person working in the IT field

1. What are the two areas of physical security within a data center?

**outside**

**inside**

Non of them

Any one side

1. What is the core component of Intent-Based Networking?

**artificial intelligence**

Ml

Robotics

Non of them

1. Match the logic structure to the function.

**allow the code to make decisions - if-then**

**execute a block of code while a condition is true - while**

**repeat the execution of a specific block of code for a specific number of times - for**

1. What are two characteristics of the Python programming language?

It runs without conversion to machine-language.

The code is easy to read.

**Both of them**

Non of them

1. Which two data types would be classified as personally identifiable information (PII)? (Choose two.)

**Facebook photographs**

**vehicle identification number**

Your picture

Country Pictures

1. Which two skills help with IoT prototyping?

programming

design

Non of them

**Both of them**

1. What are two requirements to connect a smart device to a home wireless network? (Choose two.)

**IP addressing**

**SSID**

Password

Non of them

1. What is a key feature of the assurance element of the intent-based networking model?

**end-to-end verification of network-wide behavior**

Data protocol

Cloud computing

Non of them

1. A company requires using a secure encrypted internet connection when connecting to the corporate network from outside the company. Which technology should be used when employees travel and use a laptop?

**VPN**

Home network

Both of them

Non of them

1. Which security best practice involves defining company rules, job duties, and expectations?

**developing a security policy**

Developing Hardware

Both of them

Non of them

1. What are three attributes of data that would indicate that it may be big data? (Choose three.)

**variety**

**volume**

**velocity**

mass

1. Which technology has the intelligence that is demonstrated by machines in a way that mimics human cognitive functions?

**AI**

Ml

Robotics

Non of them

1. What is the purpose of data analytics?

**to gain new insights from data**

To decode data

To analysis data

Non of them

1. Mined data can be visualized through the use of charts. Select two criteria that can be used to determine the best chart selection

**number of variables to be shown**

**items requiring comparison**

Non of them

1. What device provides auto discovery services for smart devices that are connected to the network?

**home gateway**

Lan network

Border

Non of them

1. Which type of network is the connection between a Bluetooth headset and a vehicle?

**PAN**

Single

Wifi

Non of them

1. Change will have to occur in the corporate network in order to prepare for the Internet of Things. Which type of testing would a company do to demonstrate the benefits of networking a new "thing" that was not on the network before?

**Prototyping**

Direct Hardware modeling

Non of them

Bothe of them

1. What are two features of automation?

**a process that eventually eliminates the need for human intervention**

**a process that is self-driven**

Both of them

Non of them

1. What are two things that all digital devices need in order to work? (Choose two.)

**computer program**

**data**

Sensor

Non of them

1. What is used to provide IoT sensors with access to the network?

**a microcontroller**

a Sensor

A database

Non of them

1. What is the purpose of Packet Tracer?

**to simulate and visualize one or more networks**

Only one network

Both of them

NON OF THEM

1. Which statement describes global variables in programming languages?

**They can be used within any function of a program.**

They can not use

Program function can not use them

Non of this all

1. How is data that has been collected through sources such as web pages, audio, or tweets categorized?

**unstructured data**

Only data

Both

Non O them

1. Match the term with the definition. (Not all options are used.)

**Hadoop - a comprehensive ecosystem...**

**distributed processing - breaks large volumes of data...**

**fog computing - an architecture that utilizes...**

**cloud services - a collection of data centers...**

Non of this all

1. What limits the types of different objects that can become intelligent sensors on the Internet of Things?

**our imagination**

Noting

Word Imagination

Teacher Imagination

1. Which technology is a subset of AI that uses statistical techniques to enable computers to "learn" from collected data?

**ML**

AI

Robotics

Computing

1. True or False? With artificial intelligence, smart devices can modify processes and settings on the fly in response to changes on the network.

**True**

False

1. Which technology is used as a visual programming tool to create a program by connecting colored blocks?

**Blockly**

Code

ML language

None of this above

1. **A company is contemplating whether to use a client/server or a peer-to-peer network. What are three characteristics of a peer-to-peer network? (Choose three.)**
   * better security
   * easy to create
   * better device performance when acting as both client and server
   * lacks centralized administration
   * less cost to implement
   * scalable

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1. **Which device performs the function of determining the path that messages should take through internetworks?**
   * a router
   * a firewall
   * a web server
   * a DSL modem

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1. **What two criteria are used to help select a network medium from various network media? (Choose two.)**
   * the types of data that need to be prioritized
   * the cost of the end devices utilized in the network
   * the distance the selected medium can successfully carry a signal
   * the number of intermediate devices installed in the network
   * the environment where the selected medium is to be installed

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1. **Which two statements describe intermediary devices? (Choose two.)**
   * Intermediary devices generate data content.
   * Intermediary devices alter data content.
   * Intermediary devices direct the path of the data.
   * Intermediary devices connect individual hosts to the network.
   * Intermediary devices initiate the encapsulation process.

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| encapsulation process. |

1. **What are two functions of end devices on a network? (Choose two.)**
   * They originate the data that flows through the network.
   * They direct data over alternate paths in the event of link failures.
   * They filter the flow of data to enhance security.
   * They are the interface between humans and the communication network.
   * They provide the channel over which the network message travels.

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1. **Which area of the network would a college IT staff most likely have to redesign as a direct result of many students bringing their own tablets and smartphones to school to access school resources?**
   * extranet
   * intranet
   * wired LAN
   * wireless LAN
   * wireless WAN

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1. **What type of network must a home user access in order to do online shopping?**
   * an intranet
   * the Internet
   * an extranet
   * a local area network

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1. **An employee at a branch office is creating a quote for a customer. In order to do this, the employee needs to access confidential pricing information from internal servers at the Head Office. What type of network would the employee access?**
   * an intranet
   * the Internet
   * an extranet
   * a local area network

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1. **Which two connection options provide an always-on, high-bandwidth Internet connection to computers in a home office? (Choose two.)**
   * cellular
   * DSL
   * satellite
   * cable
   * dial-up telephone

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1. **Which two Internet connection options do not require that physical cables be run to the building? (Choose two.)**
   * DSL
   * cellular
   * satellite
   * dialup
   * dedicated leased line

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1. **Which term describes the state of a network when the demand on the network resources exceeds the available capacity?**
   * convergence
   * congestion
   * optimization
   * synchronization

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1. **What type of network traffic requires QoS?**
   * email
   * on-line purchasing
   * video conferencing
   * wiki

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1. **Which expression accurately defines the term bandwidth?**
   * a method of limiting the impact of a hardware or software failure on the network
   * a measure of the data carrying capacity of the media
   * a state where the demand on the network resources exceeds the available capacity
   * a set of techniques to manage the utilization of network resources

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1. **A network administrator is implementing a policy that requires strong, complex passwords. Which data protection goal does this policy support?**
   * data integrity
   * data quality
   * data confidentiality
   * data redundancy

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1. **Which statement describes a characteristic of cloud computing?**
   * A business can connect directly to the Internet without the use of an ISP.
   * Applications can be accessed over the Internet by individual users or businesses using any device, anywhere in the world.
   * Devices can connect to the Internet through existing electrical wiring.
   * Investment in new infrastructure is required in order to access the cloud.

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1. **What is the Internet?**
   * It is a network based on Ethernet technology.
   * It provides network access for mobile devices.
   * It provides connections through interconnected global networks.
   * It is a private network for an organization with LAN and WAN connections.

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1. **Which statement describes the use of powerline networking technology?**
   * New “smart” electrical cabling is used to extend an existing home LAN.
   * A home LAN is installed without the use of physical cabling.
   * A device connects to an existing home LAN using an adapter and an existing electrical outlet.
   * Wireless access points use powerline adapters to distribute data  through the home LAN.

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1. **What security violation would cause the most amount of damage to the life of a home user?**
   * denial of service to your email server
   * replication of worms and viruses in your computer
   * capturing of personal data that leads to identity theft
   * spyware that leads to spam emails

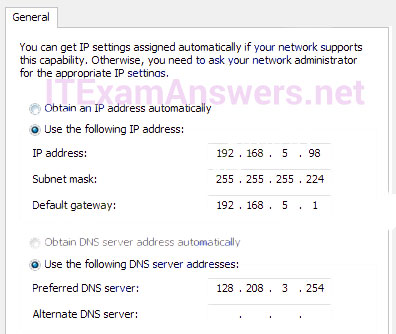
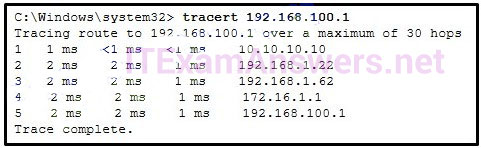
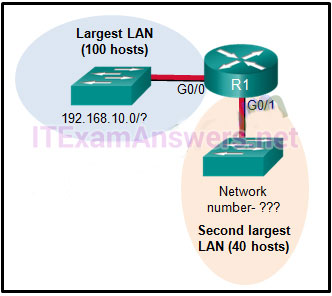
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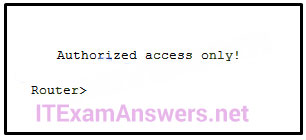
1. **A user is implementing security on a small office network. Which two actions would provide the minimum security requirements for this network? (Choose two.)**
   * implementing a firewall
   * installing a wireless network
   * installing antivirus software
   * implementing an intrusion detection system
   * adding a dedicated intrusion prevention device

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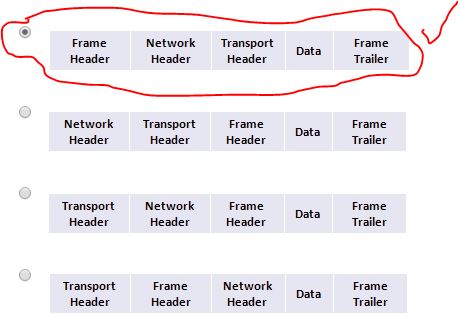
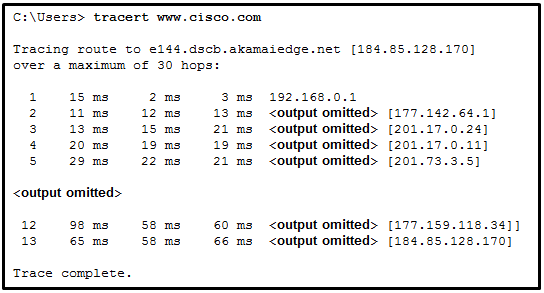
1. **Which networking trend involves the use of personal tools and devices for accessing resources on a business or campus network?**
   * BYOD
   * cloud computing
   * video conferencing
   * powerline networking

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1. **What is a characteristic of a converged network?**
   * A converged network requires a separate network infrastructure for each type of communication technology
   * it delivers data, voice, and video over the same network infrastructure
   * it limits the impact of a failure by minimizing the number of devices affected
   * it provides only one path between the source and destination of a message
2. 1. **What is a characteristic of a fault tolerant network?**
      * a network that protects confidential information from unauthorized access
      * a network that can expand quickly to support new users and applications without impacting the performance of the service delivered to existing users
      * a network that supports a mechanism for managing congestion and ensuring reliable delivery of content to all users
      * **a network that recovers quickly when a failure occurs and depends on redundancy to limit the impact of a failure\***
   2. **Three bank employees are using the corporate network. The first employee uses a web browser to view a company web page in order to read some announcements. The second employee accesses the corporate database to perform some financial transactions. The third employee participates in an important live audio conference with other corporate managers in branch offices. If QoS is implemented on this network, what will be the priorities from highest to lowest of the different data types?**
      * financial transactions, audio conference, web page
      * **audio conference, financial transactions, web page\***
      * audio conference, web page, financial transactions
      * financial transactions, web page, audio conference
   3. **What is a benefit of using cloud computing in networking?**
      * End users have the freedom to use personal tools to access information and communicate across a business network.
      * **Network capabilities are extended without requiring investment in new infrastructure, personnel, or software.\***
      * Technology is integrated into every-day appliances allowing them to interconnect with other devices, making them more ‘smart’ or automated.
      * Home networking uses existing electrical wiring to connect devices to the network wherever there is an electrical outlet, saving the cost of installing data cables.
   4. **What is the function of the shell in an OS?**
      * It interacts with the device hardware.
      * **It interfaces between the users and the kernel.\***
      * It provides dedicated firewall services.
      * It provides the intrusion protection services for the device.
   5. **Which connection provides a secure CLI session with encryption to a Cisco switch?**
      * a console connection
      * an AUX connection
      * a Telnet connection
      * **an SSH connection\***
   6. **A network technician is attempting to configure an interface by entering the following command: SanJose(config)# ip address 192.168.2.1 255.255.255.0. The command is rejected by the device. What is the reason for this?**
      * **The command is being entered from the wrong mode of operation.\***
      * The command syntax is wrong.
      * The subnet mask information is incorrect.
      * The interface is shutdown and must be enabled before the switch will accept the IP address.
   7. **An administrator uses the Ctrl-Shift-6 key combination on a switch after issuing the ping command. What is the purpose of using these keystrokes?**
      * to restart the ping process
      * **to interrupt the ping process\***
      * to exit to a different configuration mode
      * to allow the user to complete the command
   8. **On which switch interface would an administrator configure an IP address so that the switch can be managed remotely?**
      * FastEthernet0/1
      * **VLAN 1\***
      * vty 0
      * console 0
   9. **What protocol is responsible for controlling the size of segments and the rate at which segments are exchanged between a web client and a web server?**
      * **TCP\***
      * IP
      * HTTP
      * Ethernet
   10. **What is an advantage to using a protocol that is defined by an open standard?**
       * A company can monopolize the market.
       * The protocol can only be run on equipment from a specific vendor.
       * An open standard protocol is not controlled or regulated by standards organizations.
       * **It encourages competition and promotes choices.\***
   11. **What are two benefits of using a layered network model? (Choose two.)**
       * **It assists in protocol design. \***
       * It speeds up packet delivery.
       * It prevents designers from creating their own model.
       * **It prevents technology in one layer from affecting other layers.\***
       * It ensures a device at one layer can function at the next higher layer.
   12. **Which two OSI model layers have the same functionality as two layers of the TCP/IP model? (Choose two.)**
       * data link
       * **network\***
       * physical
       * session
       * **transport\***
   13. **Which name is assigned to the transport layer PDU?**
       * bits
       * data
       * frame
       * packet
       * **segment\***
   14. **A network engineer is measuring the transfer of bits across the company backbone for a mission critical database application. The engineer notices that the network throughput appears lower than the bandwidth expected. Which three factors could influence the differences in throughput? (Choose three.)**
       * **the amount of traffic that is currently crossing the network\***
       * the sophistication of the encapsulation method applied to the data
       * **the type of traffic that is crossing the network\***
       * **the latency that is created by the number of network devices that the data is crossing\***
       * the bandwidth of the WAN connection to the Internet
       * the reliability of the gigabit Ethernet infrastructure of the backbone
   15. **A network administrator is troubleshooting connectivity issues on a server. Using a tester, the administrator notices that the signals generated by the server NIC are distorted and not usable. In which layer of the OSI model is the error categorized?**
       * presentation layer
       * network layer
       * **physical layer\***
       * data link layer
   16. **Which type of UTP cable is used to connect a PC to a switch port?**
       * console
       * rollover
       * crossover
       * **straight-through\*\***
   17. **A network administrator is measuring the transfer of bits across the company backbone for a mission critical financial application. The administrator notices that the network throughput appears lower than the bandwidth expected. Which three factors could influence the differences in throughput? (Choose three.)**
       * **the amount of traffic that is currently crossing the network\***
       * the sophistication of the encapsulation method applied to the data
       * **the type of traffic that is crossing the network \***
       * **the latency that is created by the number of network devices that the data is crossing\***
       * the bandwidth of the WAN connection to the Internet
       * the reliability of the gigabit Ethernet infrastructure of the backbone
   18. **What is a characteristic of UTP cabling?**
       * **cancellation\***
       * cladding
       * immunity to electrical hazards
       * woven copper braid or metallic foil
   19. **What are two characteristics of fiber-optic cable? (Choose two.)**
       * **It is not affected by EMI or RFI.\***
       * Each pair of cables is wrapped in metallic foil.
       * It combines the technique of cancellation, shielding, and twisting to protect data.
       * It typically contains 4 pairs of fiber-optic wires.
       * **It is more expensive than UTP cabling is.\***
   20. **What is a characteristic of the LLC sublayer?**
       * It provides the logical addressing required that identifies the device.
       * It provides delimitation of data according to the physical signaling requirements of the medium.
       * **It places information in the frame allowing multiple Layer 3 protocols to use the same network interface and media.\***
       * It defines software processes that provide services to the physical layer.
   21. **A network team is comparing physical WAN topologies for connecting remote sites to a headquarters building. Which topology provides high availability and connects some, but not all, remote sites?**
       * mesh
       * **partial mesh\***
       * hub and spoke
       * point-to-point
   22. **What method is used to manage contention-based access on a wireless network?**
       * CSMA/CD
       * priority ordering
       * **CSMA/CA\***
       * token passing
   23. **What are the three primary functions provided by Layer 2 data encapsulation? (Choose three.)**
       * error correction through a collision detection method
       * session control using port numbers
       * **data link layer addressing\***
       * placement and removal of frames from the media
       * **detection of errors through CRC calculations \***
       * **delimiting groups of bits into frames\***
       * conversion of bits into data signals
   24. **What will a host on an Ethernet network do if it receives a frame with a destination MAC address that does not match its own MAC address?**
       * **It will discard the frame.\***
       * It will forward the frame to the next host.
       * It will remove the frame from the media.
       * It will strip off the data-link frame to check the destination IP address.
   25. **What are two examples of the cut-through switching method? (Choose two.)**
       * store-and-forward switching
       * **fast-forward switching\***
       * CRC switching
       * **fragment-free switching\***
       * QOS switching
   26. **What are two actions performed by a Cisco switch? (Choose two.)**
       * building a routing table that is based on the first IP address in the frame header
       * **using the source MAC addresses of frames to build and maintain a MAC address table\***
       * forwarding frames with unknown destination IP addresses to the default gateway
       * **utilizing the MAC address table to forward frames via the destination MAC address\***
       * examining the destination MAC address to add new entries to the MAC address table
   27. **Which frame forwarding method receives the entire frame and performs a CRC check to detect errors before forwarding the frame?**
       * cut-through switching
       * **store-and-forward switching\***
       * fragment-free switching
       * fast-forward switching
   28. **What addresses are mapped by ARP?**
       * **destination MAC address to a destination IPv4 address\***
       * destination IPv4 address to the source MAC address
       * destination IPv4 address to the destination host name
       * destination MAC address to the source IPv4 address
   29. **What information is added during encapsulation at OSI Layer 3?**
       * source and destination MAC
       * source and destination application protocol
       * source and destination port number
       * **source and destination IP address\***
   30. **What are two services provided by the OSI network layer? (Choose two.)**
       * performing error detection
       * **routing packets toward the destination \***
       * **encapsulating PDUs from the transport layer\***
       * placement of frames on the media
       * collision detection
   31. **Refer to the exhibit. The network administrator for a small advertising company has chosen to use the 192.168.5.96/27 network for internal LAN addressing. As shown in the exhibit, a static IP address is assigned to the company web server. However, the web server cannot access the Internet. The administrator verifies that local workstations with IP addresses that are assigned by a DHCP server can access the Internet, and the web server is able to ping local workstations. Which component is incorrectly configured?**  
       [](https://itexamanswers.net/ccna-1-final-exam-answers-v5-1-v6-0-introduction-to-networks.html/i274685v1n1_38117-2)
       * subnet mask
       * DNS address
       * host IP address
       * **default gateway address\***
   32. **Why does a Layer 3 device perform the ANDing process on a destination IP address and subnet mask?**
       * to identify the broadcast address of the destination network
       * to identify the host address of the destination host
       * to identify faulty frames
       * **to identify the network address of the destination network\***
   33. **What are two functions of NVRAM? (Choose two.)**
       * to store the routing table
       * **to retain contents when power is removed \***
       * **to store the startup configuration file\***
       * to contain the running configuration file
       * to store the ARP table
   34. **What is the dotted decimal representation of the IPv4 address 11001011.00000000.01110001.11010011?**
       * 192.0.2.199
       * 198.51.100.201
       * **203.0.113.211\***
       * 209.165.201.223
   35. **What are three characteristics of multicast transmission? (Choose three.)**
       * The source address of a multicast transmission is in the range of 224.0.0.0 to 224.0.0.255.
       * **A single packet can be sent to a group of hosts. \***
       * **Multicast transmission can be used by routers to exchange routing information. \***
       * **Routers will not forward multicast addresses in the range of 224.0.0.0 to 224.0.0.255.\***
       * Computers use multicast transmission to request IPv4 addresses.
       * Multicast messages map lower layer addresses to upper layer addresses.
   36. **What are the three ranges of IP addresses that are reserved for internal private use? (Choose three.)**
       * **10.0.0.0/8\***
       * 64.100.0.0/14
       * 127.16.0.0/12
       * **172.16.0.0/12\***
       * 192.31.7.0/24
       * **192.168.0.0/16\***
   37. **What purpose does NAT64 serve in IPv6?**
       * **It converts IPv6 packets into IPv4 packets.\***
       * It translates private IPv6 addresses into public IPv6 addresses.
       * It enables companies to use IPv6 unique local addresses in the network.
       * It converts regular IPv6 addresses into 64-bit addresses that can be used on the Internet.
       * It converts the 48-bit MAC address into a 64-bit host address that can be used for automatic host addressing.
   38. **Which three addresses are valid public addresses? (Choose three.)**
       * **198.133.219.17\***
       * 192.168.1.245
       * 10.15.250.5
       * **128.107.12.117\***
       * 192.15.301.240
       * **64.104.78.227 \***
   39. **Refer to the exhibit. On the basis of the output, which two statements about network connectivity are correct? (Choose two.)**  
       [](https://itexamanswers.net/ccna-1-final-exam-answers-v5-1-v6-0-introduction-to-networks.html/i275429v1n1_chapter-9-wan-images2-2)
       * **There is connectivity between this device and the device at 192.168.100.1.\***
       * The connectivity between these two hosts allows for videoconferencing calls.
       * **There are 4 hops b\*\*etween this device and the device at 192.168.100.1.\***
       * The average transmission time between the two hosts is 2 milliseconds.
       * This host does not have a default gateway configured.
   40. **What type of IPv6 address is FE80::1?**
       * loopback
       * **link-local\***
       * multicast
       * global unicast
   41. **How many valid host addresses are available on an IPv4 subnet that is configured with a /26 mask?**
       * 254
       * 190
       * 192
       * **62\***
       * 64
   42. **A site administrator has been told that a particular network at the site must accommodate 126 hosts. Which subnet mask would be used that contains the required number of host bits?**
       * 255.255.255.0
       * **255.255.255.128\***
       * 255.255.255.224
       * 255.255.255.240
   43. **A network administrator wants to have the same subnet mask for three subnetworks at a small site. The site has the following networks and numbers of devices:  
       Subnetwork A: IP phones – 10 addresses  
       Subnetwork B: PCs – 8 addresses  
       Subnetwork C: Printers – 2 addresses**  
       **What single subnet mask would be appropriate to use for the three subnetworks?**
       * 255.255.255.0
       * **255.255.255.240\***
       * 255.255.255.248
       * 255.255.255.252
   44. **How many hosts are addressable on a network that has a mask of 255.255.255.248?**
       * 2
       * **6\***
       * 8
       * 14
       * 16
       * 254
   45. **Which subnet would include the address 192.168.1.96 as a usable host address?**
       * **192.168.1.64/26\***
       * 192.168.1.32/27
       * 192.168.1.32/28
       * 192.168.1.64/29
   46. **What subnet mask is needed if an IPv4 network has 40 devices that need IP addresses and address space is not to be wasted?**
       * 255.255.255.0
       * 255.255.255.128
       * **255.255.255.192\***
       * 255.255.255.224
       * 255.255.255.240
   47. **What are two characteristics shared by TCP and UDP? (Choose two.)**
       * default window size
       * connectionless communication
       * **port numbering\***
       * 3-way handshake
       * ability to to carry digitized voice
       * **use of checksum\***
   48. **Why are port numbers included in the TCP header of a segment?**
       * to indicate the correct router interface that should be used to forward a segment
       * to identify which switch ports should receive or forward the segment
       * to determine which Layer 3 protocol should be used to encapsulate the data
       * **to enable a receiving host to forward the data to the appropriate application\***
       * to allow the receiving host to assemble the packet in the proper order
   49. **Refer to the exhibit. Consider the IP address of 192.168.10.0/24 that has been assigned to a high school building. The largest network in this building has 100 devices. If 192.168.10.0 is the network number for the largest network, what would be the network number for the next largest network, which has 40 devices?**  
       [](https://itexamanswers.net/ccna-1-final-exam-answers-v5-1-v6-0-introduction-to-networks.html/i245561v1n1_245561-2)
       * 192.168.10.0
       * **192.168.10.128\***
       * 192.168.10.192
       * 192.168.10.224
       * 192.168.10.240
   50. **Which statement is true about variable-length subnet masking?**
       * Each subnet is the same size.
       * **The size of each subnet may be different, depending on requirements.\***
       * Subnets may only be subnetted one additional time.
       * Bits are returned, rather than borrowed, to create additional subnets.
   51. **In what two situations would UDP be the preferred transport protocol over TCP? (Choose two.)**
       * when applications need to guarantee that a packet arrives intact, in sequence, and unduplicated
       * **when a faster delivery mechanism is needed\***
       * when delivery overhead is not an issue
       * **when applications do not need to guarantee delivery of the data\***
       * when destination port numbers are dynamic
   52. **What important information is added to the TCP/IP transport layer header to ensure communication and connectivity with a remote network device?**
       * timing and synchronization
       * **destination and source port numbers\***
       * destination and source physical addresses
       * destination and source logical network addresses
   53. **What is the TCP mechanism used in congestion avoidance?**
       * three-way handshake
       * socket pair
       * two-way handshake
       * **sliding window\***
   54. **Which scenario describes a function provided by the transport layer?**
       * A student is using a classroom VoIP phone to call home. The unique identifier burned into the phone is a transport layer address used to contact another network device on the same network.
       * A student is playing a short web-based movie with sound. The movie and sound are encoded within the transport layer header.
       * **A student has two web browser windows open in order to access two web sites. The transport layer ensures the correct web page is delivered to the correct browser window.\***
       * A corporate worker is accessing a web server located on a corporate network. The transport layer formats the screen so the web page appears properly no matter what device is being used to view the web site.
   55. **A user opens three browsers on the same PC to access www.cisco.com to search for certification course information. The Cisco web server sends a datagram as a reply to the request from one of the web browsers. Which information is used by the TCP/IP protocol stack in the PC to identify which of the three web browsers should receive the reply?**
       * the destination IP address
       * **the destination port number\***
       * the source IP address
       * the source port number
   56. **What are two ways that TCP uses the sequence numbers in a segment? (Choose two.)**
       * **to identify missing segments at the destination \***
       * **to reassemble the segments at the remote location\***
       * to specify the order in which the segments travel from source to destination
       * to limit the number of segments that can be sent out of an interface at one time
       * to determine if the packet changed during transit
   57. **Which two tasks are functions of the presentation layer? (Choose two.)**
       * **compression\***
       * addressing
       * **encryption\***
       * session control
       * authentication
   58. **Which three statements characterize UDP? (Choose three.)**
       * **UDP provides basic connectionless transport layer functions.\***
       * UDP provides connection-oriented, fast transport of data at Layer 3.
       * **UDP relies on application layer protocols for error detection. \***
       * **UDP is a low overhead protocol that does not provide sequencing or flow control mechanisms.\***
       * UDP relies on IP for error detection and recovery.
       * UDP provides sophisticated flow control mechanisms.
   59. **What is a key characteristic of the peer-to-peer networking model?**
       * wireless networking
       * social networking without the Internet
       * network printing using a print server
       * **resource sharing without a dedicated server\***
   60. **A technician can ping the IP address of the web server of a remote company but cannot successfully ping the URL address of the same web server. Which software utility can the technician use to diagnose the problem?**
       * tracert
       * ipconfig
       * netstat
       * **nslookup\***
   61. **Which domain name would be an example of a top-level domain?**
       * www.cisco.com
       * cisco.com
       * **.com\***
       * root.cisco.com
   62. **A PC obtains its IP address from a DHCP server. If the PC is taken off the network for repair, what happens to the IP address configuration?**
       * The configuration is permanent and nothing changes.
       * The address lease is automatically renewed until the PC is returned.
       * **The address is returned to the pool for reuse when the lease expires.\***
       * The configuration is held by the server to be reissued when the PC is returned.
   63. **When planning for network growth, where in the network should packet captures take place to assess network traffic?**
       * **on as many different network segments as possible\***
       * only at the edge of the network
       * between hosts and the default gateway
       * only on the busiest network segment
   64. **A wireless host needs to request an IP address. What protocol would be used to process the request?**
       * FTP
       * HTTP
       * **DHCP\***
       * ICMP
       * SNMP
   65. **Which example of malicious code would be classified as a Trojan horse?**
       * **malware that was written to look like a video game\***
       * malware that requires manual user intervention to spread between systems
       * malware that attaches itself to a legitimate program and spreads to other programs when launched
       * malware that can automatically spread from one system to another by exploiting a vulnerability in the target
   66. **When applied to a router, which command would help mitigate brute-force password attacks against the router?**
       * exec-timeout 30
       * service password-encryption
       * banner motd $Max failed logins = 5$
       * **login block-for 60 attempts 5 within 60\***
   67. **A network technician suspects that a particular network connection between two Cisco switches is having a duplex mismatch. Which command would the technician use to see the Layer 1 and Layer 2 details of a switch port?**
       * show mac-address-table
       * show ip interface brief
       * **show interfaces\***
       * show running-config
   68. **Where are Cisco IOS debug output messages sent by default?**
       * Syslog server
       * **console line\***
       * memory buffers
       * vty lines

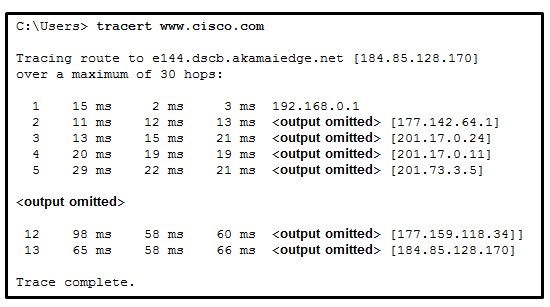
* 1. **A user is unable to reach the web site when typing http://www.cisco.com in a web browser, but can reach the same site by typing http://72.163.4.161. What is the issue?**
     + default gateway
     + DHCP
     + TCP/IP protocol stack
     + **DNS \***
  2. **A company is expanding its business to other countries. All branch offices must remain connected to corporate headquarters at all times. Which network technology is required to support this requirement?**
     + LAN
     + MAN
     + **WAN\***
     + WLAN
  3. **A home user is looking for an ISP connection that provides high speed digital transmission over regular phone lines. What ISP connection type should be used?**
     + **DSL\***
     + dial-up
     + satellite
     + cell modem
     + cable modem
  4. **How does quality of service help a network support a wide range of applications and services?**
     + by limiting the impact of a network failure
     + by allowing quick recovery from network failures
     + **by providing mechanisms to manage congested network traffic\***
     + by providing the ability for the network to grow to accommodate new users
  5. **What source IP address does a router use by default when the traceroute command is issued?**
     + the highest configured IP address on the router
     + the lowest configured IP address on the router
     + a loopback IP address
     + **the IP address of the outbound interface\***
  6. **After making configuration changes on a Cisco switch, a network administrator issues a copy running-config startup-config command. What is the result of issuing this command?**
     + The new configuration will be stored in flash memory.
     + **The new configuration will be loaded if the switch is restarted.\***
     + The current IOS file will be replaced with the newly configured file.
     + The configuration changes will be removed and the original configuration will be restored.
  7. **Which connection provides a secure CLI session with encryption to a Cisco network device?**
     + a console connection
     + an AUX connection
     + a Telnet connection
     + **an SSH connection\***
  8. **What function does pressing the Tab key have when entering a command in IOS?**
     + It aborts the current command and returns to configuration mode.
     + It exits configuration mode and returns to user EXEC mode.
     + It moves the cursor to the beginning of the next line.
     + **It completes the remainder of a partially typed word in a command.\***
  9. **What layer is responsible for routing messages through an internetwork in the TCP/IP model?**
     + **internet\***
     + transport
     + network access
     + session
  10. **Which statement accurately describes a TCP/IP encapsulation process when a PC is sending data to the network?**
      + Data is sent from the internet layer to the network access layer.
      + Packets are sent from the network access layer to the transport layer.
      + **Segments are sent from the transport layer to the internet layer.\***
      + Frames are sent from the network access layer to the internet layer.
  11. **What unique address is embedded in an Ethernet NIC and used for communication on an Ethernet network?**
      + host address
      + IP address
      + **MAC address\***
      + network address
      + k layer
  12. **Which procedure is used to reduce the effect of crosstalk in copper cables?**
      + requiring proper grounding connections
      + **twisting opposing circuit wire pairs together\***
      + wrapping the bundle of wires with metallic shielding
      + designing a cable infrastructure to avoid crosstalk interference
      + avoiding sharp bends during installation
  13. **During the encapsulation process, what occurs at the data link layer for a PC connected to an Ethernet network?**
      + An IP address is added.
      + The logical address is added.
      + **The physical address is added.\***
      + The process port number is added.
  14. **What are two characteristics of Ethernet MAC addresses? (Choose two.)**
      + **They are globally unique.\***
      + They are routable on the Internet.
      + **They are expressed as 12 hexadecimal digits.\***
      + MAC addresses use a flexible hierarchical structure.
      + MAC addresses must be unique for both Ethernet and serial interfaces on a device.
  15. **If a device receives an Ethernet frame of 60 bytes, what will it do?**
      + **drop the frame\***
      + process the frame as it is
      + send an error message to the sending device
      + add random data bytes to make it 64 bytes long and then forward it
  16. **Under which two circumstances will a switch flood a frame out of every port except the port that the frame was received on? (Choose two.)**
      + **The frame has the broadcast address as the destination address. \***
      + **The destination address is unknown to the switch.\***
      + The source address in the frame header is the broadcast address.
      + The source address in the frame is a multicast address.
      + The destination address in the frame is a known unicast address.
  17. **Which switching method has the lowest level of latency?**
      + cut-through
      + store-and-forward
      + fragment-free
      + **fast-forward\***
  18. **Which two commands can be used on a Windows host to display the routing table? (Choose two.)**
      + netstat -s
      + **route print\***
      + show ip route
      + **netstat -r\***
      + tracert
  19. **Which two functions are primary functions of a router? (Choose two.)**
      + **packet forwarding\***
      + microsegmentation
      + domain name resolution
      + **path selection\***
      + flow control
  20. **What is the binary representation of 0xCA?**
      + 10111010
      + 11010101
      + **11001010\***
      + 11011010
  21. **At a minimum, which address is required on IPv6-enabled interfaces?**
      + **link-local\***
      + unique local
      + site local
      + global unicast
  22. **Which service provides dynamic global IPv6 addressing to end devices without using a server that keeps a record of available IPv6 addresses?**
      + stateful DHCPv6
      + **SLAAC\***
      + static IPv6 addressing
      + stateless DHCPv6
  23. **What is the purpose of the command ping ::1?**
      + **It tests the internal configuration of an IPv6 host.\***
      + It tests the broadcast capability of all hosts on the subnet.
      + It tests the multicast connectivity to all hosts on the subnet.
      + It tests the reachability of the default gateway for the network.
  24. **How many usable IP addresses are available on the 192.168.1.0/27 network?**
      + 256
      + 254
      + 62
      + **30\***
      + 16
      + 32
  25. **What is the process of dividing a data stream into smaller pieces before transmission?**
      + **segmentation\***
      + encapsulation
      + encoding
      + flow control
  26. **When IPv4 addressing is manually configured on a web server, which property of the IPv4 configuration identifies the network and host portion for an IPv4 address?**
      + DNS server address
      + **subnet mask\***
      + default gateway
      + DHCP server address
  27. **Which two roles can a computer assume in a peer-to-peer network where a file is being shared between two computers? (Choose two.)**
      + **client\***
      + master
      + **server\***
      + slave
      + transient
  28. **Which two protocols operate at the highest layer of the TCP/IP protocol stack? (Choose two.)**
      + **DNS\***
      + Ethernet
      + IP
      + **POP\***
      + TCP
      + UDP
  29. **What is one difference between the client-server and peer-to-peer network models?**
      + Only in the client-server model can file transfers occur.
      + **Every device in a peer-to-peer network can function as a client or a server.\***
      + A peer-to-peer network transfers data faster than a transfer using a client-server network.
      + A data transfer that uses a device serving in a client role requires that a dedicated server be present.
  30. **What is the function of the HTTP GET message?**
      + **to request an HTML page from a web server\***
      + to send error information from a web server to a web client
      + to upload content to a web server from a web client
      + to retrieve client email from an email server using TCP port 110
  31. **Which networking model is being used when an author uploads one chapter document to a file server of a book publisher?**
      + peer-to-peer
      + master-slave
      + **client/server\***
      + point-to-point
  32. What network service resolves the URL entered on a PC to the IP address of the destination server?
      + **DNS\***
      + DHCP
      + FTP
      + SNMP
  33. **A network engineer is analyzing reports from a recently performed network baseline. Which situation would depict a possible latency issue?**
      + a change in the bandwidth according to the show interfaces output
      + a next-hop timeout from a traceroute
      + **an increase in host-to-host ping response times\***
      + a change in the amount of RAM according to the show version output
  34. **Which firewall feature is used to ensure that packets coming into a network are legitimate responses to requests initiated from internal hosts?**
      + **stateful packet inspection\***
      + URL filtering
      + application filtering
      + packet filtering
  35. **What is one indication that a Windows computer did not receive an IPv4 address from a DHCP server?**
      + The computer cannot ping 127.0.0.1.
      + Windows displays a DHCP timeout message.
      + **The computer receives an IP address that starts with 169.254\***
      + The computer cannot ping other devices on the same network with IP addresses in the 169.254.0.0/16 range.
  36. **Which command can an administrator issue on a Cisco router to send debug messages to the vty lines?**
      + **terminal monitor\***
      + logging console
      + logging buffered
      + logging synchronous
  37. **Fill in the blank.**  
      During data communications, a host may need to send a single message to a specific group of destination hosts simultaneously. This message is in the form of a **Multicast \***message.
  38. **A medium-sized business is researching available options for connecting to the Internet. The company is looking for a high speed option with dedicated, symmetric access. Which connection type should the company choose?**
      + DSL
      + dialup
      + satellite
      + **leased line\***
      + cable modem
  39. **What is the purpose of having a converged network?**
      + to provide high speed connectivity to all end devices
      + to make sure that all types of data packets will be treated equally
      + to achieve fault tolerance and high availability of data network infrastructure devices
      + **to reduce the cost of deploying and maintaining the communication infrastructure\***
  40. **What characteristic of a network enables it to quickly grow to support new users and applications without impacting the performance of the service being delivered to existing users?**
      + reliability
      + **scalability\***
      + quality of service
      + accessibility
  41. **After several configuration changes are made to a router, the copy running-configuration startup-configuration command is issued. Where will the changes be stored?**
      + flash
      + ROM
      + **NVRAM\***
      + RAM
      + the configuration register
      + a TFTP server
  42. **Refer to the exhibit. From global configuration mode, an administrator is attempting to create a message-of-the-day banner by using the command banner motd V Authorized access only! Violators will be prosecuted! V When users log in using Telnet, the banner does not appear correctly. What is the problem?**  
      [](https://itexamanswers.net/ccna-1-final-exam-answers-v5-1-v6-0-introduction-to-networks.html/36489-2)
      + The banner message is too long.
      + **The delimiting character appears in the banner message.\***
      + The symbol “!” signals the end of a banner message.
      + Message-of-the-day banners will only appear when a user logs in through the console port.
  43. **What are three characteristics of an SVI? (Choose three.)**
      + It is designed as a security protocol to protect switch ports.
      + **It is not associated with any physical interface on a switch.\***
      + It is a special interface that allows connectivity by different types of media.
      + It is required to allow connectivity by any device at any location.
      + **It provides a means to remotely manage a switch. \***
      + **It is associated with VLAN1 by default.\***
  44. **A technician configures a switch with these commands:SwitchA(config)# interface vlan 1**  
      **SwitchA(config-if)# ip address 192.168.1.1 255.255.255.0**  
      **SwitchA(config-if)# no shutdownWhat is the technician configuring?**
      + Telnet access
      + **SVI\***
      + password encryption
      + physical switchport access
  45. **In computer communication, what is the purpose of message encoding?**
      + **to convert information to the appropriate form for transmission\***
      + to interpret information
      + to break large messages into smaller frames
      + to negotiate correct timing for successful communication
  46. **What is a characteristic of multicast messages?**
      + **They are sent to a select group of hosts.\***
      + They must be acknowledged.
      + They are sent to a single destination.
      + They are sent to all hosts on a network.
  47. **A large corporation has modified its network to allow users to access network resources from their personal laptops and smart phones. Which networking trend does this describe?**
      + **bring your own device\***
      + video conferencing
      + online collaboration
      + cloud computing
  48. **True or False.  
      A dedicated server is not needed when implementing a peer-to-peer network.**
      + **true\***
      + false
  49. **Which term refers to a network that provides secure access to the corporate offices by suppliers, customers and collaborators?**
      + Internet
      + intranet
      + **extranet\***
      + extendednet
  50. **What subnet mask is required to support 512 subnets on networks 172.28.0.0/16?**
      + 255.255.240.0
      + 255.255.255.224
      + 255.255.255.240
      + **255.255.255.128\***
      + 255.255.252.0

1. **A DHCP server is used to IP addresses dynamically to the hosts on a network. The address pool is configured with 10.29.244.0/25. There are 19 printers on this network that need to use reserve static IP addresses from the pool. How many IP address in the pool are left to be assign to other hosts?**
   * 210
   * 60
   * 109
   * **107\***
   * 146
2. **What is a function of the data link layer?**
   * provides the formatting of data
   * **provides for the exchange of data over a common local media\***
   * provides end-to-end delivery of data between hosts
   * provides delivery of data between two applications
3. **Which communication tool allows real-time collaboration?**
   * wiki
   * e-mail
   * weblog
   * **instant messaging\***
4. **A host is accessing a Web server on a remote network. Which three functions are performed by intermediary network devices during this conversation? (Choose three.)**
   * **regenerating data signals\***
   * acting as a client or a server
   * providing a channel over which messages travel
   * **applying security settings to control the flow of data \***
   * **notifying other devices when errors occur\***
   * serving as the source or destination of the messages
5. **A company is expanding its business to other countries. All branch offices must remain connected to corporate headquarters at all times. Which network technology is required to support this requirement?**
   * LAN
   * MAN
   * **WAN\***
   * WLAN
6. **A network administrator is upgrading a small business network to give high priority to real-time applications traffic. What two types of network services is the network administrator trying to accommodate? (Choose two.)**
   * SNMP
   * instant messaging
   * **voice\***
   * FTP
   * **video\***

1. **Which IPv4 address can be pinged to test the internal TCP/IP operation of a host?**
   * 0.0.0.0
   * 0.0.0.1
   * **127.0.0.1\***
   * 192.168.1.1
   * 255.255.255.255
2. **What three application layer protocols are part of the TCP/IP protocol suite? (Choose three.)**
   * ARP
   * **DHCP\***
   * **DNS\***
   * **FTP\***
   * NAT
   * PPP
3. **Which two protocols function at the internet layer? (Choose two)**
   * ARP
   * BOOTP
   * **ICMP\***
   * **IP\***
   * PPP
4. **Which publicly available resources describe protocols, processes, and technologies for the Internet but do not give implementation details?**
   * **Request for Comments\***
   * IRTF research papers
   * protocol models
   * IEEE standards
5. **Which address on a PC does not change, even if the PC is moved to a different network?**
   * IP address
   * default gateway address
   * **MAC address\***
   * logical address
6. **What is the protocol that is used to discover a physical address from a known logical address and what message type does it use?**
   * ARP, multicast
   * DNS, unicast
   * DNS, broadcast
   * **ARP, broadcast\***
   * PING, multicast
   * PING, broadcast
7. **What will happen if the default gateway address is incorrectly configured on a host?**
   * The host cannot communicate with other hosts in the local network.
   * The switch will not forward packets initiated by the host.
   * The host will have to use ARP to determine the correct address of the default gateway.
   * **The host cannot communicate with hosts in other networks.\***
   * A ping from the host to 127.0.0.1 would not be successful.
8. **What is an important function of the physical layer of the OSI model?**
   * It accepts frames from the physical media.
   * It encapsulates upper layer data into frames.
   * It defines the media access method performed by the hardware interface.
   * **It encodes frames into electrical, optical, or radio wave signals.\***
9. **Which two statements describe the characteristics of fiber-optic cabling? (Choose two.)**
   * **Fiber-optic cabling does not conduct electricity.\***
   * Fiber-optic cabling has high signal loss.
   * **Fiber-optic cabling is primarily used as backbone cabling.\***
   * Multimode fiber-optic cabling carries signals from multiple sending devices.
   * Fiber-optic cabling uses LEDs for single-mode cab?les and laser technology for multimode cables.
10. **What is contained in the trailer of a data-link frame?**
    * logical address
    * physical address
    * data
    * **error detection\***
11. **How does a Layer 3 switch differ from a Layer 2 switch?**
    * A Layer 3 switch supports VLANs, but a Layer 2 switch does not.
    * **An IP address can be assigned to a physical port of a Layer 3 switch. However, this is not supported in Layer 2 switches.\***
    * A Layer 3 switch maintains an IP address table instead of a MAC address table.
    * A Layer 3 switch learns the MAC addresses that are associated with each of its ports. However, a Layer 2 switch does not.
12. **What is the purpose of the routing process?**
    * to encapsulate data that is used to communicate across a network
    * **to select the paths that are used to direct traffic to destination networks\***
    * to convert a URL name into an IP address
    * to provide secure Internet file transfer
    * to forward traffic on the basis of MAC addresses
13. **Which technology provides a solution to IPv4 address depletion by allowing multiple devices to share one public IP address?**
    * ARP
    * DNS
    * **NAT\***
    * SMB
    * DHCP
    * HTTP
14. **Which of the following are primary functions of a router? (Choose two.)**
    * **packet switching\***
    * microsegmentation
    * domain name resolution
    * **path selection\***
    * flow control
15. **Which two statements correctly describe a router memory type and its contents? (Choose two.)**
    * **ROM is nonvolatile and contains basic diagnostic software.\***
    * FLASH is nonvolatile and contains a limited portion of the IOS​.
    * ROM is nonvolatile and stores the running IOS.
    * **RAM is volatile and stores the IP routing table.\***
    * NVRAM is nonvolatile and stores other system files.
16. **In which default order will a router search for startup configuration information?**
    * NVRAM, RAM, TFTP
    * **NVRAM, TFTP, setup mode\***
    * setup mode, NVRAM, TFTP
    * TFTP, ROM, NVRAM
    * flash, ROM, setup mode
17. **What happens when part of an Internet VoIP transmission is not delivered to the destination?**
    * A delivery failure message is sent to the source host.
    * The part of the VoIP transmission that was lost is re-sent.
    * The entire transmission is re-sent.
    * **The transmission continues without the missing portion.\***
18. **Which three IP addresses are private ? (Choose three.)**
    * **10.172.168.1\***
    * 172.32.5.2
    * 192.167.10.10
    * **172.20.4.4 \***
    * **192.168.5.254\***
    * 224.6.6.6
19. **How many bits make up the single IPv6 hextet :10CD:?**
    * 4
    * 8
    * **16\***
    * 32
20. **What is the effect of configuring the ipv6 unicast-routing command on a router?**
    * to assign the router to the all-nodes multicast group
    * **to enable the router as an IPv6 router\***
    * to permit only unicast packets on the router
    * to prevent the router from joining the all-routers multicast group
21. **What is the purpose of ICMP messages?**
    * to inform routers about network topology changes
    * to ensure the delivery of an IP packet
    * **to provide feedback of IP packet transmissions\***
    * to monitor the process of a domain name to IP address resolution
22. **A network administrator needs to monitor network traffic to and from servers in a data center. Which features of an IP addressing scheme should be applied to these devices?**
    * random static addresses to improve security
    * addresses from different subnets for redundancy
    * **predictable static IP addresses for easier identification\***
    * dynamic addresses to reduce the probability of duplicate addresses
23. **A host PC has just booted and is attempting to lease an address through DHCP. Which two messages will the client typically broadcast on the network? (Choose two.)**
    * **DHCPDISCOVER\***
    * DHCPOFFER
    * **DHCPREQUEST\***
    * DHCPACK
    * DHCPNACK
24. **What is the purpose of the network security accounting function?**
    * to require users to prove who they are
    * to determine which resources a user can access
    * **to keep track of the actions of a user\***
    * to provide challenge and response questions
25. **What two preconfigured settings that affect security are found on most new wireless routers? (Choose two.)**
    * **broadcast SSID\***
    * MAC filtering enabled
    * WEP encryption enabled
    * PSK authentication required
    * **default administrator password\***
26. **Which type of wireless security generates dynamic encryption keys each time a client associates with an AP?**
    * EAP
    * PSK
    * WEP
    * **WPA\***
27. **Fill in the blank.**  
    **TFTP\* is a best-effort, connectionless application layer protocol that is used to transfer files.**
28. **Which two components are necessary for a wireless client to be installed on a WLAN? (Choose two.)**
    * media
    * **wireless NIC\***
    * custom adapter
    * crossover cable
    * wireless bridge
29. **A host is accessing an FTP server on a remote network. Which three functions are performed by intermediary network devices during this conversation? (Choose three.)**
    * **regenerating data signals\***
    * acting as a client or a server
    * providing a channel over which messages travel
    * **applying security settings to control the flow of data\***
    * **notifying other devices when errors occur\***
    * serving as the source or destination of the messages
30. **When is a dial-up connection used to connect to an ISP?**
    * when a cellular telephone provides the service
    * when a high-speed connection is provided over a cable TV network
    * when a satellite dish is used
    * **when a regular telephone line is used\***
31. **On a school network, students are surfing the web, searching the library database, and attending an audio conference with their sister school in Japan. If network traffic is prioritized with QoS, how will the traffic be classified from highest priority to lowest priority?**
    * **audio conference, database, HTTP\***
    * database, HTTP, audio conference
    * audio conference, HTTP, database
    * database, audio conference, HTTP
32. **During normal operation, from which location do most Cisco routers run the IOS?**
    * **RAM\***
    * flash
    * NVRAM
    * disk drive
33. **Which keys act as a hot key combination that is used to interrupt an IOS process?**
    * Ctrl-Shift-X
    * **Ctrl-Shift-6\***
    * Ctrl-Z
    * Ctrl-C
34. **A technician uses the ping 127.0.0.1 command. What is the technician testing?**
    * **the TCP/IP stack on a network host\***
    * connectivity between two adjacent Cisco devices
    * connectivity between a PC and the default gateway
    * connectivity between two PCs on the same network
    * physical connectivity of a particular PC and the network
35. **What is the correct order for PDU encapsulation?**  
    
36. **Which device should be used for enabling a host to communicate with another host on a different network?**
    * switch
    * hub
    * **router\***
    * host
37. **A network technician is measuring the transfer of bits across the company backbone for a mission critical application. The technician notices that the network throughput appears lower than the bandwidth expected. Which three factors could influence the differences in throughput? (Choose three.)**
    * **the amount of traffic that is currently crossing the network\***
    * the sophistication of the encapsulation method applied to the data
    * **the type of traffic that is crossing the network\***
    * **the latency that is created by the number of network devices that the data is crossing\***
    * the bandwidth of the WAN connection to the Internet
    * the reliability of the gigabit Ethernet infrastructure of the backbone
38. **Which characteristics describe fiber optic cable? (Choose two.)**
    * **It is not affected by EMI or RFI.\***
    * Each pair of cables is wrapped in metallic foil.
    * It combines the technique of cancellation, shielding and twisting to protect data.
    * It has a maximum speed of 100 Mbps.
    * **It is the most expensive type of LAN cabling\***
39. **What are two features of a physical, star network topology? (Choose two.)**
    * **It is straightforward to troubleshoot.\***
    * End devices are connected together by a bus.
    * **It is easy to add and remove end devices.\***
    * All end devices are connected in a chain to each other.
    * Each end system is connected to its respective neighbor.
40. **A frame is transmitted from one networking device to another. Why does the receiving device check the FCS field in the frame?**
    * to determine the physical address of the sending device
    * to verify the network layer protocol information
    * to compare the interface media type between the sending and receiving ends
    * **to check the frame for possible transmission errors\***
    * to verify that the frame destination matches the MAC address of the receiving device
41. **What will a Layer 2 switch do when the destination MAC address of a received frame is not in the MAC table?**
    * It initiates an ARP request.
    * It broadcasts the frame out of all ports on the switch.
    * It notifies the sending host that the frame cannot be delivered.
    * **It forwards the frame out of all ports except for the port at which the frame was received.\***
42. **Which parameter does the router use to choose the path to the destination when there are multiple routes available?**
    * **the lower metric value that is associated with the destination network\***
    * the lower gateway IP address to get to the destination network
    * the higher metric value that is associated with the destination network
    * the higher gateway IP address to get to the destination network
43. **Which two statements describe the functions or characteristics of ROM in a router? (Choose two.)**
    * stores routing tables
    * allows software to be updated without replacing pluggable chips on the motherboard
    * **maintains instructions for POST diagnostics\***
    * holds ARP cache
    * **stores bootstrap program\***
44. **Which statement describes a characteristic of the Cisco router management ports?**
    * A console port is used for remote management of the router.
    * **A console port is not used for packet forwarding.\***
    * Serial and DSL interfaces are types of management ports.
    * Each Cisco router has a LED indicator to provide information about the status of the management ports.
45. **What happens when part of an Internet radio transmission is not delivered to the destination?**
    * A delivery failure message is sent to the source host.
    * The part of the radio transmission that was lost is re-sent.
    * The entire transmission is re-sent.
    * **The transmission continues without the missing portion.\***
46. **What types of addresses make up the majority of addresses within the /8 block IPv4 bit space?**
    * private addresses
    * **public addresses\***
    * multicast addresses
    * experimental addresses
47. **Refer to the exhibit. What is the maximum TTL value that is used to reach the destination www.cisco.com??**  
    
    * 11
    * 12
    * **13\***
    * 14
48. **A company has a network address of 192.168.1.64 with a subnet mask of 255.255.255.192. The company wants to create two subnetworks that would contain 10 hosts and 18 hosts respectively. Which two networks would achieve that? (Choose two.)**
    * 192.168.1.16/28
    * **192.168.1.64/27\***
    * 192.168.1.128/27
    * **192.168.1.96/28\***
    * 192.168.1.192/28
49. **In a network that uses IPv4, what prefix would best fit a subnet containing 100 hosts?**
    * /23
    * /24
    * **/25\***
    * /26
50. **Which protocol supports rapid delivery of streaming media?**
    * Transmission Control Protocol
    * **Real-Time Transport Protocol\***
    * Secure File Transfer Protocol
    * Video over Internet Protocol
51. **Why would a network administrator use the tracert utility?**
    * to determine the active TCP connections on a PC
    * to check information about a DNS name in the DNS server
    * **to identify where a packet was lost or delayed on a network\***
    * to display the IP address, default gateway, and DNS server address for a PC
52. **Which WLAN security protocol generates a new dynamic key each time a client establishes a connection with the AP?**
    * EAP
    * PSK
    * WEP
    * **WPA\***
53. **A host is accessing a Telnet server on a remote network. Which three functions are performed by intermediary network devices during this conversation? (Choose three.)**
    * **regenerating data signals\***
    * acting as a client or a server
    * providing a channel over which messages travel
    * **applying security settings to control the flow of data\***
    * **notifying other devices when errors occur\***
    * serving as the source or destination of the messages

**Three office workers are using the corporate network. The first employee uses a web browser to view a company web page in order to read some announcements. The second employee accesses the corporate database to perform some financial transactions. The third employee participates in an important live audio conference with other office workers in branch offices. If QoS is implemented on this network, what will be the priorities from highest to lowest of the different data types?**

* + **audio conference, financial transactions, web page\***
  + financial transactions, web page, audio conference
  + audio conference, web page, financial transactions
  + financial transactions, audio conference, web page

1. **During normal operation, from which location do most Cisco switches and routers run the IOS?**
   * **RAM\***
   * flash
   * NVRAM
   * disk drive
2. **A network administrator is making changes to the configuration of a router. After making the changes and verifying the results, the administrator issues the copy running-config startup-config command. What will happen after this command executes?**
   * The configuration will be copied to flash.
   * **The configuration will load when the router is restarted.\***
   * The new configuration file will replace the IOS file.
   * The changes will be lost when the router restarts.
3. **What information does the loopback test provide?**
   * **The TCP/IP stack on the device is working correctly.\***
   * The device has end-to-end connectivity.
   * DHCP is working correctly.
   * The Ethernet cable is working correctly.
   * The device has the correct IP address on the network.
4. **What happens when a switch receives a frame and the calculated CRC value is different than the value that is in the FCS field?**
   * The switch places the new CRC value in the FCS field and forwards the frame.
   * The switch notifies the source of the bad frame.
   * **The switch drops the frame.\***
   * The switch floods the frame to all ports except the port through which the frame arrived to notify the hosts of the error.
5. **What is the auto-MDIX feature on a switch?**
   * the automatic configuration of an interface for 10/100/1000 Mb/s operation
   * **the automatic configuration of an interface for a straight-through or a crossover Ethernet cable connection\***
   * the automatic configuration of full-duplex operation over a single Ethernet copper or optical cable
   * the ability to turn a switch interface on or off accordingly if an active connection is detected
6. **What are the two main components of Cisco Express Forwarding (CEF)? (Choose two.)**
   * **adjacency tables\***
   * MAC-address tables
   * routing tables
   * ARP tables
   * **forwarding information base (FIB)\***
7. **Which statement describes the sequence of processes executed by a router when it receives a packet from a host to be delivered to a host on another network?**
   * It receives the packet and forwards it directly to the destination host.
   * **It de-encapsulates the packet, selects the appropriate path, and encapsulates the packet to forward it toward the destination host\***
   * It de-encapsulates the packet and forwards it toward the destination host.
   * It selects the path and forwards it toward the destination host.
8. **What happens when part of an Internet television transmission is not delivered to the destination?**
   * A delivery failure message is sent to the source host.
   * The part of the television transmission that was lost is re-sent.
   * The entire transmission is re-sent.
   * **The transmission continues without the missing portion.\***
9. **Which three statements characterize the transport layer protocols? (Choose three.)**
   * **TCP and UDP port numbers are used by application layer protocols.\***
   * TCP uses port numbers to provide reliable transportation of IP packets.
   * UDP uses windowing and acknowledgments for reliable transfer of data.
   * **TCP uses windowing and sequencing to provide reliable transfer of data.\***
   * **TCP is a connection-oriented protocol. UDP is a connectionless protocol.\***
10. **Which statement is true regarding the UDP client process during a session with a server?**
    * **Datagrams that arrive in a different order than that in which they were sent are not placed in order.\***
    * A session must be established before datagrams can be exchanged.
    * A three-way handshake takes place before the transmission of data begins.
    * Application servers have to use port numbers above 1024 in order to be UDP capable.
11. **Which two components are configured via software in order for a PC to participate in a network environment? (Choose two.)**
    * MAC address
    * **IP address\***
    * kernel
    * shell
    * **subnet mask\***
12. **Which two reasons generally make DHCP the preferred method of assigning IP addresses to hosts on large networks? (Choose two.)**
    * **It eliminates most address configuration errors.\***
    * It ensures that addresses are only applied to devices that require a permanent address.
    * It guarantees that every device that needs an address will get one.
    * It provides an address only to devices that are authorized to be connected to the network.
    * **It reduces the burden on network support staff.\***
13. **What is the purpose of the network security authentication function?**
    * **to require users to prove who they are\***
    * to determine which resources a user can access
    * to keep track of the actions of a user
    * to provide challenge and response questions
14. **Which type of wireless security makes use of dynamic encryption keys each time a client associates with an AP?**
    * EAP
    * PSK
    * WEP
    * **WPA\***
15. **Which field in an IPv4 packet header will typically stay the same during its transmission?**
    * Packet Length
    * **Destination Address\***
    * Flag
16. **What must be configured to enable Cisco Express Forwarding (CEF) on most Cisco devices that perform Layer 3 switching?**
    * Manually configure next-hop Layer 2 addresses.
    * Issue the no shutdown command on routed ports.
    * **CEF is enabled by default, so no configuration is necessary.\***
    * Manually map Layer 2 addresses to Layer 3 addresses to populate the forwarding information base (FIB).
17. **What is the purpose of adjacency tables as used in Cisco Express Forwarding (CEF)?**
    * to populate the forwarding information base (FIB)
    * **to maintain Layer 2 next-hop addresses\***
    * to allow the separation of Layer 2 and Layer 3 decision making
    * to update the forwarding information base (FIB)
18. **Which statement describes a characteristic of the network layer in the OSI model?**
    * It manages the data transport between the processes running on each host.
    * In the encapsulation process, it adds source and destination port numbers to the IP header.
    * When a packet arrives at the destination host, its IP header is checked by the network layer to determine where the packet has to be routed.
    * **Its protocols specify the packet structure and processing used to carry the data from one host to another.\***
19. **A user gets an IP address of 192.168.0.1 from the company network administrator. A friend of the user at a different company gets the same IP address on another PC. How can two PCs use the same IP address and still reach the Internet, send and receive email, and search the web?**
    * Both users must be using the same Internet Service Provider.
    * **ISPs use Network Address Translation to change a user IP address into an address that can be used on the Internet.\***
    * ISPs use Domain Name Service to change a user IP address into a public IP address that can be used on the Internet.
    * Both users must be on the same network.
20. **Why does HTTP use TCP as the transport layer protocol?**
    * to ensure the fastest possible download speed
    * because HTTP is a best-effort protocol
    * because transmission errors can be tolerated easily
    * **because HTTP requires reliable delivery\***
21. **What field content is used by ICMPv6 to determine that a packet has expired?**
    * TTL field
    * CRC field
    * **Hop Limit field\***
    * Time Exceeded field
22. **Which firewall technique blocks incoming packets unless they are responses to internal requests?**
    * port filtering
    * **stateful packet inspection\***
    * URL filtering
    * application filtering
23. **A network technician is investigating network connectivity from a PC to a remote host with the address 10.1.1.5. Which command issued on the PC will return to the technician the complete path to the remote host?**
    * trace 10.1.1.5
    * traceroute 10.1.1.5
    * **tracert 10.1.1.5\***
    * ping 10.1.1.5
24. **Fill in the blank.**  
    **To prevent faulty network devices from carrying dangerous voltage levels, equipment must be grounded \*correctly**
25. **What is a possible hazard that can be caused by network cables in a fire?**
    * **The cable insulation could be flammable.\***
    * Users could be exposed to excessive voltage.
    * Network cables could be exposed to water.
    * The network cable could explode.
26. **What device is commonly used to verify a UTP cable?**
    * a multimeter
    * an Optical Time Domain Reflectometer
    * **a cable tester\***
    * an ohmmeter
27. **What needs to be checked when testing a UTP network cable?**
    * capacitance
    * **wire map\***
    * inductance
    * flexibility
28. **Which function is provided by TCP?**
    * data encapsulation
    * **detection of missing packets\***
    * communication session control
    * path determination for data packets
29. **What does a router use to determine where to send data it receives from the network?**
    * an ARP table
    * **a routing table\***
    * the destination PC physical address
    * a switching table
30. **Which router interface should be used for direct remote access to the router via a modem?**
    * an inband router interface
    * a console port
    * a serial WAN interface
    * **an AUX port\***
31. **A technician is configuring a router to allow for all forms of management access. As part of each different type of access, the technician is trying to type the command login. Which configuration mode should be entered to do this task?**
    * user executive mode
    * global configuration mode
    * **any line configuration mode\***
    * privileged EXEC mode
32. **Which three statements characterize the transport layer protocols? (Choose three.)**
    * **TCP and UDP port numbers are used by application layer protocols.\***
    * TCP uses port numbers to provide reliable transportation of IP packets.
    * UDP uses windowing and acknowledgments for reliable transfer of data.
    * **TCP uses windowing and sequencing to provide reliable transfer of data.\***
    * **TCP is a connection-oriented protocol. UDP is a connectionless protocol.\***
33. **Which statement is true about an interface that is configured with the IPv6 address command?**
    * IPv6 traffic-forwarding is enabled on the interface.
    * **A link-local IPv6 address is automatically configured on the interface.\***
    * A global unicast IPv6 address is dynamically configured on the interface.
    * Any IPv4 addresses that are assigned to the interface are replaced with an IPv6 address.
34. **A network administrator is variably subnetting a given block of IPv4 addresses. Which combination of network addresses and prefix lengths will make the most efficient use of addresses when the need is for 2 subnets capable of supporting 10 hosts and 1 subnet that can support 6 hosts?**
    * **10.1.1.128/28\***  
      **10.1.1.144/28\***  
      **10.1.1.160/29\***
    * 10.1.1.128/28  
      10.1.1.144/28  
      10.1.1.160/28
    * 10.1.1.128/28  
      10.1.1.140/28  
      10.1.1.158/26
    * 10.1.1.128/26  
      10.1.1.144/26  
      10.1.1.160/26
    * 10.1.1.128/26  
      10.1.1.140/26  
      10.1.1.158/28
35. **How many additional bits should be borrowed from a /26 subnet mask in order to create subnets for WAN links that need only 2 useable addresses?**
    * 2
    * 3
    * **4\***
    * 5
    * 6
36. **An administrator issued the service password-encryption command to apply encryption to the passwords configured for enable password, vty, and console lines. What will be the consequences if the administrator later issues the no service password-encryption command?**
    * It will remove encryption from all passwords.
    * It will reverse only the vty and console password encryptions.
    * **It will not reverse any encryption.\***
    * It will reverse only the enable password encryption.
37. **After making configuration changes, a network administrator issues a copy running-config startup-config command in a Cisco switch. What is the result of issuing this command?**
    * The new configuration will be stored in flash memory.
    * **The new configuration will be loaded if the switch is restarted.\***
    * The current IOS file will be replaced with the newly configured file.
    * The configuration changes will be removed and the original configuration will be restored.
38. **What are two features of ARP? (Choose two.)**
    * **If a host is ready to send a packet to a local destination device and it has the IP address but not the MAC address of the destination, it generates an ARP broadcast.\***
    * An ARP request is sent to all devices on the Ethernet LAN and contains the IP address of the destination host and its multicast MAC address.
    * When a host is encapsulating a packet into a frame, it refers to the MAC address table to determine the mapping of IP addresses to MAC addresses.
    * If no device responds to the ARP request, then the originating node will broadcast the data packet to all devices on the network segment.
    * **If a device receiving an ARP request has the destination IPv4 address, it responds with an ARP reply.\***
39. **A network administrator is enabling services on a newly installed server. Which two statements describe how services are used on a server? (Choose two.)**
    * Data sent with a service that uses TCP is received in the order the data was sent.
    * **A port is considered to be open when it has an active server application that is assigned to it.\***
    * An individual server can have two services that are assigned to the same port number.
    * An individual server cannot have multiple services running at the same time.
    * **Server security can be improved by closing ports that are associated with unused services.\***
40. **Given the binary address of 11101100 00010001 00001100 00001010, which address does this represent in dotted decimal format?**
    * 234.17.10.9
    * 234.16.12.10
    * 236.17.12.6
    * **236.17.12.10\***
41. **A particular telnet site does not appear to be responding on a Windows 7 computer. What command could the technician use to show any cached DNS entries for this web page?**
    * ipconfig /all
    * arp -a
    * **ipconfig /displaydns\***
    * nslookup
42. **Fill in the blank.**  
    **Network devices come in two physical configurations. Devices that have expansion slots that provide the flexibility to add new modules have a Modular \* configuration.**  
    **Refer to the exhibit. What is the maximum TIL value that is used to reach the destination www.cisco.com?**  
    
    * 11
    * 12
    * **13\***
    * 14
43. **Which statement is true about DHCP operation?**
    * **When a device that is configured to use DHCP boots, the client broadcasts a DHCPDISCOVER message to identify any available DHCP servers on the network.\***
    * A client must wait for lease expiration before it sends another DHCPREOUEST message.
    * The DHCPDISCOVER message contains the IP address and sub net masK to be assigned, the IP address of the DNS server, and the IP address of the default gateway.
    * If the client receives several DHCPOFFER messages from different servers, it sends a unicast DHCPREOUEST message to the server from which it chooses to obtain the IP information.
44. **Which type of wireless security is easily compromised?**
    * EAP
    * PSK
    * **WEP\***
    * WPA
45. **A network administrator notices that the throughput on the network appears lower than expected when compared to the end-to-end network bandwidth. Which three factors can explain this difference? (Choose three.)**
    * **the amount of traffic\***
    * the type of data encapsulation in use
    * **the type of traffic\***
    * the number and type of network devices that the data is crossing\*
    * the bandwidth of the connection to the ISP
    * the reliability of the network backbone
46. **A host PC is attempting to lease an address through DHCP. What message is sent by the server to the client know it is able to use the provided IP information?**
    * DHCPDISCOVER
    * **DHCPOFFER\***
    * DHCPPREQUEST
    * DHCPACK
    * DHCPNACK
47. **How many bits would need to be borrowed if a network admin were given the IP addressing scheme of 172.16.0.0/16 and needed no more than 16 subnet with equal number of hosts?**
    * 10
    * 12
    * 2
    * **4\***
48. **Which statement best describes the operation of the File Transfer Protocol?**
    * An FTP client uses a source port number of 21 and a randomly generated destination port number during the establishment of control traffic with an FTP Server.
    * An FTP client uses a source port number of 20 and a randomly generated destination port number during the establishment of data traffic with an FTP Server.
    * **An FTP server uses a source port number of 20 and a randomly generated destination port number during the establishment of control traffic with an FTP client.\***
    * An FTP server uses a source port number of 21 and a randomly generated destination port number during the establishment of control traffic with an FTP client.
49. **A client is establishing a TCP session with a server. How is the acknowledgment number in the response segment to the client determined?**
    * **The acknowledgment number field is modified by adding 1 to the randomly chosen initial sequence number in response to the client.\***
    * The acknowledgment number is set to 11 to signify an acknowledgment packet and synchronization packet back to the client.
    * The acknowledgment number field uses a random source port number in response to the client.
    * The acknowledgment number is set to 1 to signify an acknowledgment packet back to the client.
50. **Why does layer 3 device perform the ANDing process on a destination IP and subnet Mask?**
    * to identify host address and destination host;
    * **to identify network address of destination host;\***
    * to identify faulty frames;
    * to identify broadcast address of destination network;
51. **There was also a question about if you activated service password encryption in the past and you prompt “no service password encryption” what password are modified ?**
    * **no password at all;\***
    * password of the lines are in clear;
    * login password;
    * ?
52. **What type of communication rule would best describe CSMA/CD?**
    * message encapsulation
    * flow control
    * message encoding
    * **access method\***
53. **What is the primary reason to subnet IPv6 prefixes?**
    * to conserve IPv6 addresses
    * to avoid wasting IPv6 addresses
    * to conserve IPv6 prefixes
    * **to create a hierarchical Layer 3 network design\***
54. **Which statement describes data throughput?**
    * It is the measure of the bits transferred across the media under perfect conditions.
    * **It is the measure of the bits transferred across the media over a given period of time.\***
    * It indicates the capacity of a particular medium to carry data.
    * It is the guaranteed data transfer rate offered by an ISP.
55. **Fill in the blank. Use a number.**  
    IPv4 multicast addresses are directly mapped to IEEE 802 (Ethernet) MAC addresses using the last \_\_\_**4**\_\_\_ of the 28 available bits in the IPv4 multicast group address.
56. **How could a faulty network device create a source of hazard for a user? (Choose two.)**
    * **It could stop functioning.\***
    * It could apply dangerous voltage to other pieces of equipment.
    * **It could explode.\***
    * It could produce an unsafe electromagnetic field.
    * It could apply dangerous voltage to itself.
57. **What are three important considerations when planning the structure of an IP addressing scheme? (Choose three.)**
    * **preventing duplication of addresses\***
    * **providing and controlling access\***
    * documenting the network
    * monitoring security and performance
    * **conserving addresses\***
    * implementing new services
58. **What is the metric value that is used to reach the 10.1.1.0 network in the following routing table entry? D 10.1.1.0/24 [90/2170112] via 209.165.200.226, 00:00:05, Serial0/0/0**
    * 24
    * 90
    * 05
    * **2170112\***
59. **Which two services or protocols use the preferred UDP protocol for fast transmission and low overhead? (Choose two)**
    * **VoIP\***
    * **DNS\***
    * HTTP
    * FTP
    * POP3
60. **What action does a DHCPv4 client take if it receives more than one DHCPOFFER from multiple DHCP servers?**
    * **It sends a DHCPREQUEST that identifies which lease offer the client is accepting.\***
    * It sends a DHCPNAK and begins the DHCP process over again.
    * It discards both offers and sends a new DHCPDISCOVER.
    * It accepts both DHCPOFFER messages and sends a DHCPACK.
61. **To what legacy address class does the address 10.0.0.0 belong?**
    * Class B
    * Class D
    * **Class A\***
    * Class C
    * Class E
62. **How many IPv4 addresses are available to be assigned to hosts on a network that has a mask of 255.255.255.248?**
    * 16
    * 14
    * 8
    * 254
    * **6\***
    * 2
63. **What type of communication medium is used with a wireless LAN connection?**
    * **radio waves\***
    * fiber
    * microwave
    * UTP
64. **Which method of IPv6 prefix assignment relies on the prefix contained in RA messages?**
    * EUI-64
    * static
    * **SLAAC\***
    * stateful DHCPv6
65. **What is a characteristic of DNS?**
    * **DNS servers can cache recent queries to reduce DNS query traffic.\***
    * DNS servers are programmed to drop requests for name translations that are not within their zone.
    * All DNS servers must maintain mappings for the entire DNS structure.
    * DNS relies on a hub-and-spoke topology with centralized servers.
66. **What is the prefix for the host address 2001:DB8:BC15:A:12AB::1/64?**
    * 2001:DB8:BC15
    * **2001:DB8:BC15:A\***
    * 2001:DB8:BC15:A:1
    * 2001:DB8:BC15:A:12
67. **What information is maintained in the CEF adjacency table?**
    * Layer 2 next hops
    * **MAC address to IPv4 address mappings\***
    * IP address to interface mappings
    * the IP addresses of all neighboring routers
68. **Which command can an administrator issue on a Cisco router to send debug messages to the vty lines?**
    * **terminal monitor\***
    * logging console
    * logging buffered
    * logging synchronous
69. **What is an example of a top-level domain?**
    * root.cisco.com
    * http://www.cisco.com
    * **.com\***
    * cisco.com
70. **Which protocol requires the establishment of a session between sender and receiver hosts prior to transmitting data?**
    * UDP
    * **TCP\***
    * IP
    * ICMP
71. **Which two protocols operate at the top layer of the TCP/IP protocol suite? (Choose two.)**
    * TCP
    * IP
    * UDP
    * **POP**
    * **DNS**
    * Ethernet
72. **What does a client do when it has UDP datagrams to send?**
    * It sends to the server a segment with the SYN flag set to synchronize the conversation.
    * **It just sends the datagrams.\***
    * It queries the server to see if it is ready to receive data.
    * It sends a simplified three-way handshake to the server.
73. **What is a characteristic of multicast messages?**
    * They are sent to all hosts on a network.
    * They must be acknowledged.
    * **They are sent to a select group of hosts.\***
    * They are sent to a single destination.
74. **Which protocol or service uses UDP for a client-to-server communication and TCP for server-to-server communication?**
    * FTP
    * HTTP
    * **DNS \***
    * SMTP
75. **In what networking model would eDonkey, eMule, BitTorrent, Bitcoin, and LionShare be used?**
    * master-slave
    * client-based
    * **peer-to-peer \***
    * point-to-point

**Question 1**

What are two benefits of using a layered model for network protocol development? (Choose two.)

**promoting acquisition of networking products**

reducing competition among different manufacturers

enhancing capabilities of networking products and services

**UnansweredQuestion 3**

What are three components of a control system? (Choose three.)

**sensor**

**plant**

thermostat

wearable device

**controller**

**UnansweredQuestion 4**

What are two factors that impact network security in the IoT? (Choose two.)

**Correct Answer**



the number of devices



the number of bits used for encryption

**Correct Answer**



the nontraditional location of devices



the lack of Internet standards



the amount of space between sensors

**UnansweredQuestion 5**

What are three machine-intelligible message structures that group strings of bits for network transmission? (Choose three.)



ASCII codes

**Correct Answer**



frames



pixels

**Correct Answer**



packets

**Correct Answer**



segments



waveforms

**Question 6**

Fill in the blank.  
In process control theory, a  uses inputs to execute the required actions in order to achieve the desired output.

**Answer 1:**

**You Answered**(You left this blank)

**Correct Answer**

process

**Correct Answer**

controlled process

**UnansweredQuestion 7**

Which action is the result of negative feedback?



A flashlight is used at night by a camper.



A strong feedback noise is heard in an auditorium during a rehearsal.



An unexpected chemical reaction in a chemical plant causes an explosion.

**Correct Answer**



A thermostat shuts down an air conditioning unit when the temperature reaches the set temperature.

What are three alternative methods of powering IoT systems deployed in remote locations? (Choose three.)

**Correct Answer**



solar



PoE

**Correct Answer**



vibration

**Correct Answer**



temperature differences



AC line power

.

**UnansweredQuestion 9**

What is the term for the extension of the existing Internet structure to billions of connected devices?



SCADA



digitization

**Correct Answer**



IoT



M2M

**UnansweredQuestion 10**

What are two advantages of using fiber optic cables compared with copper cables? (Choose two.)



They are less expensive.

**Correct Answer**



They support higher bandwidth.

**Correct Answer**



They provide connections over longer distances.



They use electromagnetic signals to transmit data.



They provide shared media access for a single link.

**UnansweredQuestion 11**

**0 / 2 pts**

What are three types of connections in an IoT system? (Choose three.)

**Correct Answer**



connection to power sources



application protocols designed for IoT



exclusive networking for IoT systems



interconnection among cloud computing systems

**Correct Answer**



wires and circuitry associated with linking IoT components

**Correct Answer**



OSI Layer 2 and Layer 3 networking connections

**Question 12**

**0 / 2 pts**

Match the layers of the TCP/IP model to their function. (Not all options are used.)

**You Answered**

**application**



**Correct Answer**

represents data to the user and provides encoding and dialog control

**You Answered**

**transport**



**Correct Answer**

supports communication between various devices across diverse networks

**You Answered**

**internet**



**Correct Answer**

determines the best path through the networks to send data

**You Answered**

**network access**



**Correct Answer**

controls hardware devices and media that make up the network

Other Incorrect Match Options:

* manages virtual server environment

Refer to curriculum topic: 1.2.1

**UnansweredQuestion 13**

**0 / 2 pts**

Which level of the Internet of Things reference model describes data storage?



data abstraction



edge computing

**Correct Answer**



data accumulation



physical devices and controllers

.

**UnansweredQuestion 14**

**0 / 2 pts**

True or False?  
The purpose of the Cisco IoT System is to create complexity in IoT system implementation and management.



true

**Correct Answer**



false

**UnansweredQuestion 15**

**0 / 2 pts**

What is an example of a closed-loop control system?



a manual garage door opener



a clock



a traditional dishwasher

**Correct Answer**



a thermostat

**UnansweredQuestion 16**

**0 / 2 pts**

What type of IoT device is the Raspberry Pi?



router



sensor



actuator

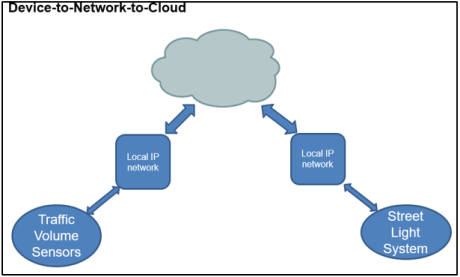
**Correct Answer**



controller

**UnansweredQuestion 17**

**0 / 2 pts**



To answer the question, you do not need to consider the exhibit. Which type of IoT device operates in the device-to-network-to-cloud communication model?



Bluetooth heart-rate sensor

**Correct Answer**



IP camera



smart watch



Zigbee gas sensor

**UnansweredQuestion 18**

**0 / 2 pts**

What is embedded within a digital object, such as a photograph or email?



sensor



microcontroller



feedback

**Correct Answer**



metadata

.

**UnansweredQuestion 19**

**0 / 2 pts**



To answer the question, you do not need to consider the exhibit. Which type of media would use electromagnetic signals to communicate between IoT devices?



wireless



single-mode fiber



copper



multimode fiber

**Question 1**

**0 / 2 pts**

What is another term for an electrically controlled mechanical switch?



microcontroller



actuator



sensor

**Correct Answer**



relay

Refer to curriculum topic: 2.2.4  
Another term for an electrically controlled switch is a relay.

**UnansweredQuestion 2**

**0 / 2 pts**

What is direct current?



the type of current that is supplied to the home by power utilities



the type of electric current in which the current flow periodically reverses direction

**Correct Answer**



the type of current that is produced by batteries, computer power supplies, and solar cells



the type of current that is represented by a sine wave

Refer to curriculum topic: 2.1.2  
Direct current is the flow of electricity that does not change direction. Direct current is used by computers and other digital devices. It is created by batteries, DC power supplies, and solar panels. Alternating current is the flow of electricity that reverses direction periodically. Because of this, its representation is a sine wave. It is delivered to homes and businesses by power utilities.

**UnansweredQuestion 3**

**0 / 2 pts**

What software package is commonly used to create programs for the Arduino?

**Correct Answer**



Arduino IDE​



Packet Tracer



SparkFun​



RedBoard

Refer to curriculum topic: 2.2.2  
The Arduino IDE is a free software package that can be downloaded from the Arduino web site. It includes software and drivers required to interact with the Arduino board.​

**UnansweredQuestion 4**

**0 / 2 pts**

Which tool has the ability to measure the signals that travel from sensors to microcontrollers as a function of time?



multimeter



clamp meter

**Correct Answer**



oscilloscope



wattmeter

Refer to curriculum topic: 2.1.2  
The oscilloscope assists in visualizing and measuring voltage as a function of time in an output of a waveform. The oscilloscope is used to monitor and measure the signals that travel from sensors to microcontrollers and from single board computers back to actuators.

**UnansweredQuestion 5**

**0 / 2 pts**

Which three items can serve as inputs to a microcontroller unit such as an Arduino? (Choose three.)

**Correct Answer**



a sensor



an LED

**Correct Answer**



a pushbutton

**Correct Answer**



a Twitter message



an actuator



a relay

Refer to curriculum topic: 2.2.1  
Microcontroller units, such as the Arduino, can be set up to monitor and respond to events. The events serve as inputs to the microcontroller. Examples of these events are a change in the amount of light detected by a light sensor, the press of a pushbutton, or receiving an Internet message, such as a tweet from Twitter.

**Question 6**

**0 / 2 pts**

Match the unit of measurement with the associated electronic concept. (Not all options are used.)

**You Answered**

**watt**



**Correct Answer**

power

**You Answered**

**ampere**



**Correct Answer**

current

**You Answered**

**volt**



**Correct Answer**

voltage

**You Answered**

**ohm**



**Correct Answer**

resistance

Other Incorrect Match Options:

* bandwidth
* latency

Refer to curriculum topic: 2.1.1

**UnansweredQuestion 7**

**0 / 2 pts**

Which tool measures the ratio of voltage to current across an object?

**Correct Answer**



multimeter



clamp meter



oscilloscope



wattmeter

Refer to curriculum topic: 2.1.1  
A multimeter can be utilized to measure multiple electrical factors including voltage, current, and resistance. Resistance is the opposition to the flow of charged particles and is a ratio of voltage to current.

**UnansweredQuestion 8**

**0 / 2 pts**

What type of device is able to create physical movement?

**Correct Answer**



actuator



sensor



diode

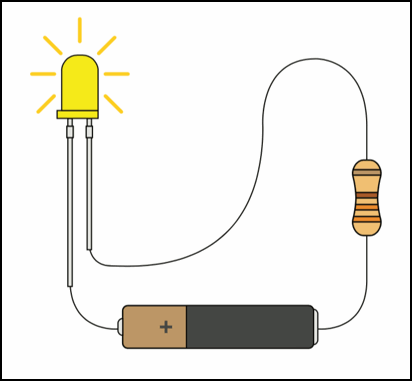


resistor

Refer to curriculum topic: 2.2.4  
Actuators are a type of device that is used to produce physical movement.

**Question 9**

**0 / 2 pts**



Fill in the blank.  
Refer to the exhibit. The graphic shows an example of a simple .

**Answer 1:**

**You Answered**(You left this blank)

**Correct Answer**

circuit

Refer to curriculum topic: 2.2.2  
A circuit includes a continuous loop and a power source for the flow of electricity. Other devices, such as a resistor, can be placed into the path of current flow to perform other actions.

**UnansweredQuestion 10**

**0 / 2 pts**

How are electronic sensors used in digitizing the natural world?

**Correct Answer**



They measure a physical event and translate it into electrical signals.



They measure voltage as a function of time and output a graph.



They convert digital events into analog representations.



They measure electrical signals sent from a specific computer port.

Refer to curriculum topic: 2.1.1  
Electronic sensors are used to measure a physical event and translate it into an electrical signal. This digital signal can be received by a computer that is programmed to utilize this input.

**Question 11**

**0 / 2 pts**

Match the term to its definition.

**You Answered**

**voltage (V)**



**Correct Answer**

electrical potential difference, “electrical pressure"

**You Answered**

**resistance (R)**



**Correct Answer**

opposition to flow of charged particles

**You Answered**

**current (I)**



**Correct Answer**

flow of charged particles; often electrons

**You Answered**

**impedance (Z)**



**Correct Answer**

opposition to changes in voltage or current due to electrical and magnetic interactions

**You Answered**

**power (P)**



**Correct Answer**

electrical energy per unit time generated or dissipated

Refer to curriculum topic: 2.1.1

**UnansweredQuestion 12**

**0 / 2 pts**

What type of circuit provides multiple paths for current flow so that the failure of a single component will not affect the operation of the entire circuit?



series

**Correct Answer**



parallel



linear



nonlinear

Refer to curriculum topic: 2.1.2  
A parallel circuit provides connected components with their own share of current.

**Question 13**

**0 / 2 pts**

Match the definitions with the appropriate steps of the design phase of a printed circuit board.

**You Answered**

**finding possible vendors and material costs**



**Correct Answer**

research

**You Answered**

**the initial idea**



**Correct Answer**

concept

**You Answered**

**symbolic representations of the circuit and components**



**Correct Answer**

circuit design

Refer to curriculum topic: 2.1.3

**UnansweredQuestion 14**

**0 / 2 pts**

What type of electrical circuit stops working when a single electronic component is damaged or removed?



nonlinear



parallel

**Correct Answer**



series

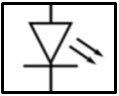


linear

Refer to curriculum topic: 2.1.2  
In a series circuit, electricity will only have a single path to follow and must transverse all components. If any of these components fail and block the flow of electricity, the entire circuit stops working.

**UnansweredQuestion 15**

**0 / 2 pts**



Refer to the exhibit. What type of component is represented if it appeared on an electronic schematic?



inductor



resistor



capacitor

**Correct Answer**



LED

Refer to curriculum topic: 2.1.1  
A light-emitting diode (LED) is symbolized by a triangle with a line segment on one end and two arrows pointing outward. This is a symbol used in schematic diagrams of electrical circuits

**UnansweredQuestion 16**

**0 / 2 pts**

What type of component has no effect on gain or control over voltage or current?



linear



nonlinear

**Correct Answer**



passive



active

Refer to curriculum topic: 2.1.2  
A passive component provides no gain or control over voltage or current. These are two-terminal components that include resistors, capacitors, inductors and memristors.

**UnansweredQuestion 17**

**0 / 2 pts**

What functions do sensors perform in the digitized world?



creating physical movement

**Correct Answer**



detecting events in the physical environment



performing physical actions



reducing current flow through a circuit

Refer to curriculum topic: 2.2.3  
Sensors take the measurement of events in the physical environment as input and transform the measurement into electrical or optical output.

**UnansweredQuestion 18**

**0 / 2 pts**



Refer to the exhibit. What is used to limit the amount of current that flows through the circuit?



inductor

**Correct Answer**



resistor



capacitor



LED

Refer to curriculum topic: 2.1.1  
A resistor is placed in a circuit to limit the amount of current that flows through the circuit.

**UnansweredQuestion 19**

**0 / 2 pts**

What file extension is used when saving sketches written with the Arduino IDE?​



.txt



.doc

**Correct Answer**



.ino



.exe

Refer to curriculum topic: 2.2.2  
The file extension .ino is used when saving sketches that are written using the Arduino IDE.​

**UnansweredQuestion 20**

**0 / 2 pts**

What is a feature of microcontrollers that makes them well-suited for use in the Internet of things?



large data storage capacity



low power requirements​



multiple processor cores



large form factor

**UnansweredQuestion 1**

**0 / 2 pts**

Which Linux distribution is used to develop the Raspbian operating system for the Raspberry Pi?



Mint



Ubuntu

**Correct Answer**



Debian



Red Hat



Slackware

Refer to curriculum topic: 3.2.3  
Raspbian, the operating system for Raspberry Pi, is a Debian Linux variation.

**UnansweredQuestion 2**

**0 / 2 pts**

What are two features related to Linux? (Choose two.)

**Correct Answer**



open source



an application for word processing



an example of interpreted language



a code base managed by one organization

**Correct Answer**



support by a community of programmers

Refer to curriculum topic: 3.2.3  
Linux is an open source operating system and maintained by a community of programmers. There are many distributions (or variations) of Linux and each distribution has its own code base maintained by an organization.

**UnansweredQuestion 3**

**0 / 2 pts**

Which statement describes Blockly?



It is a compiled language.



It is a specific Linux distribution.



It is graphic editing software for web design.

**Correct Answer**



It is a JavaScript based library for implementing visual programming.

Refer to curriculum topic: 3.2.4  
Blockly is a JavaScript based library for implementing visual programming. By using a number of block types, it allows a user to create a program without entering any lines of code. It is not an example of a compiled language, nor a Linux distribution. Although it provides visual programming features, it is not considered a graphic editing software package.

**UnansweredQuestion 4**

**0 / 2 pts**

What is an advantage of an executable program coded with an interpreted language compared with a compiled language?



It runs faster.



It stores as binary format.

**Correct Answer**



It is easier to maintain and troubleshoot.



It does not rely on another program in order to execute.

Refer to curriculum topic: 3.1.2  
A program coded with an interpreted language stays in human-readable text, which makes it easy to maintain and troubleshoot. However, it relies on another program, called the interpreter, to parse and execute the code. Because it requires interpretation during its execution, it runs slower than the same program coded by a compiled language.

**Question 5**

**0 / 2 pts**

Fill in the blank.  
A computer  is a set of ordered instructions created to accomplish a specific task.

**Answer 1:**

**You Answered**(You left this blank)

**Correct Answer**

program

**Correct Answer**

code

**Correct Answer**

software

**Correct Answer**

software program

Refer to curriculum topic: 3.1.1  
A computer program, also called code, is a set of ordered instructions created to accomplish a specific task.

**UnansweredQuestion 6**

**0 / 2 pts**

What is a method to secure the control plane of an IoT device?



the encryption of user data

**Correct Answer**



enforcement of authorized access to code



restricting access to servers



verification of data integrity

Refer to curriculum topic: 3.1.3  
Securing the control plane of an IoT device can be done by enforcing authorized access to code, removing any hard-coded debug access accounts, and keeping firmware upgraded.

**UnansweredQuestion 7**

**0 / 2 pts**

What is the benefit of deploying a group of headless Pi IoT devices?

**Correct Answer**



Each Pi IoT device is managed remotely on a network.



A single monitor can be connected to the group of Pi IoT devices.



The Pi IoT devices can connect to each other using Zigbee.



The group of Pi IoT devices must be controlled by a single Pi device in the cloud.

Refer to curriculum topic: 3.2.2  
The term headless is used to describe servers that are only remotely operated. A Pi can be set up to be managed entirely over the network and can be operated without the need for a monitor, keyboard, or mouse.

**UnansweredQuestion 8**

**0 / 2 pts**

Which Python command is an example of conditional logic?



**def**



**delay**

**Correct Answer**



**if**



**from**

Refer to curriculum topic: 3.2.5  
The commands **if** and **else** are used for conditional logic. The commands**for** and **while** are used for repetition logic, and **from** is for module importing.

**UnansweredQuestion 9**

**0 / 2 pts**

Which Linux shell command can be used to search a specific string of characters within a file?



**cat**



**man**



**pwd**

**Correct Answer**



**grep**

Refer to curriculum topic: 3.2.3  
There are many CLI commands in Linux, including these:

* **grep** – used to search for specific strings of characters within a file or other commands outputs
* **pwd** – used to display the current directory
* **cat** – used to list the contents of a file
* **man** – used to display the documentation for a specific command

**UnansweredQuestion 10**

**0 / 2 pts**

Which Python function is used for console output?

**Correct Answer**



**print**



**return**



**for**



**from**

Refer to curriculum topic: 3.2.5  
The **print** command is used for console output. The command**for** is used for repetition logic**, from** is used for module importing, and **return** is a function definition.

**UnansweredQuestion 11**

**0 / 2 pts**

A system administrator issues the command **ps** on a server that is running the Linux operating system. What is the purpose of this command?



to process a new task



to change file permissions



to display the contents of the current directory

**Correct Answer**



to list the processes currently running in the system

Refer to curriculum topic: 3.2.3  
The Linux **ps** command is used to list the currently running processes in the system. If needed, this command can be instructed to display running processes initiated by the current user or other users.

**UnansweredQuestion 12**

**0 / 2 pts**

Which language is an example of a compiled programming language?



Python



PHP



Javascript

**Correct Answer**



C

Refer to curriculum topic: 3.1.2  
C is a compiled programming language, whereas Python, PHP, and Javascript are all interpreted languages.

**UnansweredQuestion 13**

**0 / 2 pts**

What is needed for a computer program to communicate with another computer program made from a different vendor?

**Correct Answer**



API



firmware



device driver



operating system

Refer to curriculum topic: 3.1.3  
An application programming interface (API) is a set of routines and software tools that facilitate communication between computer programs.

**UnansweredQuestion 14**

**0 / 2 pts**

What tool can be used on a Linux device to compare all installed software against a repository index, to download updates, and to install them automatically?



Blockly



improved C Shell (tcsh)



Arduino

**Correct Answer**



package manager system

Refer to curriculum topic: 3.2.3  
A package manager can be used to upgrade programs and the Linux operating system. Package managers allow users to compare installed software versions against a repository index and then download and automatically install all updated software programs.

**Question 15**

**0 / 2 pts**

Match the Linux administrative command to the function it performs. (Not all options are used.)

**You Answered**

**cd**



**Correct Answer**

change the current directory

**You Answered**

**cp**



**Correct Answer**

copy a file or files from source to destination

**You Answered**

**mv**



**Correct Answer**

move a file or files to a different directory

**You Answered**

**rm**



**Correct Answer**

remove a file or files

**You Answered**

**mkdir**



**Correct Answer**

create a directory under the current directory

Other Incorrect Match Options:

* modify file permissions

Refer to curriculum topic: 3.2.3

**UnansweredQuestion 16**

**0 / 2 pts**

True or False?  
Programmers only work on desktop applications.



true

**Correct Answer**



false

Refer to curriculum topic: 3.1.1  
In the past, many programmers worked on desktop applications. The Internet and the IoT, however, have opened up many interesting new areas of work for programmers.

**UnansweredQuestion 17**

**0 / 2 pts**

What elements are used to represent different programming structures in Blockly?



flowcharts

**Correct Answer**



colored blocks



programming code pieces



colored lines and symbols

Refer to curriculum topic: 3.2.4  
Blockly implements visual programming by assigning different programming structures to colored blocks. These blocks also contain slots and spaces to allow programmers to enter values required by the structure. Programming structures can be connected by dragging and attaching the appropriate blocks.

**UnansweredQuestion 18**

**0 / 2 pts**

What is a Raspberry Pi?

**Correct Answer**



a small, low cost, single-board computer



a Python function for conditional logic



an object-oriented programming language



a cloud-based service for teaching IoT

Refer to curriculum topic: 3.2.1

**UnansweredQuestion 19**

**0 / 2 pts**

A user is using Blockly to program a process to find the next 100 prime numbers after 2. Which block is best used for the task?

**Correct Answer**



FOR block



WHILE block



PRIME block

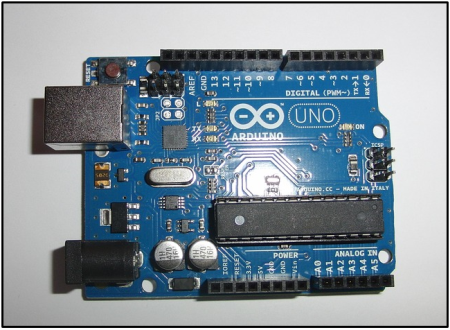


IF-THEN block

Refer to curriculum topic: 3.2.4  
FOR loop blocks are used to repeat the execution of a specific block of code for a specific number of times. It is best used if the number of repetitions is known. In this case, the repetition number is 100. The FOR block can execute 100 times, each time to find a prime number. After 100 prime numbers are found, the FOR block will stop the execution.

**UnansweredQuestion 20**

**0 / 2 pts**



To answer the question, you do not need the graphic. Why is it common to connect an Arduino board with a single board computer like the Raspberry Pi?



The Arduino is a full computer and the Raspberry Pi is not.



The Raspberry Pi cannot process incoming digital signals.



The Arduino has analog pins.



The Raspberry Pi does not require software to interact with an Arduino.

Refer to curriculum topic: 3.2.6  
Analog signals are generated by thermometers, light sensors, and air pressure sensors. A Raspberry Pi does not have analog pins and requires the use of another device to receive this data. An Arduino has analog pins and can then receive analog signals and data by connecting to a Raspberry Pi via USB.

**Question 1**

**0 / 2 pts**

Match the wireless technology with the description.

**You Answered**

**ZigBee**



**Correct Answer**

popular in IoT applications such as home automation

**You Answered**

**4G/5G**



**Correct Answer**

cellular-based technology for transferring data over large geographic areas

**You Answered**

**LoRaWAN**



**Correct Answer**

uses a gateway to relay messages between end-devices and a central network server

Refer to curriculum topic: 4.1.2

**UnansweredQuestion 2**

**0 / 2 pts**

Which pillar of the Cisco IoT System allows data to be analyzed and managed at the location where it is generated?



data analytics

**Correct Answer**



fog computing



network connectivity



application enhancement platform

Refer to curriculum topic: 5.1.1  
The Cisco IoT System consists of six pillars to describe foundational elements, (1) network connectivity, (2) fog computing, (3) security (cyber and physical), (4) data analytics, (5) management and automation, and (6) an application enablement platform. The fog computing pillar covers software and hardware that extends IoT applications to the network edge.

**UnansweredQuestion 3**

**0 / 2 pts**

What are two protocols developed by the Wi-Fi Alliance to secure wireless networks? (Choose two.)

**Correct Answer**



WPA



802.1x

**Correct Answer**



WPA2



LoRaWAN



IPsec

Refer to curriculum topic: 4.1.2  
Wireless communications are inherently insecuer and require encryption to protect the data being transmitted. The Wi-Fi Alliance developed WPA and WPA2 as protocols to secure wireless networks. WPA is the older of the two protocols and considered vulnerable to hacking attacks, and therefore WPA2 is recommended.

**UnansweredQuestion 4**

**0 / 2 pts**

Which type of payment model is typically used to purchase cloud services?



annual subscription fee



lump-sum payment in advance

**Correct Answer**



pay-as-you-go system



calculation based on bandwidth

Refer to curriculum topic: 4.2.1  
Cloud services are usually provided as a pay-as-you-go service much like a utility.

**UnansweredQuestion 5**

**0 / 2 pts**

What measure should be taken to secure IoT devices?



install self-encrypting hard drives



disconnect from the Internet

**Correct Answer**



keep firmware updated



implement the security through obscurity model

Refer to curriculum topic: 4.2.4  
IoT devices are typically too small and inexpensive to run complex security algorithms. This makes the devices vulnerable to security threats. To mitigate these threats, the firmware on the devices should be upgradesd to the latest version.

**UnansweredQuestion 6**

**0 / 2 pts**

Which wireless technology can be used to provide a metropolitan area with up to 100 Mbps of bandwidth?



Bluetooth

**Correct Answer**



5G



LoRaWAN



ZigBee

Refer to curriculum topic: 4.1.2  
5G is a fifth generation cellular-based technology for transferring data over large geographic areas. 5G provides high bandwidth and is capable of data rates of 100 Mbps.

**Question 7**

**0 / 2 pts**

Match the type of media with the transmission technology.

**You Answered**

**copper wires**



**Correct Answer**

electrical impulses

**You Answered**

**fiber optic cable**



**Correct Answer**

pulses of light

**You Answered**

**wireless**



**Correct Answer**

radio waves

Other Incorrect Match Options:

* sound waves

Refer to curriculum topic: 4.1.1

**UnansweredQuestion 8**

**0 / 2 pts**

Which wireless technology has low-power and data rate requirements making it popular in home automation applications?



LoRaWAN



5G



Wi-Fi

**Correct Answer**



ZigBee

Refer to curriculum topic: 4.1.2  
ZigBee is an IEEE 802.15.4 wireless standard designed for creating personal-area networks. Low energy, power, and data rate requirements make Zigbee a popular protocol for connecting home automation devices.

**UnansweredQuestion 9**

**0 / 2 pts**

What are rules governing communication between network devices?



processes

**Correct Answer**



protocols



services



architectures

Refer to curriculum topic: 4.1.1  
Before devices on a network can communicate to each other, they must agree on a common set of communication rules. These rules are called protocols.

**UnansweredQuestion 10**

**0 / 2 pts**

Which cloud service provides an app development platform and a backend service for apps?

**Correct Answer**



Built.io



Zapier



IFTTT



ZigBee

Refer to curriculum topic: 4.2.1  
Built.io is a cloud service that is an app development platform and is a useful resource for IoT systems that require a mobile app.

**Question 11**

**0 / 2 pts**

Fill in the blank.  
The three Vs that distinguish data from big data are velocity, volume, and .

**Answer 1:**

**You Answered**(You left this blank)

**Correct Answer**

variety

Refer to curriculum topic: 4.2.2  
The three Vs that distinguish data from big data are velocity, volume, and variety. Velocity is the rate at which data is generated. Volume is the amount of data transported and stored. Variety is the various types of data generated.

**Question 12**

**0 / 2 pts**

Fill in the blank.  
A  area network is a network infrastructure that interconnects end devices in a limited area.​

**Answer 1:**

**You Answered**(You left this blank)

**Correct Answer**

LAN

**Correct Answer**

Local

**Correct Answer**

Local area network

**Correct Answer**

local area

Refer to curriculum topic: 4.1.1  
Local-area networks, or LANs, are geographically small, usually limited to a building, home, or campus, and administrated by a single organization or individual.​

**Question 13**

**0 / 2 pts**

Match the network component category with the description.

**You Answered**

**end devices**



**Correct Answer**

source or destination of a message

**You Answered**

**intermediate devices**



**Correct Answer**

determine best path for packets

**You Answered**

**media**



**Correct Answer**

physical channel to carry messages

**You Answered**

**services**



**Correct Answer**

network applications

Refer to curriculum topic: 4.1.1

**UnansweredQuestion 14**

**0 / 2 pts**

What is data in motion?

**Correct Answer**



value extracted from data while it is being generated



data stored in mobile devices



data generated by an IoT device that is moving



data transferred from an IoT device to the cloud

Refer to curriculum topic: 4.2.2  
The term data in motion refers to the process of extracting value from data while it is being generated. It is considered in motion because it may or may not eventually be stored.

**UnansweredQuestion 15**

**0 / 2 pts**

What are three characteristics that distinguish big data from data? (Choose three.)

**Correct Answer**



amount of data being transported and stored

**Correct Answer**



rate at which data is generated

**Correct Answer**



type of data that is generated



where the data is stored



how the data is collected



who is authorized to access the data

Refer to curriculum topic: 4.2.2  
Big data is characterized by the three Vs of big data: volume, which is the amount of data generated; velocity, which is the rate at which data is generated; and variety, which is the type of data generated.

**UnansweredQuestion 16**

**0 / 2 pts**

What is the role of routing on data networks?

**Correct Answer**



to determine the best paths for packets through the network



to provide a physical channel for packets to travel through the network​



to ensure availability of services and resources on the network​



to provide an architecture for data exchange

Refer to curriculum topic: 4.1.1  
On a network, packets must travel between source and destination along one of many paths. Routing is used on the network to calculate which path is the best path for packets to take.

**UnansweredQuestion 17**

**0 / 2 pts**

What is the goal of fog computing?



to store all data on a single server for processing



to send data immediately to the cloud for secure storage

**Correct Answer**



to analyze data as close to the source as possible



to permanently store data on the local device

Refer to curriculum topic: 4.2.1  
The fog computing model involves real-time analysis of data as close to where it is created as possible.

**Question 18**

**0 / 2 pts**

Fill in the blank.  
A  area network is usually administered by multiple service providers.​

**Answer 1:**

**You Answered**(You left this blank)

**Correct Answer**

WAN

**Correct Answer**

wide

**Correct Answer**

wide area network

**Correct Answer**

wide area

Refer to curriculum topic: 4.1.1  
Wide-area networks, or WANs, are characterized by a large geographic scope and that they are administered by multiple service providers. WANs do not connect individual end devices together, but connect networks to the Internet.​​

**UnansweredQuestion 19**

**0 / 2 pts**

Which statement is an accurate description of 4G and 5G wireless technologies?



Both 4G and 5G technologies use a low-energy, low-power, low-data rate for wireless personal-area networks.



They require a wireless WAN connection to power constricted devices.



They are both cellular-based technologies for covering large geographic areas.



They both require a 2.4 GHz short-range radio frequency band for industrial, scientific, and medical applications.

Refer to curriculum topic: 4.1.2  
4G and 5G are fourth and fifth generation cellular-based technologies for transferring data over large geographic areas. Both provide high bandwidth and are capable of supporting voice, mobile Internet access, video calling, and high-definition mobile TV.