Question 1
What are two benefits that are provided by proper grounding and bonding systems?
A. higher speed communications
B. safe discharge of electrostatic energy
C. lower equipment power consumption
D. equipotential termination points for equipment and cable shields
E. lowest carbon footprint
Correct Answer: BD
Explanation/Reference:

Question 2
What do deflections indicate to the time domain reflectometer user?
A. They indicate splices, water in the cable, split pairs, and discontinuities or faults.
B. Do not connect live circuit cables to the input of the time domain reflectometer. Connect the cable that is being tested to the cable connector on the front panel of the time domain reflectometer.
C. Upward deflections indicate high-impedance mismatches or opens, and downward deflections indicate shorts or low-impedance mismatches.
D. They are used to select the I/O impedance of the time domain reflectometer. You can select 50, 75, 95, or 125Ω impedances.
Correct Answer: C
Explanation/Reference:

Question 3
Which two reasons make mesh bonding systems most effective?
A. cover wide areas
B. provide additional strength to floor structures
C. provide low-impedance noise-equalizing paths
D. create equipotential grounding systems
E. most cost-effective approach
Correct Answer: CD
Explanation/Reference:

Question 4
Which protocol is a secure alternative to Telnet?
A. SSH
B. FTP
C. SMTP
D. SNMP
E. HTTP
Correct Answer: A
Explanation/Reference:

Question 5
Which two commands can help you to determine what image is running on your industrial switch?
A. show version
B. show spanning-tree
C. show interface-switch
D. show interfaces gigabitEthernet x/y switchport
E. show license
Correct Answer: AE
Explanation/Reference:
How does the optical time domain reflectometer use “backscattered” light to make measurements?
A. It uses pulses to locate and test for sheath faults, damaged conductors, loose connectors, splices, bridge taps, split pairs, and other problems.
B. It performs wiremapping to measure that all pins are correctly connected.
C. It correlates the returned light pulses with a location in the fiber.
D. It measures light-pulse width to measure that all pins are correctly connected.

Correct Answer: C
Explanation/Reference:
Explanation:

**Question 7**
What is the purpose of a time domain reflectometer?
A. It uses pulses to locate and test for sheath faults, damaged conductors, loose connectors, splices, bridge taps, split pairs, and other problems.
B. It opens shorts and pinholes in cable shielding.
C. It correlates the returned light pulses with a location in the fiber.
D. It opens kinks and mismatched cable connectors.

Correct Answer: A
Explanation/Reference:
Explanation:

**Question 8**
What does a power status LED indicate when it is solid green?
A. Power is present on the associated circuit and the system is operating normally.
B. Power is present on the associated circuit, but there is no correlation to whether the system is operating normally.
C. The system is operating normally, but power is not necessarily present on the associated circuit.
D. Power is not present on the associated circuit and the power supply alarm is configured.
E. The power status LED does not show solid green.

Correct Answer: A
Explanation/Reference:
Explanation:

**Question 9**
Which parameter would you tune to affect the selection of a static route as a backup, when a dynamic protocol is also being used?
A. hop count
B. administrative distance
C. link bandwidth
D. link delay
E. link cost

Correct Answer: B
Explanation/Reference:
Explanation:

**Question 10**
What can the technician do to correct the problem?
Exhibit:

Refer to the exhibit. A technician enters the exhibited commands to configure a new router on the plant floor, but receives an error message when attempting to save the configuration. What can the technician do to correct the problem?
A. Enter the correct command.
B. Enter the command at the correct prompt.
C. Upgrade the amount of flash memory in the router.
D. Erase NVRAM to make room for the configuration file.
E. Add NVRAM because there is not enough room for the configuration file.

Correct Answer: A
Explanation/Reference:
Explanation:
Question 11
Which three pieces of information must be maintained for all stakeholders as part of the change management process?
(Choose three.)
A. the location of the person who applied the change
B. the date and time that the change was applied and on which device
C. the original change request form that indicates why the change is necessary
D. the size of the change (in bytes)
E. a description of the actual change itself (configuration, program code, and so on)
F. the names of the current members of the change advisory board
G. the industrial protocol that is used
Correct Answer: BCE
Explanation/Reference:

Question 12
What is a characteristic of cables that are used in articulating equipment arms?
A. fiber-optic zip-cord construction
B. shielded copper twisted pair
C. high flex rated cable
D. type PLTC cable
Correct Answer: C
Explanation/Reference:

Question 13
What is the most critical step to perform when you are using optical fiber connectors?
A. Cover with dust caps when not in use.
B. Immerse in alcohol prior to use.
C. Blow off and carefully wipe down with a tissue before and after each use.
D. Lightly sand with cloth prior to mating.
Correct Answer: A
Explanation/Reference:

Question 14
Which two pieces of information are commonly tracked as part of a change management process?
(Choose two.)
A. reason for the change
B. names of people involved in the change
C. return on investment related to the change
D. SWOT analysis related to the change
E. scatter diagrams related to the change
Correct Answer: AB
Explanation/Reference:

Question 15
What is a reason to use user EXEC mode on an industrial switch?
A. to verify commands that you have entered
B. to change terminal settings
C. to configure VLAN parameters
D. to configure parameters that apply to the entire switch
Correct Answer: B
Explanation/Reference:

Question 16
What is a reason to use privileged EXEC mode on an industrial switch?
A. to verify commands that you have entered
B. to change terminal settings
C. to configure VLAN parameters
D. to configure parameters that apply to the entire switch
Correct Answer: A
Explanation/Reference:
What does the Cisco PSIRT issue for significant security issues that directly involve Cisco products and require an upgrade, fix, or other customer action?

A. Cisco Security Advisories
B. Cisco Security Responses
C. Cisco Security Notices
D. Cisco Security Bulletins

Correct Answer: A
Explanation/Reference:

Question 18
Which command should be used to determine which IOS is running on the router?

A. show flash
B. show version
C. show memory
D. show startup-config
E. show config-register

Correct Answer: B
Explanation/Reference:

Question 19
Which three statements are true?

Refer to the exhibit. The output that is shown is generated at an industrial switch. Which three statements are true? (Choose three.)

A. All ports will be in a state of discarding, learning, or forwarding.
B. Thirty VLANs have been configured on this switch.
C. The bridge priority is lower than the default value for spanning tree.
D. All interfaces that are shown are on shared media.
E. All designated ports are in a forwarding state.
F. This switch must be the root bridge for all VLANs on this switch.

Correct Answer: ACE
Explanation/Reference:

Topic 5, Maintain Appropriate End Devices and Industrial Network Infrastructure Devices

Question 20
What two things does a router do when it forwards a packet?

A. switches the packet to the appropriate outgoing interfaces
B. computes the destination host address
C. determines the next hop on the path
D. updates the destination IP address
E. forwards ARP requests

Correct Answer: AC
Explanation/Reference:

Question 21
Which Layer would you check ACLs for TCP ports being blocked?

At which Layer would you check ACLs for TCP ports being blocked?

A. Layer 1
B. Layer 2
C. Layer 3
D. Layer 4

Correct Answer: D
Explanation/Reference:
Question 22
Which Layer would you use trace route to validate the path?
At which Layer would you use trace route to validate the path?
A. Layer 1
B. Layer 2
C. Layer 3
D. Layer 4

Correct Answer: C
Explanation/Reference:
Explanation:

Question 23
Which Layer would you check for spanning tree loops?
At which Layer would you check for spanning tree loops?
A. Layer 1
B. Layer 2
C. Layer 3
D. Layer 4

Correct Answer: B
Explanation/Reference:
Explanation:

Question 24
Which Layer would you troubleshoot a cabling issue?
At which Layer would you troubleshoot a cabling issue?
A. Layer 1
B. Layer 2
C. Layer 3
D. Layer 4

Correct Answer: A
Explanation/Reference:
Explanation:

Question 25
What is the leading cause of fiber-optic link failure?
What is the leading cause of fiber-optic link failure?
A. contaminants
B. crushed fiber
C. poor testing practices
D. bad connectors

Correct Answer: A
Explanation/Reference:
Explanation:

Question 26
Which two ways could you minimize the impact of monitoring an industrial network?
In which two ways could you minimize the impact of monitoring an industrial network? (Choose two.)
A. Send random messages to a device and see what the response is.
B. Do frequent ping sweeps to industrial devices to check for their proper operations.
C. Make a copy of all the network traffic and analyze it offline.
D. Use an industrial-network grade IDS/IPS system.

Correct Answer: CD
Explanation/Reference:
Explanation:

Question 27
What are two recommended tools or commands that allow you to troubleshoot connectivity between two devices in different IP networks?
What are two recommended tools or commands that allow you to troubleshoot connectivity between two devices in different IP networks? (Choose two.)
A. show interface status
B. show spanning-tree
C. ping
D. show interfaces gigabitEthernet x/y switchport
E. traceroute
F. show interface

Correct Answer: CE
Explanation/Reference:
Explanation:

Question 28
What could be the cause of this problem?
You are called upon to troubleshoot connectivity problems to a network device on a production floor. You have used ping and traceroute to verify that you
cannot connect to the device from the management network. The network is 209.165.202.128/27 and the device has been given the IP address 209.165.202.158
and mask 255.255.255.224. You have verified that you can reach the device with your computer connected to the same switch as the device. What could be the
cause of this problem?
A. The device is set to the wrong subnet mask.
B. The device is set to the wrong IP address.
C. The device has no IP default gateway.
D. The device is connected to a switchport in the wrong VLAN.
Correct Answer: C
Explanation/Reference:

Question 29
What does a port status LED indicate when it is solid green?
With a Cisco IE 2000 switch, what does a port status LED indicate when it is solid green?
A. The port is sending or receiving data.
B. A link is present.
C. No link is present.
D. There is a link fault.
E. The port is not forwarding.
Correct Answer: B
Explanation/Reference:

Question 30
What does a port status LED indicate when it is solid amber?
With a Cisco IE 2000 switch, what does a port status LED indicate when it is solid amber?
A. The port is sending or receiving data.
B. A link is present.
C. No link is present.
D. There is a link fault.
E. The port is not forwarding.
Correct Answer: E
Explanation/Reference:

Question 31
What does a port status LED indicate when it is alternating green and amber?
With a Cisco IE 2000 switch, what does a port status LED indicate when it is alternating green and amber?
A. The port is sending or receiving data.
B. A link is present.
C. No link is present.
D. There is a link fault.
E. The port is not forwarding.
Correct Answer: D
Explanation/Reference:

Question 32
What are two symptoms of duplex mismatch?
What are two symptoms of duplex mismatch? (Choose two.)
A. Ping does not return from one direction versus the other direction.
B. Communication is slow and locks up.
C. Speed is seen equally slow in both directions.
D. The half-duplex side sees frame sequence errors or runt frames.
E. The full-duplex side sees CRC errors.
Correct Answer: BD
Explanation/Reference:

Question 33
Which two protocols could be used during this communication?
The network administrator is using a Windows PC application that is called putty.exe for remote communication to a switch for network troubleshooting. Which
two protocols could be used during this communication? (Choose two).
A. SNMP
B. HTTP
C. Telnet
D. RMON
E. SSH
Correct Answer: CE
Explanation/Reference:
Which command would you issue to see where the packets stop?
You are troubleshooting a connectivity problem and want to isolate the problem. You suspect that a router on the route to an unreachable network is at fault. Which command would you issue to see where the packets stop?
A. router#ping
B. router#tracert
C. router#show ip route
D. router#show cdp neighbors
E. router#traceroute
Correct Answer: E
Explanation/Reference:

Question 35
The link light indicates what two conditions?
An Ethernet cable is attached to a PC NIC and then attached to a switch port. The PC power is turned on and the switch port link LED turns green. The link light indicates what two conditions? (Choose two.)
A. Layer 2 communication has been established between the PC and switch.
B. The PC has received a DHCP address.
C. Traffic is being sent from the switch to the PC.
D. If flashing, the green LED indicates port speed of 100 Mb/s.
E. The Layer 1 media is functioning between the PC and switch.
F. The switch port is functioning as a half-duplex connection.
Correct Answer: AE
Explanation/Reference:

Question 36
Which address should be assigned to the workstation?
A network administrator has subnetted the 172.16.0.0 network using a subnet mask of 255.255.255.192. A duplicate IP address of 172.16.2.120 has accidentally been configured on a workstation in the network. The technician on the plant floor must assign this workstation a new IP address within that same subnetwork. Which address should be assigned to the workstation?
A. 172.16.1.80
B. 172.16.2.80
C. 172.16.1.64
D. 172.16.2.64
E. 172.16.2.127
F. 172.16.2.128
Correct Answer: B
Explanation/Reference:

Question 37
What are APC connectors used?
A. Category 6a cables that need tight radius bends
B. copper network cables in corrosive environments
C. single-mode fiber-optic cables to reduce return loss
D. high-density copper patch panels
Correct Answer: C
Explanation/Reference:

Topic 4, Troubleshooting

Question 38
What should be done with unused conductors in copper unshielded or shielded twisted-pair network cables? What should be done with unused conductors in copper unshielded or shielded twisted-pair network cables?
A. terminate in their characteristic impedance
B. trim back and properly insulate
C. connect to protective earth
D. splice to a used conductor
Correct Answer: A
Explanation/Reference:

Question 39
Which option best describes a mechanical, ingress, climatic, chemical and electromagnetic environment that is classified as M3 I3 C3 E3?
Which option best describes a mechanical, ingress, climatic, chemical and electromagnetic environment that is classified as M3 I3 C3 E3?
A. the highest quality
B. office environment
C. severe
D. serviced by multiple cable segments
Correct Answer: C
Explanation/Reference:
Question 40
DRAG DROP

A. Wire the switch to the DIN power supply
B. Wire the DIN power supply
C. Mount the switch on the DIN rail
D. Connect Patch cards

Correct Answer: A, B, C, D
Explanation/Reference:
Explanation:
Answer: cm x1=3 x2=503 y1=44 y2=78/<cm x1=3 x2=504 y1=117 y2=120/<cm x1=4 x2=504 y1=131 y2=181/<cm x1=4 x2=505 y1=175 y2=206/<cm x1=5 x2=502 y1=220 y2=247/<cm x1=6 x2=509 y1=258 y2=291/<cm x1=7 x2=1015 y1=84 y2=270/<cm x1=8 x2=1017 y1=80 y2=121/<cm x1=515 x2=1017 y1=133 y2=182/<cm x1=514 x2=1018 y1=176 y2=204/<cm x1=518 x2=1018 y1=217 y2=258/<cm x1=516 x2=1018 y1=261 y2=290/<
Topic: Install, Replace, and Remove Cables

Question 41
Which network device and interface configuration meets the minimum requirements for this installation?
Exhibit:

Refer to the exhibit. An industrial ruggedized network device needs to be installed in the place of the icon labeled Network Device to accommodate a leased line attachment to the Internet. Which network device and interface configuration meets the minimum requirements for this installation?
A. a router with two Ethernet interfaces
B. a switch with two Ethernet interfaces
C. a router with one Ethernet and one serial interface
D. a switch with one Ethernet and one serial interface
E. a router with one Ethernet and one modem interface

Correct Answer: C
Explanation/Reference:
Explanation:

Question 42
What is true about this configuration?
Exhibit:
Refer to the exhibit. C-router is to be used as a “router-on-a-stick” to route between the VLANs. All the interfaces have been properly configured and IP routing is operational. The hosts in the VLANs have been configured with the appropriate default gateway. What is true about this configuration?

A. These commands need to be added to the configuration:
   C-router(config)# router eigrp 123
   C-router(config-router)# network 172.19.0.0

B. These commands need to be added to the configuration:
   C-router(config)# router ospf 1
   C-router(config-router)# network 172.19.0.0 0.0.3.255 area 0

C. These commands need to be added to the configuration:
   C-router(config)# router rip
   C-router(config-router)# network 172.19.0.0

D. No further routing configuration is required.

Correct Answer: D

Explanation/Reference:

Question 43
What must be done to accomplish this?

An administrator has connected devices to an industrial switch and, for security reasons, wants the dynamically learned MAC addresses from the address table added to the running configuration. What must be done to accomplish this?

A. Enable port security and use the keyword sticky.
B. Set the switchport mode to trunk and save the running configuration.
C. Use the switchport protected command to have the MAC addresses added to the configuration.
D. Use the no switchport port-security command to allow MAC addresses to be added to the configuration.

Correct Answer: A

Explanation/Reference:

Question 44
Which layer would you perform manufacturing operations and control?

According to the Purdue Reference Model, at which layer would you perform manufacturing operations and control?

A. Level 0
B. Level 1
C. Level 2
D. Level 3
E. Level 4

Correct Answer: D

Explanation/Reference:

Question 45
What are the two most relevant factors in determining the class of administration that is required to maintain the telecommunications infrastructure?

What are the two most relevant factors in determining the class of administration that is required to maintain the telecommunications infrastructure? (Choose two.)

A. the size of the infrastructure
B. the complexity of the infrastructure
C. the age of the infrastructure
D. the industry that the infrastructure supports
E. the physical environment of the infrastructure

Correct Answer: AB

Explanation/Reference:

Question 46
Which prompt is used to configure parameters for the Ethernet ports of an industrial switch?

Which prompt is used to configure parameters for the Ethernet ports of an industrial switch?

A. Switch(config-if)#
B. Switch(config-if-ind)#
C. Switch(config-line)#
D. Switch(config-ind)#
E. Switch(config-vlan)#

Correct Answer: A

Explanation/Reference:

Question 47
EtherNet/IP is an Ethernet implementation of which protocol?

EtherNet/IP is an Ethernet implementation of which protocol?

A. CIP
B. Industrial Protocol
C. DeviceNet  
D. ControlNet  

Correct Answer: A  
Explanation/Reference:  
Explanation:  

**Question 48**  
Which two ports does EtherNet/IP use to communicate?  
Which two ports does EtherNet/IP use to communicate? (Choose two.)  
A. TCP 44818  
B. UDP 44818  
C. TCP 502  
D. UDP 502  
E. TCP 2222  
F. UDP 2222  

Correct Answer: AF  
Explanation/Reference:  
Explanation:  

**Question 49**  
Which loop prevention mechanism provides the fastest reconvergence time after a link failure?  
Given a ring topology, which loop prevention mechanism provides the fastest reconvergence time after a link failure?  
A. Rapid Per-VLAN Spanning Tree Protocol  
B. Resilient Ethernet Protocol  
C. Multiple Spanning Tree Protocol  
D. Spanning Tree Protocol  

Correct Answer: B  
Explanation/Reference:  
Explanation:  

**Question 50**  
Why is SSH preferred over Telnet as a method of accessing a network device to alter or view the configuration?  
Why is SSH preferred over Telnet as a method of accessing a network device to alter or view the configuration?  
A. Telnet encrypts only the login information, not the entire transmission.  
B. SSH requires fewer network resources and no additional configuration.  
C. Telnet is more difficult to use and configure than SSH.  
D. SSH encrypts the login and session information.  

Correct Answer: D  
Explanation/Reference:  
Explanation:  

**Question 51**  
What is the purpose of assigning a default gateway to SW-C switch?  
Exhibit:  

Refer to the exhibit. CCNA.com has the industrial network shown in the exhibit. All switches are configured as layer 2 switches and are using VLAN 1 as their management VLAN. Each VLAN 1 interface has been assigned the correct IP address. What is the purpose of assigning a default gateway to SW-C switch?  
A. allows connectivity between the VLAN 1 interface on SW-C and other devices in the network.  
B. allows connectivity between Host A and other devices in the network.  
C. allows connectivity between Host B and other devices in the network.  
D. allows the switch to pass traffic between Host A and Host B  

Correct Answer: A  
Explanation/Reference:  
Explanation:  

**Question 52**  
What is the purpose of Spanning Tree Protocol?  
What is the purpose of Spanning Tree Protocol?  
A. to prevent routing loops  
B. to create a default route
C. to provide multiple gateways for hosts  
D. to maintain a loop-free Layer 2 network topology  
E. to enhance the functions of SNMP  

Correct Answer: D  
Explanation/Reference:  
Explanation:  

**Question 53**  
Which three of the following components must be elected before the Spanning Tree Protocol can converge in a switched LAN?  
Which three of the following components must be elected before the Spanning Tree Protocol can converge in a switched LAN? (Choose three.)  
A. designated ports  
B. duplex operating mode  
C. fast mode ports  
D. root bridge  
E. root ports  
F. BDPU priority  

Correct Answer: ADE  
Explanation/Reference:  
Explanation:  

**Question 54**  
What are two benefits of a star network topology?  
What are two benefits of a star network topology? (Choose two.)  
A. Disruption of the entire network is not required when adding new machines.  
B. Any problem which leaves the network inoperable can be traced to the central hub.  
C. This network type requires less cable as compared to linear bus topology.  
D. The performance of one of the numerous nodes cannot reflect on the performance of other nodes.  
E. The performance of the entire network is directly dependent on the performance of the hub.  

Correct Answer: AB  
Explanation/Reference:  
Explanation:  

**Topic 2, Install, Replace, and Remove an Industrial Device**  

**Question 55**  
Which two statements are correct for a safe wiring installation to the terminal block of the switch or endpoint?  
Exhibit:  

Which two statements are correct for a safe wiring installation to the terminal block of the switch or endpoint? (Choose two.)  
A. Insert a green ground wire into the terminal block that is marked RT for return.  
B. Verify that DC power is live and within 24 VDC voltage range before starting wiring.  
C. Verify that the DC power circuit includes an overcurrent protective device that limits the DC current to 5 A.  
D. Because this is a low-voltage DC circuit, anyone can install this wiring without electrical training or qualifications.  
E. Connect the positive 24 VDC conductor to the V terminal and connect the negative 24 VDC return wire to the RT terminal.  
F. A ground wire can optionally be connected to the screw terminal on the front of the switch.  

Correct Answer: CE  
Explanation/Reference:  
Explanation:  

**Question 56**  
What are three traffic and interconnection requirements for the devices in the exhibit?  
Exhibit:  

Refer to the exhibit. What are three traffic and interconnection requirements for the devices in the exhibit? (Choose three.)

A. The EtherNet/IP drive connections are in a high-voltage area and need protection from electromagnetic noise, so shielded cable that is rated for 600 V is advised.
B. EtherNet/IP devices such as the controller, drive, VoIP phone, and IP camera should be in the same VLAN.
C. CIP traffic has the highest bandwidth requirement so it needs the highest QoS setting.
D. EtherNet/IP drive traffic has high sensitivity to random drops, latency, and jitter.
E. Real-time motion control and VoIP traffic can share the same VLAN with the proper QoS setting.
F. IEEE1588 and PTP are important for ensuring real-time synchronization.

Correct Answer: ADF

Question 57
Which option allows an EtherNet/IP I/O device to be safely installed where it is subject to water immersion?

A. The device is rated IP20 and the power wiring is installed securely to the terminal block.
B. The device is rated IP67 and a power cordset is used.
C. The device is rated IP67 and immersed to 10 m.
D. The device is rated IP20 and immersed to 10 m.

Correct Answer: B

Question 58
Which port should a PLC with IP address 192.168.3.65 be plugged into in order to communicate to the rest of the network?

Exhibit:

Refer to the exhibit. Which port should a PLC with IP address 192.168.3.65 be plugged into in order to communicate to the rest of the network?

A. FastEthernet1/1
B. FastEthernet1/2
C. FastEthernet1/3
D. FastEthernet1/4
E. FastEthernet1/5

Correct Answer: C
**Question 59**
Which of the following correctly pairs the dotted decimal subnet mask with the correct number of binary bits that represent the subnet mask?

A. 255.255.255.192 and /25
B. 255.255.255.248 and /28
C. 255.255.255.224 and /26
D. 255.255.255.248 and /27
E. 255.255.255.240 and /28
F. 255.255.255.240 and /16

Correct Answer: E

**Explanation/Reference:**

**Question 60**
Which address is the default gateway of Host 3?

Refer to the exhibit. Host 3 on Network A is sending data to Host 8 on Network B. Which address is the default gateway of Host 3?

A. the address of the switch interface that is connected to router interface Fa0/0
B. the address of the switch interface that is connected to router interface Fa0/1
C. the address of the host that is connected to Network A
D. the address of the host that is connected to Network B
E. the address of the router interface Fa0/0
F. the address of the router interface Fa0/1

Correct Answer: E

**Explanation/Reference:**

**Question 61**
Which subnet mask needs to be configured?

A small manufacturing company has a Class C network address on the plant floor and needs to create five subnets, each accommodating 25 endpoints. Which subnet mask needs to be configured?

A. 255.255.240.0
B. 255.255.255.128
C. 255.255.255.192
D. 255.255.255.224
E. 255.255.255.240
F. 255.255.255.248

Correct Answer: D

**Explanation/Reference:**