**Network exam and answer**

## ****Examination: Network Media Connectivity****

**Total Marks: 50**  
**Time: 1.5 Hours**

### ****Section A: Multiple Choice Questions (10 Marks)****

Each question carries 2 marks.

Which of the following is NOT a classification of a network?  
a) LAN  
b) MAN  
c) PAN  
d) CPU

What is a primary advantage of using a computer network?  
a) Increased security risks  
b) Easier resource sharing  
c) Higher cost of communication  
d) Increased power consumption

Which of the following is NOT a network topology?  
a) Star  
b) Mesh  
c) Tree  
d) Hybrid

What is the role of a **router** in a network?  
a) Store data permanently  
b) Connect different networks and route data  
c) Provide security against viruses  
d) Control access to applications

**Which network technology uses fiber optic cables for high-speed data transmission?**  
a) Ethernet  
b) Wi-Fi  
c) Bluetooth  
d) Optical Fiber

### ****Section B: Short Answer Questions (20 Marks)****

Each question carries 4 marks.

**Define a network and explain two benefits of networking.**

**Differentiate between LAN, MAN, and WAN.**

**Describe any three network topologies and their advantages.**

**List four essential network components and their functions.**

**Mention two advantages and two disadvantages of using networks.**

### ****Section C: Long Answer Questions (20 Marks)****

Each question carries 10 marks.

**Explain different types of network technologies and their applications. Provide examples.**

**Discuss the various types of network media and their advantages. Compare wired and wireless communication.**

## ****Solutions****

### ****Section A: Multiple Choice Answers****

1. **(d) CPU**
2. **(b) Easier resource sharing**
3. **(d) Hybrid**
4. **(b) Connect different networks and route data**
5. **(d) Optical Fiber**

### ****Section B: Short Answer Solutions****

**Definition of a Network:**  
A network is a system that connects multiple devices to share resources and information.  
**Benefits:**

* 1. **Resource Sharing**: Users can share files, printers, and applications.
  2. **Communication**: Enables email, video conferencing, and messaging.

**Difference between LAN, MAN, and WAN:**

* 1. **LAN (Local Area Network)**: Covers a small area like a home, school, or office.
  2. **MAN (Metropolitan Area Network)**: Covers a city or town, connecting multiple LANs.
  3. **WAN (Wide Area Network)**: Covers large geographical areas like countries or continents.

**Network Topologies:**

* 1. **Star Topology**: Central device connects all nodes. **Advantage:** Easy to troubleshoot.
  2. **Bus Topology**: Single cable backbone connects all devices. **Advantage:** Cost-effective.
  3. **Mesh Topology**: Devices are interconnected. **Advantage:** High reliability.

**Network Components & Their Functions:**

* 1. **Router**: Connects different networks and directs traffic.
  2. **Switch**: Manages data transmission within a LAN.
  3. **Modem**: Converts digital signals to analog for internet access.
  4. **Network Interface Card (NIC)**: Enables devices to connect to the network.

**Advantages & Disadvantages of Networks:**  
**Advantages:**

* Faster data transfer.
* Cost reduction in resource sharing.  
  **Disadvantages:**
* Security threats like hacking.
* Dependence on network infrastructure.

### ****Section C: Long Answer Solutions****

1. **Network Technologies & Applications:**

* **Ethernet**: Used in wired LANs for high-speed internet.
* **Wi-Fi**: Used for wireless connectivity in homes and offices.
* **Bluetooth**: Used for short-range device communication.
* **Optical Fiber**: Used for high-speed broadband connections.

1. **Comparison of Wired & Wireless Communication:**  
   **Wired (Ethernet, Fiber Optics):**

* More stable & secure.
* Higher speed & less interference.  
  **Wireless (Wi-Fi, Bluetooth):**
* More flexible & mobile.
* Easy to set up without cables.

## ****Examination: Network Media Connectivity****

**Total Marks: 50**  
**Time: 1.5 Hours**

### ****Section A: Multiple Choice Questions (10 Marks)****

Each question carries 2 marks.

Which of the following network cables is best for long-distance data transmission with minimal interference?  
a) Twisted pair  
b) Coaxial  
c) Fiber optic  
d) Management cable

Which tool is used for cutting network cables to the desired length?  
a) Stripping tool  
b) Cutting tool  
c) Crimping tool  
d) Drilling tool

**What is the purpose of a UPS in a network setup?**  
a) To increase the network speed  
b) To store and share data  
c) To provide backup power during electrical outages  
d) To connect multiple networks

Which of the following is used to organize and secure cables in a network setup?  
a) Cable clips  
b) Patch panel  
c) Repeater  
d) Regenerator

**Which tool is used for connecting a network cable to a connector?**  
a) Crimping tool  
b) Testing tool  
c) Patching tool  
d) Drilling tool

### ****Section B: Short Answer Questions (20 Marks)****

Each question carries 4 marks.

**Define twisted pair and fiber optic cables, and explain when each is used.**

**List and describe three types of trunk cables used in network setups.**

**What are the different types of network tools, and what is the purpose of each tool?**

**Describe the function of a patch panel in a network system.**

**Explain how a UPS and inverter work together in providing uninterrupted power for a network.**

### ****Section C: Long Answer Questions (20 Marks)****

Each question carries 10 marks.

**Discuss the different types of connectors and their role in network media connectivity. Provide examples of where each is used.**

**Explain the importance of testing tools in network setup. How do they ensure the performance and reliability of the network?**

## ****Solutions****

### ****Section A: Multiple Choice Answers****

1. **(c) Fiber optic**
2. **(b) Cutting tool**
3. **(c) To provide backup power during electrical outages**
4. **(a) Cable clips**
5. **(a) Crimping tool**

### ****Section B: Short Answer Solutions****

**Twisted Pair and Fiber Optic Cables:**

* 1. **Twisted Pair**: Two insulated copper wires twisted together to reduce interference. Commonly used in telephone lines and LAN connections.
  2. **Fiber Optic**: Uses light to transmit data through glass or plastic fibers. Used for high-speed, long-distance communication like internet backbones.

**Types of Trunk Cables:**

* 1. **Flexible Trunk**: Made of rubber or plastic, used for easier installation in tight spaces.
  2. **Plastic Trunk**: Rigid and durable, commonly used for structural support of cable systems.
  3. **Timber Trunk**: Wooden-based cable protection, used for aesthetic or architectural integration.

**Network Tools & Their Purpose:**

* 1. **Cutting Tool**: Used to cut cables to the desired length.
  2. **Stripping Tool**: Removes the insulation from the cable for easy connection.
  3. **Drilling Tool**: Used to create holes in walls for cable passages.
  4. **Crimping Tool**: Used to attach connectors to the ends of cables.
  5. **Patching Tool**: Used for managing cables in patch panels.

**Patch Panel Function:**  
A patch panel allows for easy management of network cables, connecting multiple devices in a structured and organized way. It ensures flexibility in making and breaking network connections.

**UPS and Inverter in Power Supply:**

* 1. **UPS**: Provides immediate backup power during an electrical outage to prevent data loss and network downtime.
  2. **Inverter**: Converts DC to AC power, typically used in conjunction with the UPS to stabilize the power supply.

### ****Section C: Long Answer Solutions****

**Connectors in Network Media Connectivity:**

* 1. **RJ45**: Common in Ethernet networks, used for twisted pair cables.
  2. **LC, SC, and ST connectors**: Used with fiber optic cables for high-speed data transmission.
  3. **BNC Connectors**: Used in coaxial cables for video and data transmission.

**Importance of Testing Tools:**  
Testing tools (e.g., cable testers, signal testers) help verify the integrity of network cables, check signal strength, and ensure proper functioning of connections. They ensure network performance is optimized and troubleshoot issues before full deployment.

## ****Examination: Network Media Connectivity and Cable Termination****

**Total Marks: 60**  
**Time: 2 Hours**

### ****Section A: Multiple Choice Questions (12 Marks)****

Each question carries 2 marks.

Which of the following cable types is most commonly used for internet connections in local area networks?  
a) Coaxial  
b) Fiber-optic  
c) Twisted pair  
d) Shielded twisted pair

**What type of installation method involves running cables along telephone poles or towers?**  
a) Open-wire  
b) Underground  
c) Semi-built-in  
d) Above-ground conduits

What is the primary purpose of cable trunking materials in network setups?  
a) To enhance data transmission speed  
b) To protect and organize cables  
c) To minimize network traffic  
d) To prevent interference

Which of the following is used to identify and organize cables in network installations?  
a) Patching tool  
b) Labeling  
c) Crimping tool  
d) Drilling tool

**Which of the following cable types is most commonly used for long-distance, high-speed data transmission in modern networks?**  
a) Twisted pair  
b) Fiber-optic  
c) Coaxial  
d) Shielded twisted pair

Which type of network cable termination is typically used in fiber-optic installations?  
a) RJ45  
b) LC connector  
c) BNC connector  
d) SC connector

**What type of cabling is designed to reduce electromagnetic interference (EMI)?**  
a) Coaxial  
b) Fiber-optic  
c) Shielded twisted pair  
d) Twisted pair

What type of network cable installation method is commonly used in residential settings?  
a) Open-wire  
b) Aerial  
c) Underground  
d) Above-ground conduits

**Which of the following is NOT a material used in cable trunking?**  
a) Stainless steel  
b) Wood  
c) Aluminum  
d) Plastic

**Which of the following is an example of a network cabling technique for use in areas with high electromagnetic interference (EMI)?**  
a) Fiber-optic  
b) Shielded twisted pair  
c) Twisted pair  
d) Coaxial

**What method would be used to ensure cable integrity during installation by reducing physical strain on the cable?**  
a) Cable tagging  
b) Patching  
c) Proper cable termination  
d) Crimping

**Which of the following types of network cable installation would be best suited for protecting cables from water damage?**  
a) Underground  
b) Aerial  
c) Semi-built-in  
d) Underwater

### ****Section B: Short Answer Questions (24 Marks)****

Each question carries 4 marks.

**Describe the differences between twisted pair cabling, fiber-optic cabling, and coaxial cabling. When would you use each type?**

**Explain the purpose of labelling in network cable installations. Why is it important?**

**What are the benefits of using cable trunking made from stainless steel as compared to plastic or wood?**

**List and explain three common types of cable terminations used in network cabling systems.**

**What is the purpose of patching and tagging in network installations, and how do these processes contribute to effective network management?**

### ****Section C: Long Answer Questions (24 Marks)****

Each question carries 12 marks.

**Discuss the different types of network cable installation methods (open-wire, aerial, above-ground conduits, semi-built-in) and explain where each method would be most appropriate for use.**

**Provide a detailed explanation of how network cables should be terminated (twisted pair, fiber-optic, coaxial, shielded twisted pair) and the tools required for each termination method.**

## ****Solutions****

### ****Section A: Multiple Choice Answers****

1. **(c) Twisted pair**
2. **(a) Open-wire**
3. **(b) To protect and organize cables**
4. **(b) Labeling**
5. **(b) Fiber-optic**
6. **(b) LC connector**
7. **(c) Shielded twisted pair**
8. **(d) Above-ground conduits**
9. **(c) Aluminum**
10. **(b) Shielded twisted pair**
11. **(c) Proper cable termination**
12. **(a) Underground**

### ****Section B: Short Answer Solutions****

1. **Twisted Pair, Fiber-optic, and Coaxial Cabling:**

* **Twisted Pair**: Uses pairs of wires twisted together; used in Ethernet (Cat 5/6).
* **Fiber-optic**: Uses light signals to transmit data; used for high-speed, long-distance communication.
* **Coaxial**: Has a central conductor and shielding; used for cable internet and TV.

**Purpose of Labeling in Cable Installations:**  
Labeling helps identify cables and their purpose, simplifying troubleshooting, maintenance, and future upgrades. It ensures that cables are connected to the right equipment and reduces errors during installations.

**Benefits of Stainless Steel Cable Trunking:**

* **Durability**: Stainless steel is more robust and can withstand environmental stress.
* **Protection**: Offers better protection against mechanical damage compared to plastic or wood.
* **Fire Resistance**: Stainless steel is fire-resistant, making it a safer option for critical installations.

1. **Types of Cable Terminations:**

* **Twisted Pair Termination**: Use of RJ45 connectors to connect wires.
* **Fiber-optic Termination**: Use of SC, LC, or ST connectors.
* **Coaxial Termination**: BNC connectors used to connect coaxial cables.

1. **Patching and Tagging Purpose:**

* **Patching**: The process of connecting network devices through patch panels or switches.
* **Tagging**: Involves labeling cables and connections to ensure easy identification.  
  These practices contribute to efficient network organization, reduce downtime, and facilitate easier troubleshooting.

### ****Section C: Long Answer Solutions****

1. **Network Cable Installation Methods:**

* **Open-wire**: Used for outdoor, long-distance communications (telephone lines).
* **Aerial**: Cables are suspended on poles, often used for telecommunication.
* **Above-ground Conduits**: Suitable for industrial and commercial installations where underground installation is impractical.
* **Semi-built-in**: Cables installed within the walls or floors, often used in offices or homes for aesthetic purposes.

1. **Network Cable Termination Process:**

* **Twisted Pair**: Use RJ45 connectors with crimping tools to secure the cable.
* **Fiber-optic**: Use SC, LC, or ST connectors and fusion splicing or mechanical splicing tools.
* **Coaxial**: Use BNC connectors with crimping tools for proper termination.  
  Proper termination ensures optimal signal strength, reliability, and minimal interference.

## ****Examination: Basic Network Configuration****

**Total Marks: 60**  
**Time: 2 Hours**

### ****Section A: Multiple Choice Questions (12 Marks)****

Each question carries 2 marks.

Which type of IP address is manually assigned to a device?  
a) Static  
b) Dynamic  
c) Automatic  
d) DHCP

What does the command hostname do in a network device configuration?  
a) Sets the device’s IP address  
b) Defines the name of the device  
c) Changes the device’s password  
d) Configures the port

**Which of the following is an advantage of subnetting?**  
a) Simplifies network traffic  
b) Decreases the number of IP addresses required  
c) Increases the number of available IP addresses  
d) Ensures security

What is the role of a **gateway** in a network configuration?  
a) To provide local DNS resolution  
b) To route traffic between networks  
c) To assign IP addresses dynamically  
d) To encrypt data transmissions

**Which of the following IP address classes supports up to 65,536 hosts?**  
a) Class A  
b) Class B  
c) Class C  
d) Class D

What is the default IP address version used on most modern networks?  
a) IPv4  
b) IPv6  
c) ARP  
d) DHCP

Which of the following configuration commands would you use to save the configuration on a Cisco device?  
a) copy running-config startup-config  
b) reload  
c) show running-config  
d) configure terminal

**What is the first step when configuring a network device?**  
a) Configure the IP address  
b) Set the hostname  
c) Set the device password  
d) Test the network connection

In binary subnetting, what is the role of logical operators?  
a) To apply configuration changes  
b) To determine the range of usable IP addresses  
c) To define the subnet mask  
d) To apply logical rules to calculate subnets

**What type of IP address is dynamically assigned by a DHCP server?**  
a) Static  
b) Dynamic  
c) Automatic  
d) Manual

Which of the following tests checks for connectivity between different parts of the network?  
a) Physical testing  
b) Unit testing  
c) Integration testing  
d) Configuration testing

**Which of the following IP address classes is used for multicast communication?**  
a) Class A  
b) Class B  
c) Class C  
d) Class D

### ****Section B: Short Answer Questions (24 Marks)****

Each question carries 4 marks.

**Explain the difference between static, dynamic, and automatic IP address assignment.**

**Describe the function of subnet masks in IP addressing. Why are they important?**

**What is the purpose of a banner message in network device configuration?**

**Explain the process of configuring a basic network device, including setting a hostname and device password.**

**What are the benefits of subnetting a network? How does it affect IP address management?**

### ****Section C: Long Answer Questions (24 Marks)****

Each question carries 12 marks.

**Explain the different types of IP address classes (A, B, C, D, E) and provide examples of when each would be used.**

**Discuss the process of subnetting an IP network. Include the use of binary system, subnet mask calculation, and how to divide the network into smaller subnets.**

## ****Solutions****

### ****Section A: Multiple Choice Answers****

1. **(a) Static**
2. **(b) Defines the name of the device**
3. **(a) Simplifies network traffic**
4. **(b) To route traffic between networks**
5. **(a) Class A**
6. **(a) IPv4**
7. **(a)** copy running-config startup-config
8. **(b) Set the hostname**
9. **(b) To determine the range of usable IP addresses**
10. **(b) Dynamic**
11. **(c) Integration testing**
12. **(d) Class D**

### ****Section B: Short Answer Solutions****

1. **Static, Dynamic, and Automatic IP Assignment:**

* **Static IP**: Manually assigned to a device and remains unchanged.
* **Dynamic IP**: Assigned automatically by a DHCP server; can change.
* **Automatic IP**: Typically refers to DHCP assignment where the device automatically receives an IP address from the network.

**Subnet Masks in IP Addressing:**  
Subnet masks determine the division between the network and host portion of an IP address. They are important for subnetting, helping to segment a network and reduce the number of required IP addresses.

**Banner Message in Device Configuration:**  
A banner message is displayed when someone accesses a device. It can be used for legal warnings or to provide important information about the device or network.

**Configuring a Basic Network Device:**

* **Set Hostname**: hostname [device-name].
* **Set Device Password**: enable secret [password].
* This configures the basic identity and security of the device.

1. **Benefits of Subnetting:**  
   Subnetting helps organize the network, reduce network congestion, improve security, and make more efficient use of IP addresses. It allows smaller subnets within a larger network for better traffic management.

### ****Section C: Long Answer Solutions****

1. **Types of IP Address Classes:**

* **Class A**: Supports large networks (1.0.0.0 to 127.255.255.255), used by large organizations.
* **Class B**: Supports medium networks (128.0.0.0 to 191.255.255.255), used by universities or businesses.
* **Class C**: Supports small networks (192.0.0.0 to 223.255.255.255), typically used in home networks.
* **Class D**: Used for multicast (224.0.0.0 to 239.255.255.255).
* **Class E**: Reserved for future use.

1. **Subnetting Process:**

* **Binary System**: Subnetting uses binary calculations to divide an IP address into network and host portions.
* **Subnet Mask Calculation**: Subnet masks are written in binary to identify the network. For example, a mask of 255.255.255.0 means the first 24 bits represent the network, and the remaining 8 bits represent hosts.
* **Dividing Networks**: Use logical and bitwise operators to calculate the subnet range and determine the available number of hosts per subnet.

## ****Examination: Network System Maintenance****

**Total Marks: 60**  
**Time: 2 Hours**

### ****Section A: Multiple Choice Questions (12 Marks)****

Each question carries 2 marks.

**What is the main goal of preventive maintenance for network hardware?**  
a) To increase device speed  
b) To extend the lifespan of network devices  
c) To troubleshoot existing issues  
d) To reduce energy consumption

What should be the first step in the troubleshooting process when a network issue arises?  
a) Collect network system information  
b) Analyze the current network status  
c) Implement a solution  
d) Check for environmental conditions

**Which of the following actions is part of hardware preventive maintenance?**  
a) Replace damaged hardware components  
b) Schedule regular cleaning  
c) Update device firmware  
d) Change network device credentials

What type of maintenance is involved when fixing a malfunctioning network switch?  
a) Preventive maintenance  
b) Corrective maintenance  
c) Software maintenance  
d) Network monitoring

**Which of the following is an example of software corrective maintenance?**  
a) Updating network configuration  
b) Replacing hardware components  
c) Regularly cleaning equipment  
d) Updating network monitoring software

**Which network monitoring software action involves ensuring that the license is valid and up-to-date?**  
a) Software preventive maintenance  
b) Corrective maintenance  
c) Troubleshooting network issues  
d) Hardware corrective maintenance

**What is the purpose of updating network device credentials regularly?**  
a) To maintain the security of the network  
b) To increase device performance  
c) To reduce the chances of hardware failure  
d) To monitor network activity

**When performing corrective maintenance on a network, what should you do after identifying the problem?**  
a) Ignore the problem  
b) Implement a solution  
c) Collect network system information  
d) Schedule a cleaning

**Which of the following is a key component of troubleshooting network configuration?**  
a) Checking network status  
b) Scheduling preventive maintenance  
c) Cleaning network cables  
d) Updating firmware

**Which of the following best describes software preventive maintenance?**  
a) Collecting information from network devices  
b) Regularly updating and upgrading software and firmware  
c) Fixing network hardware issues  
d) Troubleshooting network failures

**Which of the following is a step in the troubleshooting process?**  
a) Checking for software updates  
b) Collecting network system information  
c) Replacing faulty hardware  
d) Cleaning the devices

**What is the most important aspect of maintaining network equipment in good physical condition?**  
a) Regular cleaning  
b) Updating the firmware  
c) Analyzing network traffic  
d) Monitoring network activity

### ****Section B: Short Answer Questions (24 Marks)****

Each question carries 4 marks.

**What are the steps involved in preventive maintenance for network hardware?**

**Describe the process of performing corrective maintenance on network devices.**

**Explain the importance of network monitoring software in maintaining network systems.**

**What are the key steps in the troubleshooting process for network issues?**

**How can regular updates to device firmware and network monitoring software contribute to system stability?**

### ****Section C: Long Answer Questions (24 Marks)****

Each question carries 12 marks.

**Discuss the types of hardware and software maintenance needed for optimal network system performance. Provide examples of when preventive and corrective maintenance would be required for each type.**

**Explain the process of troubleshooting a network issue from identifying the problem to implementing a solution. Include the tools and steps involved in diagnosing and fixing network-related issues.**

## ****Solutions****

### ****Section A: Multiple Choice Answers****

1. **(b) To extend the lifespan of network devices**
2. **(a) Collect network system information**
3. **(b) Schedule regular cleaning**
4. **(b) Corrective maintenance**
5. **(a) Updating network configuration**
6. **(a) Software preventive maintenance**
7. **(a) To maintain the security of the network**
8. **(b) Implement a solution**
9. **(a) Checking network status**
10. **(b) Regularly updating and upgrading software and firmware**
11. **(b) Collecting network system information**
12. **(a) Regular cleaning**

### ****Section B: Short Answer Solutions****

1. **Steps for Preventive Maintenance for Network Hardware:**

* Regularly clean devices and equipment to remove dust and debris.
* Check cable connections to ensure they are secure.
* Inspect hardware for wear and tear and replace as needed.
* Update device firmware to enhance functionality and security.
* Test network performance and resolve minor issues before they escalate.

1. **Corrective Maintenance on Network Devices:**

* Identify the problem by checking network status and device logs.
* Analyze symptoms and narrow down the possible causes (e.g., faulty hardware, configuration issues).
* Repair or replace damaged components (e.g., replacing a damaged network cable or faulty switch).
* After the fix, verify network functionality and monitor for recurring issues.

**Importance of Network Monitoring Software:**  
Network monitoring software helps detect issues early, providing insights into network health, performance, and security. It enables the proactive identification of problems, such as bottlenecks, hardware failures, or unauthorized access. Regular use can prevent downtime and improve overall network efficiency.

**Key Steps in the Troubleshooting Process for Network Issues:**

* **Collect Information**: Gather system logs, network status, and user reports.
* **Analyze Network Status**: Check for connectivity, latency, and errors in logs.
* **Identify the Problem**: Narrow down the issue (hardware, software, or configuration).
* **Implement a Solution**: Apply fixes such as reconfiguring devices or replacing faulty hardware.
* **Test the Solution**: Ensure the network is functioning as expected.

1. **Benefits of Regular Updates to Firmware and Software:**

* Updating firmware improves the performance, security, and functionality of devices.
* Network monitoring software updates ensure compatibility with new devices, enhanced features, and better security.
* These updates help prevent known vulnerabilities from being exploited and ensure smooth network operation.

### ****Section C: Long Answer Solutions****

1. **Types of Maintenance for Network System Performance:**

* **Hardware Preventive Maintenance**: Includes tasks like cleaning, inspecting, and updating hardware components. Example: Regular cleaning of network devices and replacing fans to prevent overheating.
* **Hardware Corrective Maintenance**: Involves fixing or replacing malfunctioning equipment. Example: Replacing a failed switch or network card.
* **Software Preventive Maintenance**: Regular updates to network monitoring software and firmware upgrades. Example: Upgrading router firmware to add new features and fix security flaws.
* **Software Corrective Maintenance**: Fixing issues like incorrect network configurations or outdated drivers. Example: Reconfiguring network settings after a router upgrade.

1. **Process of Troubleshooting a Network Issue:**

* **Step 1: Identify the Problem**: Gather information from network logs, users, and performance metrics to narrow down the potential issue.
* **Step 2: Diagnose the Cause**: Use tools like ping, traceroute, and system diagnostics to identify the root cause (e.g., misconfigured settings, faulty hardware, network congestion).
* **Step 3: Implement a Solution**: Based on the diagnosis, apply a fix such as reconfiguring the device, replacing hardware, or adjusting network settings.
* **Step 4: Verify and Monitor**: After applying the solution, test the network to ensure the issue is resolved. Continue to monitor network performance to prevent further issues.

## ****Examination: Network System Maintenance (Extended)****

**Total Marks: 60**  
**Time: 2 Hours**

### ****Section A: Multiple Choice Questions (12 Marks)****

Each question carries 2 marks.

**What is a key element of a maintenance report?**  
a) Only the issue faced  
b) Tools, materials, and equipment used  
c) The troubleshooting process  
d) Budget analysis

What is an advantage of using video documentation for reporting network maintenance?  
a) It allows for a visual record of the issue and solution.  
b) It provides a written record for further reference.  
c) It is the easiest method to communicate maintenance to clients.  
d) It simplifies the process of collecting network information.

**Which of the following is NOT typically included in a maintenance report?**  
a) Used tools, materials, and equipment  
b) Status after maintenance  
c) Details of competitors’ systems  
d) Recommendations for future improvements

Which of the following is a method of reporting network maintenance?  
a) Only written reports  
b) Oral communication  
c) Video documentation  
d) All of the above

**Why is the status after maintenance important in a report?**  
a) To identify future risks  
b) To ensure the network continues to function optimally  
c) To determine the cost of repairs  
d) To record the time taken for maintenance

**Which report element helps in guiding future improvements?**  
a) Status after maintenance  
b) Recommendations  
c) Tools used  
d) Equipment condition

**What is the primary benefit of oral reports in maintenance?**  
a) They are less formal and faster  
b) They provide a permanent record  
c) They are detailed and technical  
d) They require documentation and follow-up

**What would be a reason for including equipment condition in a maintenance report?**  
a) To highlight potential issues that need future attention  
b) To report the time of maintenance  
c) To showcase the tools used  
d) To update software configurations

**Which tool is commonly used for documentation during network maintenance?**  
a) Spreadsheet software  
b) Video camera  
c) Network analyzer  
d) Antivirus software

**What is the advantage of using written reports for network maintenance?**  
a) They can be used for future reference and audits.  
b) They require no follow-up action.  
c) They offer immediate feedback to clients.  
d) They are the fastest reporting method.

**Why might a network technician use a built design in the maintenance report?**  
a) To show changes made to the network layout after maintenance  
b) To recommend new equipment  
c) To report hardware failures  
d) To display software updates

**What should be included in a maintenance report recommendation?**  
a) A suggestion for immediate network repairs  
b) Proposals for network optimization or future upgrades  
c) The time taken for the repairs  
d) Detailed logs of network traffic

### ****Section B: Short Answer Questions (24 Marks)****

Each question carries 4 marks.

**Describe the key components of a network maintenance report.**

**Explain the different ways of reporting network maintenance and the advantages of each method.**

**Why is it important to include a "status after maintenance" section in a network maintenance report?**

**What role do recommendations play in a network maintenance report? Provide an example of a recommendation.**

**Describe the importance of documenting the tools, materials, and equipment used during maintenance.**

### ****Section C: Long Answer Questions (24 Marks)****

Each question carries 12 marks.

**Discuss the importance of thorough documentation during network maintenance. Include the roles of written, oral, and video documentation and how they contribute to reporting.**

**Explain how you would structure a network maintenance report. Include all essential elements and describe their significance in future maintenance or troubleshooting efforts.**

## ****Solutions****

### ****Section A: Multiple Choice Answers****

1. **(b) Tools, materials, and equipment used**
2. **(a) It allows for a visual record of the issue and solution.**
3. **(c) Details of competitors’ systems**
4. **(d) All of the above**
5. **(b) To ensure the network continues to function optimally**
6. **(b) Recommendations**
7. **(a) They are less formal and faster**
8. **(a) To highlight potential issues that need future attention**
9. **(b) Video camera**
10. **(a) They can be used for future reference and audits.**
11. **(a) To show changes made to the network layout after maintenance**
12. **(b) Proposals for network optimization or future upgrades**

### ****Section B: Short Answer Solutions****

1. **Key Components of a Network Maintenance Report:**

* **Tools, Materials, and Equipment Used**: A list of items used during the maintenance process, such as cables, connectors, and diagnostic tools.
* **Status After Maintenance**: Describes the network's condition after repairs or updates.
* **Update to Built Design**: Modifications made to the physical or logical network design.
* **Recommendations**: Suggested actions to improve network performance or prevent future issues.

1. **Ways of Reporting Network Maintenance:**

* **Oral Reports**: Verbal communication, often used in meetings or quick status updates, is faster but less formal.
* **Written Reports**: Detailed and formal, these provide a permanent record and can be used for future reference or audits.
* **Video Documentation**: Visual documentation provides a record of issues and solutions, which can be useful for training or explaining complex tasks.

**Importance of "Status After Maintenance":**  
The "status after maintenance" section ensures that the network is functioning properly after the fixes. It highlights whether the maintenance was successful, and whether any issues remain unresolved. This section provides an overview of network health and can help in future troubleshooting.

**Role of Recommendations in a Maintenance Report:**  
Recommendations guide future actions to improve the network’s performance or prevent recurring issues. Example: After diagnosing and fixing network congestion, a recommendation could be to upgrade the router firmware or implement additional bandwidth monitoring tools.

**Importance of Documenting Tools, Materials, and Equipment Used:**  
Documenting these items provides clarity on what was needed to resolve the issue and helps maintain inventory. It also offers insight into the type of resources required for future maintenance tasks. This helps in budgeting and planning for the next maintenance cycle.

### ****Section C: Long Answer Solutions****

1. **Importance of Thorough Documentation During Network Maintenance:**  
   Documentation serves as a record for the work done, helping network administrators track changes and solutions.

* **Written Documentation**: Provides a detailed record for future audits and troubleshooting.
* **Oral Reports**: Useful for quick updates and immediate communication with team members.
* **Video Documentation**: Helps visually demonstrate issues and repairs, useful for training new staff or explaining complex issues.  
  All forms of documentation ensure transparency and provide a basis for future decision-making.

1. **Structure of a Network Maintenance Report:**  
   A well-structured network maintenance report includes:

* **Introduction**: Brief overview of the maintenance performed.
* **Tools, Materials, and Equipment Used**: List of resources required for the maintenance.
* **Status After Maintenance**: A description of the network's current condition, highlighting any improvements or remaining issues.
* **Update to Built Design**: If any physical or logical network designs were changed, they should be recorded here.
* **Recommendations**: Proposed steps for optimization, future upgrades, or additional preventive measures.