# Assignment:

## Module –1: Understanding of Hardware and Its Components

### Section 1: Multiple Choice

1. Which of the following is NOT a component of the CPU?
    1. ALU
    2. RAM
    3. CU
    4. 1 and 3 both

    Ans: (2) ram

    Note: Because ram is volatile memory that store data that you are currently working. that losses power that the data was disappear
2. What is the function of RAM in a computer?
   Ans: ram is a temporary memory bank where your computer store data it needs to be retrieve quickly.
3. Which of the following is a primary storage device?
    1. HDD
    2. SSD
    3. SD card
    4. 1 and 2 both

    Ans: (4) HDD and SSD

    Note: both work also same both are used to store data that the reason HDD and SSD is primary storage device
4. What is the purpose of a GPU?

Ans : graphical processing unit helps handle graphics related work like graphical , effect and videos. Graphical processing unit type of hardware that performs mathematical calculations at high speed to handle graphics related tasks.

### Section 2: True or False

5. True or False: The motherboard is the main circuit board of a computer where other components are attached.

Ans : true

Note : motherboard is main printed circuit board in a computer. where all component are attached.

6. True or False: A UPS (Uninterruptible Power Supply) is a hardware device that provides emergency power to a load when the input power source fails.

Ans : true

Note: A UPS (Uninterruptible Power Supply) is a hardware device that provides emergency power to a load when the input power source fails because protect devices from damage and ensure working efficiency.

7. True or False: An expansion card is a circuit board that enhances the functionality of a component.

Ans : true

Note: YES, An expansion card is a printed circuit board that can be inserted into a computer's expansion slot to add functionality.

**Section 3: Short Answer**

8. Explain the difference between HDD and SSD.

Ans:

- Speed: SSDs are significantly faster than HDDs. They can read and write data almost instantly, leading to quicker boot times and faster file transfers
- Durability: SSDs are more durable and resistant to physical shock because they have no moving parts, whereas HDDs can be more prone to mechanical failures.
- Storage Capacity: HDDs generally offer larger storage capacities at a lower cost compared to SSDs, making them more suitable for bulk storage.
- Noise: SSDs operate silently, while HDDs can produce noise due to their moving parts.

9. Describe the function of BIOS in a computer system.

Ans:

**Power-On Self Test (POST)**: When the computer is powered on, BIOS conducts a POST to check the hardware components, such as RAM, CPU, and storage devices, to ensure they are functioning correctly.

**Boot Process**: BIOS identifies and initializes the hardware components and then locates the bootable device (like an SSD or HDD) to load the operating system.

**Configuration Settings**: BIOS provides a user interface that allows users to configure hardware settings, such as system clock speed, boot sequence, and hardware parameters.

**Hardware Abstraction**: It acts as an intermediary between the operating system and the hardware, allowing the OS to communicate with devices without needing to know their specific details.

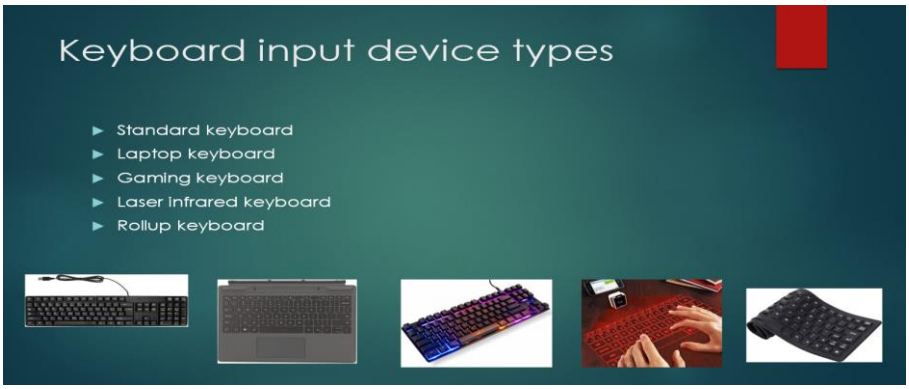
**Firmware Updates**: Some BIOS versions support updates to improve functionality, compatibility, or security.

10. List and briefly explain three input devices commonly used with computers.

Ans:

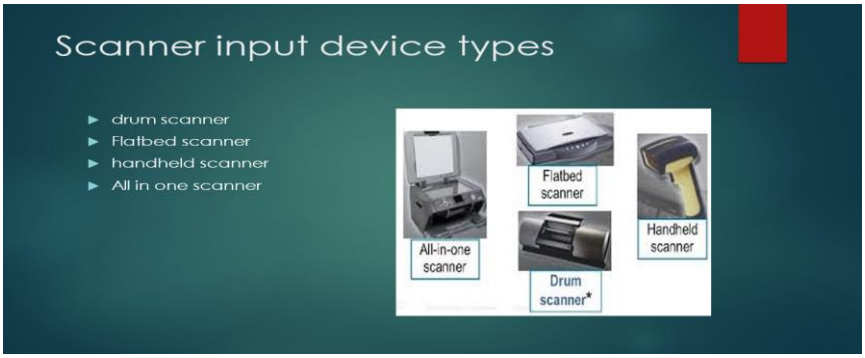
input device :- Input device communicate with a Computer .
you can use devices to enter information and issue commands.
Input device three types

1. Keyboard:




2. Mouse:


3. Scanner:

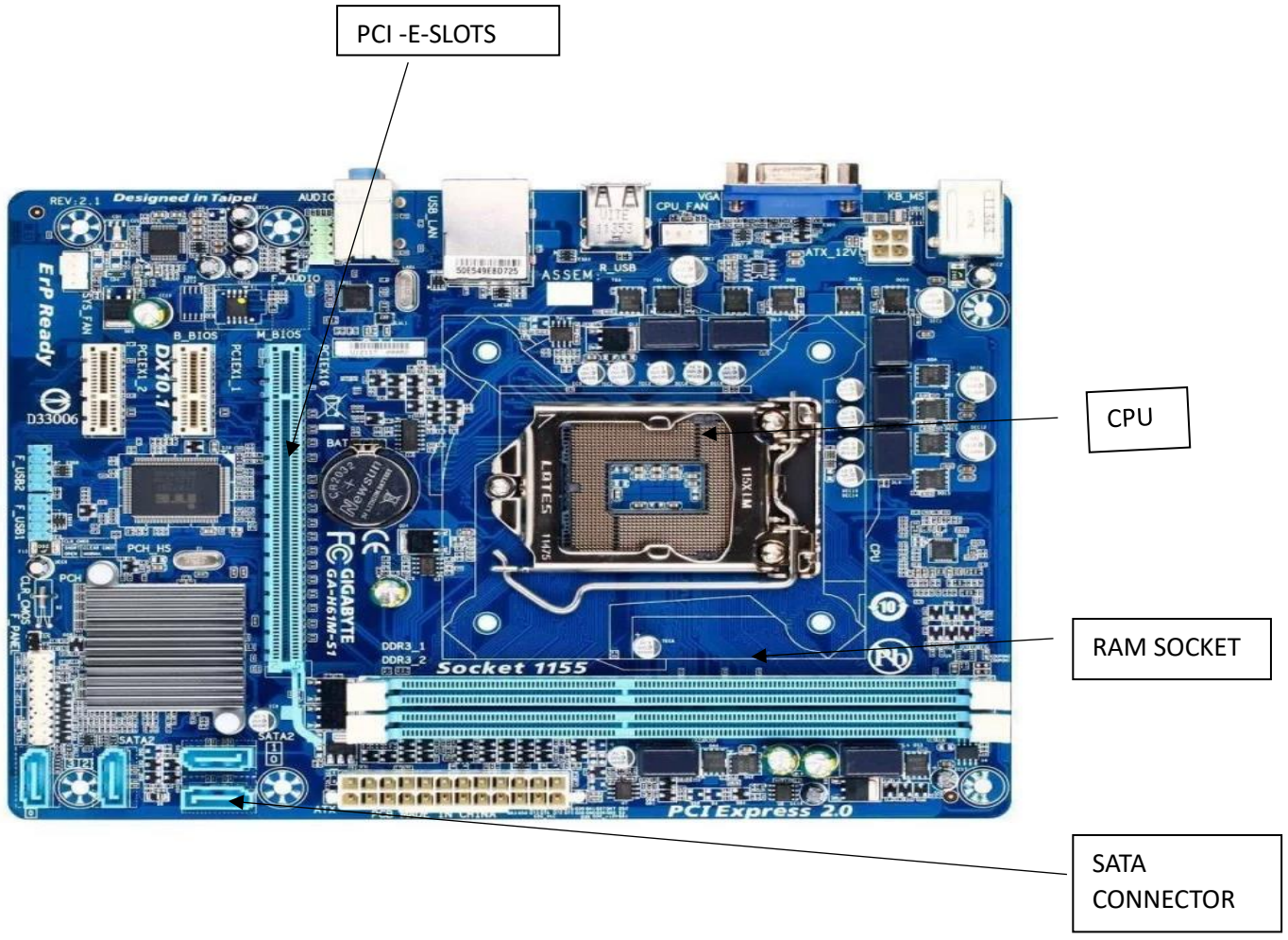


**Section 4: Practical Application**

11. Identify and label the following components on a diagram of a motherboard:
    - CPU
    - RAM slots
    - SATA connectors

    - PCI-E slot

Ans:



12. Demonstrate how to install a RAM module into a computer.
Ans:

1. Shut down your desktop computer. ...
2. Unplug the power cable. ...
3. open your central processing unit . ...
4. Ground yourself! And find ram socket in mother board . ...
5. please you make sure your ram was supporting to your motherboard . ...
6. Install RAM.

**Section 5: Essay**

13. Discuss the importance of proper cooling mechanisms in a computer system. Include examples of cooling methods and their effectiveness.

Ans. proper cooling mechanisms are crucial in computer systems to maintain optimal performance, reliability, and longevity of components.

Cooling Methods.

1 . Air Cooling:
Description: Utilizes heatsinks and fans to dissipate heat.

2. Liquid Cooling:

Description: Uses a liquid coolant to transfer heat away from components, often involving radiators and pumps.

3.Phase Change Cooling:

Description: Similar to a refrigerator, this method uses phase changes of refrigerants to cool components.

4.Peltier Cooling:

Description: Utilizes thermoelectric modules to create a temperature difference.

5.Passive Cooling:

Description: Relies on heat dissipation without fans or moving parts, using heatsinks and natural convection.

6.Chilled Liquid Cooling:
Description: Involves using chilled liquid (often water) to remove heat, usually in data centers or high-performance computing environments.

3. Explain the concept of bus width and its significance in computer architecture.
Ans. bus width refers to the number of bits that can be transmitted simultaneously over a computer bus.
The bus width is usually measured in bits (e.g., 8, 16, 32, 64 bits). A wider bus can carry more data at once, meaning that more information can be transmitted in a single cycle.

**Significance of Bus Width in Computer Architecture:**

1. **Data Transfer Rate**: A wider bus can carry more data at once, which increases the data transfer rate.
2. **Memory Access**: The bus width affects how much data can be accessed from memory in a single operation.
3. **Compatibility**: The bus width also impacts compatibility with various hardware components.
4. **Addressing Capability**: In systems where the bus is also used for addressing memory locations, a wider bus can allow for a larger address space.
5. **Impact on Design and Cost**: Designing a wider bus can increase complexity and cost in terms of both the physical layout on the motherboard and the associated electronic components.

## Assignment module 2 : Installation and Maintenance of Hardware and Its

### Section 1: Multiple Choice

1. Which of the following precautions should be taken before working on computer hardware?
   a) Ensure the computer is plugged in to prevent electrostatic discharge.
   b) Wear an anti-static wrist strap to prevent damage from electrostatic discharge.
   c) Work on carpeted surfaces to prevent slipping.
   d) Use magnetic tools to handle components more easily.

2. What is the purpose of thermal paste during CPU installation?
   a) To insulate the CPU from heat.
   b) To provide mechanical support for the CPU.

c) To improve thermal conductivity between the CPU and the heat sink.
d) To prevent the CPU from overheating.

3. Which tool is used to measure the output voltage of a power supply unit (PSU)?
   a) Multimeter
   b) Screwdriver
   c) Pliers
   d) Hex key

4. Which component is responsible for storing BIOS settings, such as date and time, even when the computer is powered off? a) CMOS battery
   b) CPU
   c) RAM
   d) Hard drive

**Section 2: True or**

5. True or False: When installing a new hard drive, it is essential to format it before use.
6. True or False: A POST (Power-On Self-Test) error indicates a problem with the CPU.
7. True or False: It is safe to remove a USB flash drive from a computer without ejecting it first.

**Section 3: Short Answer**

8. Describe the steps involved in installing a new graphics card in a desktop computer.
9. What is RAID, and what are some common RAID configurations?

**Section 4: Practical Application**

10. Demonstrate how to replace a CPU fan in a desktop computer.

**Section 5: Essay**

11. Discuss the importance of regular maintenance for computer hardware and provide examples of maintenance tasks.

**Assignment module 3 : Understanding and Maintenance of**

**Section 1: Multiple Choice**

1. What is the primary function of a router in a computer network?
   a) Assigning IP addresses to devices
   b) Providing wireless connectivity to devices
   c) Forwarding data packets between networks
   d) Managing user authentication and access control
2. What is the purpose of DNS (Domain Name System) in a computer network?
   a) Encrypting data transmissions for security
   b) Assigning IP addresses to devices dynamically
   c) Converting domain names to IP addresses
   d) Routing data packets between network segments
3. What type of network topology uses a centralized hub or switch to connect all devices? a) Star
   b) Bus

c) Ring
d) Mesh

4. Which network protocol is commonly used for securely accessing and transferring files over a network? a) HTTP
   b) FTP
   c) SMTP
   d) POP3

**Section 2: True or False**

5. True or False: A firewall is a hardware or software-based security system that monitors and controls incoming and outgoing network traffic based on predetermined security rules.
6. True or False: DHCP (Dynamic Host Configuration Protocol) assigns static IP addresses to network devices automatically.
7. True or False: VLANs (Virtual Local Area Networks) enable network segmentation by dividing a single physical network into multiple logical networks.

**Section 3: Short Answer**

8. Explain the difference between a hub and a switch in a computer network.
9. Describe the process of troubleshooting network connectivity issues.

**Section 4: Practical Application**

10. Demonstrate how to configure a wireless router's security settings to enhance network security.

**Section 5: Essay**

11. Discuss the importance of network documentation and provide examples of information that should be documented.

**Assignment module 4: Troubleshooting and**

**Section 1:** **Multiple Choice**

1. What is the first step in the troubleshooting process?
   a) Implementing a solution
   b) Identifying the problem
   c) Testing the solution
   d) Documenting the solution
2. Which of the following tools is commonly used to diagnose hardware issues by testing electrical connections? a) Loopback plug
   b) Toner probe
   c) Multimeter
   d) Cable tester
3. Which Windows utility can be used to view system logs, monitor performance, and diagnose hardware and software issues?
   a) Task Manager
   b) Device Manager
   c) Event Viewer
   d) Control Panel

**Section 2: True or False**

4. True or False: Safe Mode is a diagnostic mode in Windows that loads only essential system services and drivers, allowing users to troubleshoot and fix problems with the operating system.
5. True or False: A system restore point is a snapshot of the computer's system files, registry, and configuration settings at a specific point in time, which can be used to revert the system to a previous state if problems occur.

6. True or False: Ping is a command-line utility used to test network connectivity by sending ICMP echo requests to a target device and waiting for ICMP echo replies.

**Section 3: Short Answer**

7. Describe the steps involved in troubleshooting a computer that fails to boot into the operating system.

**Section 4: Practical Application**

8. Demonstrate how to troubleshoot network connectivity issues on a Windows computer using the ipconfig command.

**Section 5: Essay**

9. Discuss the importance of effective communication skills in a helpdesk or technical support role.

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**Assignment: module -5 Network Fundamentals and Building Networks**

**Section 1: Multiple Choice**

1. What is the primary function of a router in a computer network?
   a) Assigning IP addresses to devices
   b) Providing wireless connectivity to devices
   c) Forwarding data packets between networks
   d) Managing user authentication and access control
2. What is the purpose of DHCP (Dynamic Host Configuration Protocol) in a computer network?
   a) Assigning static IP addresses to devices
   b) Resolving domain names to IP addresses
   c) Managing network traffic and congestion
   d) Dynamically assigning IP addresses to devices
3. Which network device operates at Layer 2 (Data Link Layer) of the OSI model and forwards data packets based on MAC addresses?
   a) Router
   b) Switch
   c) Hub
   d) Repeater
4. Which network topology connects all devices in a linear fashion, with each device connected to a central cable or backbone?
   a) Star
   b) Bus
   c) Ring
   d) Mesh

**Section 2: True or**

True or False: A VLAN (Virtual Local Area Network) allows network administrators to logically segment a single physical network into multiple virtual networks, each with its own broadcast domain.

True or False: TCP (Transmission Control Protocol) is a connectionless protocol that provides reliable, ordered, and error-checked delivery of data packets over a network.

True or False: A firewall is a hardware or software-based security system that monitors and controls incoming and outgoing network traffic based on predetermined security rules.

8. Describe the steps involved in setting up a wireless network for a small office or home office (SOHO) environment.

**Section 4: Practical**

9. Demonstrate how to configure a router for Internet access using DHCP (Dynamic Host Configuration Protocol).

**Section 5:**

10. Discuss the importance of network documentation in the context of building and managing networks.

**Assignment module 6: Network Security, Maintenance, and Troubleshooting Procedures**

**Section 1: Multiple Choice**

1. What is the primary purpose of a firewall in a network security infrastructure?
   a) Encrypting network traffic
   b) Filtering and controlling network traffic
   c) Assigning IP addresses to devices
   d) Authenticating users for network access
2. What type of attack involves flooding a network with excessive traffic to disrupt normal operation?
   a) Denial of Service (DoS)
   b) Phishing
   c) Spoofing
   d) Man-in-the-Middle (MitM)
3. Which encryption protocol is commonly used to secure wireless network communications?
   a) WEP (Wired Equivalent Privacy)
   b) WPA (Wi-Fi Protected Access)
   c) SSL/TLS (Secure Sockets Layer/Transport Layer Security)
   d) AES (Advanced Encryption Standard)

4. What is the purpose of a VPN (Virtual Private Network) in a network security context?

**Section 2: True or false**

True or False: Patch management is the process of regularly updating software and firmware to address security vulnerabilities and improve system performance.
True or False: A network administrator should perform regular backups of critical data to prevent data loss in the event of hardware failures, disasters, or security breaches.
True or False: Traceroute is a network diagnostic tool used to identify the route and measure the latency of data packets between a source and destination device.

**Section 3: Short Answer**

8. Describe the steps involved in conducting a network vulnerability Assignment.

**Section 4: Practical Application**

9. Demonstrate how to troubleshoot network connectivity issues using the ping command.

**Section 5:**

10. Discuss the importance of regular network maintenance and the key tasks involved in maintaining network infrastructure.

1. Which of the following best describes the purpose of a VPN (Virtual Private Network)?
   a) Encrypting network traffic to prevent eavesdropping
   b) Connecting multiple LANs (Local Area Networks) over a wide area network (WAN)
   c) Authenticating users and controlling access to network resources
   d) Reducing latency and improving network performance

**Assignment:**
**N0..00.CCNA**

## Module -7: Network fundamental -

1- Which of the following messages in the DHCP process are broadcasted? (Choose two)

A. Request

B. Offer

C. Discover

D. Acknowledge

2- Which command would you use to ensure that an ACL does not block web-based TCP traffic?

A. permit any

B. permit tcp any any eq 80

C. permit tcp any eq 80

D. permit any any eq tcp

3-Explain Network Topologies

4-Explain TCP/IP Networking Model

5-Explain LAN and WAN Network

6-Explain Operation of Switch

7-Describe the purpose and functions of various network devices

7-Make list of the appropriate media, cables, ports, and connectors to 8-8-connect switches to other

9-Define Network devices and hosts

# Module 8: Network Access Basic routing and Advance routing concept, switching concept-

**Beginner Question**

1. Explain Switch
2. Explain Switch Boot Sequence
3. Explain Three Methods to access Switch Command Line Interface
4. Explain and Configuring the Cisco Internet Operating System
5. Explain Switch Port

4-R1, R2, R3, and R4 have their Fast Ethernet 0/0 interfaces attached to the same VLAN. A network engineer has typed a configuration for each router by using a word processor. He will later copy and paste the configuration into the routers. Examine the following exhibit, which lists configuration for the four routers, as typed by the network engineer. Assuming that all four routers can ping each other's LAN IP addresses after the configuration has been applied, choose the routers that will be able to form a neighbor relationship with the other routers on the LAN. (You can assume that, if not shown in the exhibit, all other related parameters are still set to their defaults.) (Choose two)

```
Configuration
!
interface faste
   ip address
!
router ospf 0
   network 10.
```

```
Configuration
!
interface faste
   ip address
!
router ospf 1
   network 10.
```

```
Configuration
!
interface faste
   ip address
!
router ospf 3
   network 10.
```

```
Configuration
!
interface faste
   ip address
!
router ospf 2
   network 10.
```

A. R1

B. R2

C. R3

D. R4

E. None of the routers will exchange routing information.

3-enable secret [password] is hashed using the___algorithm.

A. MD5

B. AH

C. PSK

D. ESP

E. WPA2

4- An engineer connects to Router R1 and issues a show ip ospf neighbor command. The status of neighbor 2.2.2.2 lists FULL/BDR. What does the BDR mean? A. R1 is an Area Border Router.

B. R1 is a backup designated router.

C. Router 2.2.2.2 is an Area Border Router. D. Router 2.2.2.2 is a backup designated router.

5- Which command is used to view the neighbor discovery table on a PC?

A. show ipv6 neighbor

B. show ipv6 neighbors

C. netsh interface ipv6 show neighbor

D. netsh interface ipv6 show neighbors

6- What type of variable is being shown? Routers = [R1,R2,R3]

A. List

B. Dictionary

C. Simple

D. Unsigned integers

7- Identify the fields in an IPv4 header. (Choose three)

A. Host component

B. Time to Live

C. Source address

D. Destination address

E. Network address

# Module :9 Infrastructure services –

8- Host A and Host B sit in two different subnets. The path between the subnets of these two hosts runs through three different Layer 3 forwarding devices (routers and Layer 3 switches). A network engineer uses the APIC-EM Path Trace ACL Analysis tool to analyze the path used for Host A to send packets to Host B. Which part of the function is done specifically by the ACL Analysis or ACL Trace part of the tool?

A. Discovery of the topology that exists between the two hosts

B. Analysis of the Layer 3 forwarding decisions in the path from Host A to B

C. Analysis of the Layer 2 forwarding decisions in the path from Host A to B

D. Analysis of the impact of ACLs on the packets that would flow from Host A to B

9- Which IPv6 address is the equivalent of the IPv4 interface loopback address 127.0.0.1?

A. ::1

B. ::

C. 2000::/3

D. 0::/10

10- Which command is used to apply an ACL to an interface?

A. access-group

B. ip access-group

C. ip access-list

D. ip access-class

E. access-class

F. access-list

11- Which command and mode will successfully configure a hostname of R1 on a Cisco IOS router?

A. Router(config)#name R1

B. Router# hostname R1

C. Router(config)#hostname R1

D. Router#name R1

E.

Router>hostname R1

F. Router>name R1

12- Which of the following reserved IPv4 addresses has binary 0s in all of the host bit positions?

A. Local broadcast address

B. Loopback address

C. Directed broadcast address

D. Network address

E. All zeros address

# Module 10: infrastructure Security an WAN Technologies-

13- A Cisco Catalyst switch connects to what should be individual user PCs. Each port has the same port security configuration, configured as follows: interface range gigabit Ethernet 0/1 - 24 switchport mode access switchport port-security

switchport port-security mac-address sticky

Which of the following answers describe the result of the port security configuration created with these commands? (Choose two)

A. Prevents unknown devices with unknown MAC addresses from sending data through the switch ports.

B. If a user connects a switch to the cable, prevents multiple devices from sending data through the port.

C. Will allow any one device to connect to each port, and will save that device's MAC address into the startup-config

D. Will allow any one device to connect to each port, but will not save that device's MAC address into the startup-config

14- What is the Administrative Distance of internal EIGRP routes?

A. 170

B. 90

C. 20 D. 1

E. 110

F. 120

15- When a subnet mask is presented in binary, what do the binary 1s represent?

A. The network portion of an associated address

B. The host portion of the subnet mask

C. The number of wildcard bits in the subnet mask

D. The number of wildcard bits in the address

E. The network portion of the subnet mask

F. The host portion of an associated address

16- Which switch would STP choose to become the root bridge in the selection process?

A. 32768: 11-22-33-44-55-66

B. 32768: 22-33-44-55-66-77

C. 32769: 11-22-33-44-55-65

D. 32769: 22-33-44-55-66-78

17- Which of the following devices is used by the service provider to provide WAN services?

A. Router

B. Core router

C. WAN switch

D. CSU/DSU

18- Your Cisco IOS router is acting as a DHCP server.
Which command will display the addresses that have been handed out to clients on the LAN?

A. show ip dhcp assignments

B. show ip dhcp address

C. show ip dhcp conflicts

D. show ip dhcp bindings

E. show ip dhcp pool

19- Which of the following commands would you use to enable EIGRP only on those interfaces with an IP address from 10.1.1.0 through 10.1.1.63?

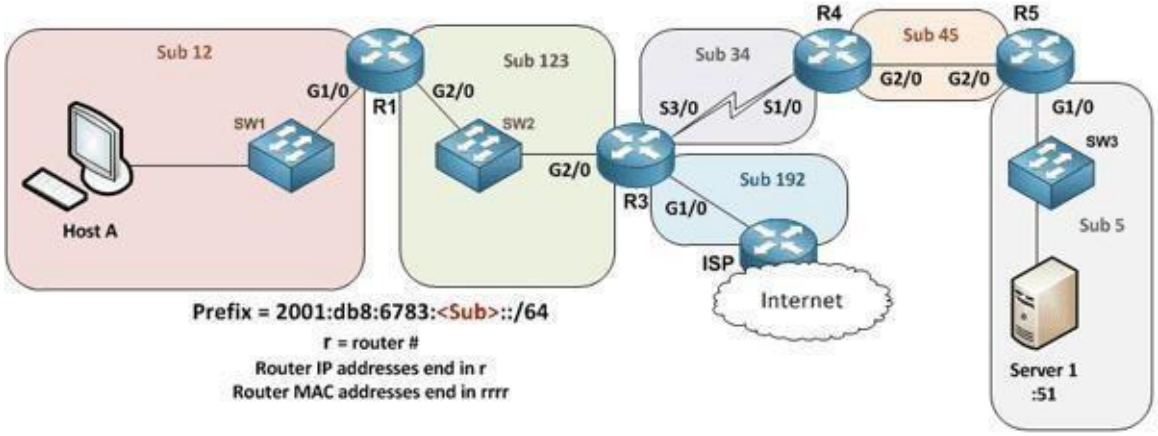
A. network 10.1.1.0 0.0.0.63

B. network 10.1.1.0/63

C. router eigrp 10.1.1.0 0.0.0.63

D. network 10.0.0.0 0.0.0.255

20- R3 has a static route configured that points toward the service provider. What command could you use to have R3 advertise an OSPFv3 default route to the internal network, regardless of whether R3 had its default static route?




A. The decision to advertise a default route depends on the static route always being present on R3.

B. The default behavior is to redistribute any default IPv6 routes into OSPFv3, so no action is required.

C. Each of the other routers needs a static default route that leads to R3.

D. Use the command default-information originate always in interface mode for G1/0 on R3.

E. Have R3 use the command default-information originate always in OSPFv3 router configuration mode.

21- You are configuring dynamic NAT on your Cisco IOS router. Which command is used to verify the interfaces that are being used as the outside interface and the inside interface? A. show interfaces

B. show ip route

C. show ip nat translations

D. show ip interface brief

E. show ip interface

F. show ip nat statistics

22- When using the “show EtherChannel summary “command, what does the “u “flag signify?

A. Waiting to be aggregated

B. Suspended

C. In use

D. Unsuitable for bundling

23- Which command could you enter to encrypt passwords?

A. enable secret

B. username {username} secret {password}

C. service password-encryption

D. All of the above

E. None of the above

24- You are setting up a Cisco IOS router as a DHCP server.
Which command is used to identify the IPv4 addresses that will be in the DHCP pool?

A. network

B. dns-server

C. default-router

D. ip dhcp excluded-address

E. lease

F. ip dhcp pool

G. domain-name

25- Which of the following statements are true regarding the processing of ACLs that have been applied to router interfaces? (Choose two)

A. Inbound ACLs will be processed before the routing table lookup occurs

B. Inbound ACLs will be processed after the routing table lookup has occurred

C. Outbound ACLs will be processed after the routing table lookup has occurred

D. Outbound ACLs will be processed before the routing table lookup occurs

26- imagine you configured OSPFv2 in a small lab network. Which of the following answers list a condition that could keep the routers in your lab from learning all the routes to all the IPv4 routes in your small lab network? (Choose two) A. An ACL could be blocking router advertisements.

B. Two neighbouring routers that connect to the same link have been configured with the same OSPF area and with the same IPv4 subnet mask.

C. Any physical layer problem that would prevent two neighbouring routers from being able to ping each others IPv4 addresses in the subnet that exists between the two routers.

D. Two neighboring routers that connect to the same link have been configured with the same OSPF process ID on the router ospf command.

27- Which statements describe neighbor discovery functionality in IPv6? (Choose two)

A. Determines the link layer address of a neighbor

B. Finds neighbor switches on the link

C. Is achieved by using Dynamic Host Configuration Protocol for IPv6, or DHCPv6 with IPv6 multicast

D. Queries for duplicate addresses

28- Which IPv6 prefix will the typical enterprise network receive from the service provider? A. /52

B. /56

C. /64

D. /32

E. /48

F. /60

29- How should be configured a switch so that it could be accessed remotely?

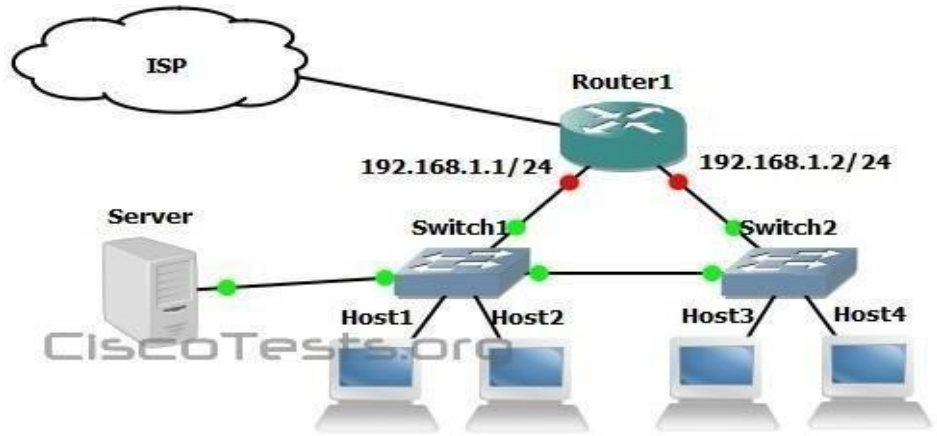
A. Assign a password and privilege level

B. Apply the access control list, or ACL, to the virtual type terminal, or vty, lines

C. Configure a gateway for the switch

D. Generate a certificate

30- Refer to the exhibit. A network technician is asked to design a small network with redundancy. The exhibit represents this design, with all hosts configured in the same VLAN. What conclusions can be made about this design?




A. This design will function as intended.

B. Spanning-tree will need to be used.

C. The router will not accept the addressing scheme.

D. The connection between switches should be a trunk. E. The router interfaces must be encapsulated with the 802.1Q protocol.

# Module 11 CCNA -Automation and Programmability

Explain How Automation Impacts Network Management
Compare Traditional network with Controller based networking
Explain Virtualization
Describe Characteristics of REST-based API
Explain methods of Automation
Explain SDN
Explain DNA Center
Explain SD-Access and SD-WAN

**Assignment: Windows Server**

## Module 12: Installation, Storage, and Compute with Windows Server

1. What two options are provided in the type of installation window during Windows Server 2016 installation?
2. Write the step How to configure server step by step?
3. What are the Pre installation tasks?
4. What are the Post installation tasks?
5. What is the standard upgrade path for Windows Server?
6. What is the Physical structure of AD?
7. What is the Logical components of Active Directory?

8. What is the Full form Of LDAP?
9. What is the location of the AD database?
10. *What is child DC*?
11. Explain the term forest in AD

12. What is Active Directory? Check all that apply.

- An open-source directory server
- A Windows-only implementation of a directory server
- Microsoft's implementation of a directory server
- An LDAP-compatible directory server

13. When you create an Active Directory domain, what's the name of the default user account?

- Superuser • Root
- Username
- Administrator

14. AD domain provides which of the following advantages? Check all that apply.

- Centralized authentication
- More detailed logging
- Centralized management with GPOs
- Better performance

15. What are the minimum hardware requirements for installing Windows Server 2016?
16. Explain the different editions of Windows Server 2016 and their features.
17. Walk through the steps of installing Windows Server 2016 using GUI mode.
16. Describe the steps for installing Windows Server 2016 in Server Core mode.
17. How do you configure network settings during Windows Server 2016 installation?
18. Explain the process of promoting a Windows Server to a domain controller.
19. Discuss the steps involved in upgrading from a previous version of Windows Server to Windows Server 2016.
20. What is Active Directory Domain Services (AD DS), and what are its key components?
21. How do you create a new Active Directory user account in Windows Server ?
22. Explain the process of creating and managing Group Policy Objects (GPOs) in Windows Server 2016 or 2019.
23. What are Organizational Units (OUs) in Active Directory, and how do you use them?
24. Describe the process of delegating administrative privileges in Active Directory.

## Module: 13- Networking with Windows Server

25. Discuss the role of Windows Firewall in Windows Server and how to configure it.
26. What is Network Address Translation (NAT) in Windows Server, and how do you configure it?
27. Explain the concept of Dynamic Host Configuration Protocol (DHCP) and how to configure it in Windows Server 2016.
28. Describe the process of configuring DNS (Domain Name System) in Windows Server.
29. What is Server Manager, and how do you use it to manage servers in Windows Server?
30. Discuss the role of Remote Desktop Services (RDS) in Windows Server 2016 or 2019 and how to configure it.

31. Explain the process of installing and configuring Hyper-V virtualization in Windows Server 2016.
32. How do you monitor server performance and manage event logs in Windows Server?
33. Describe the different types of storage options available in Windows Server.
34. What is the role of File Server in Windows Server, and how do you configure it?
35. Explain the process of implementing and managing Distributed File System (DFS) in Windows Server 2016.
36. Discuss the built-in backup and recovery options available in Windows Server 2016 or 2019.
37. How do you configure Windows Server Backup to back up critical data?
38. Explain the steps for restoring files and folders using Windows Server Backup.
39. What are some common troubleshooting techniques for Windows Server startup issues?
40. How do you troubleshoot network connectivity problems in Windows Server?
41. Discuss common Active Directory-related issues and their troubleshooting steps.
42. Explain how to troubleshoot performance problems on Windows Server 2016 or 2019.

**Assignment: Linux**

## Module: 1 - Linux server - Understand and use essential tools

1. What is the minimum number of partitions you need to install Linux?
2. Explain About Chmod Command
3. How to check Linux memory utilization

4. · Use `grep` to search for specific patterns in files.
5. . Get Connecting on a linux server by ssh
6. · Create 5 files in the /tmp directory, and then use tar and gzip to bundle and compress the files.
7. ·Describe the root account
8. What is shell?
9. What is Linux?
10. What is Bash?
11. You have a new empty hard drive that you will use for Linux. What is the first step you use.
12. Write the Linux command to show the current working directory.
13. write the Linux command to get help with various options.
14. Write the linux comman! to display what all users are currently doing.
15. write the Linux command to get information about the operating system.
16. Write the Linux command to create a hard link of a file.
17. Write the Linux command to create a soft link of a file as well as Directory.
18. Write the Linux command! to search for specific pattern in a file.
19. Write the Linux command to show the use of basic regular expressions using grep command.

## Module :2- Linux server - Operate running systems

20. View running processes with `ps`.
21. Terminate processes with `kill`.
22. Use `top` or `htop` to monitor system resources and processes.
23. · Configure one of your lab COMPUTERS to boot to the CLI using systemd, and reboot

to confirm that you were successful.

## Module :3- Linux server - Configure local storage Assignment

24. Learn about different filesystem types (e.g., ext4, NTFS).
25. Manage disk partitions and filesystems using tools like `fdisk`, `mkfs`, and `mount`.
26. create a 2048MB partition and verify if the partition has been created**.**
27. Why LVM is required?
28. How can you find out how much memory Linux is using?
29. What is a typical size for a swap partition under a Linux system?
30. What is the maximum file size on the ext4 file system?
31. What is the maximum file size on the xfs file system

## Module: 4- Linux server - Manage user and Groups and working with file systems

32. Manage users and groups with commands like `useradd`, `userdel`, `groupadd`, and `passwd`
33. Explain different file system types in Linux?
34. Explain File Permission groups in Linux?
35. How do you switch from one desktop environment to another, such as switching from KDE to Gnome?
36. What are the kinds of permissions under Linux
37. What are the different modes when using vi editor?

## Modue: 5- **Linux server - Deploy, configure, and maintain systems Assignment**

38. · Schedule tasks using `cron` or `at`.
39. · Use `apt` or `yum` (depending on your Linux distribution) to install, update, and remove software packages.
40. Install all httpd package
41. Open kickstart configuration graphically
42. Configure new kickstart file
43. Show full configuration of new kickstart file
44. Validate new kickstart file 45. All http on firewall
46. Reload firewall.
47. Start and restart http

48. Install new foundation using new kickstart file **Module 6-**

**Linux server - Manage basic networking & Security**

49. Use `ifconfig` or `ip` to view and configure network interfaces.
50. Use `ping` to test network connectivity.
51. Understand basic firewall configuration using `FIREWALL-CMD`.
52. Add ssh services in firewall
53. Graphicallymanagethefirewall
54. 
55. What is selinux Security
56. How to Set Static IP in Linux?

**`Module`: 7– Linux server -deployment of network services**

57. What is Difference between LILO And GRUB?
58. How to Recover Linux Password ?
59. Which command use for format partition in Linux OS?
60. How to enable “quota” in Linux ?
61. How to Mount Partition in Linux ?
62. What is use of “mdadm” Command ?
63. How to configure secure Apache web server in Linux ?
64. How to run Windows Software on Linux operating System?
65. what is difference between windows and Linux
66. What is the advantage of Open Source?
67. · Install and configure web servers like `Apache`
68. · Host a simple website and configure virtual hosts
69. · Install and manage databases like `MySQL/mariaDB`


## Cloud computing

### Module -1

1- What is cloud computing?
2-Describe cloud computing deploy model.
3-What are components of cloud computing?
4-cloud computing advantage and disadvantage Advantages of Cloud Computing **Module -2**

1-What is virtualization and virtualization type?
2-Type of hypervisor and how to manage it?
3-Roles of virtualization in cloud computing?
4-What is container?
5-What is high availability and live migration in virtualization?
5-Storage configuration –describe block storage, file storage and object storage---DAS NAS and SAN
6-Describe storage allocation and provisioning. Storage Allocation

## Module -3

1-Different type of cloud storage
2-What is role base access control and identity and access management and MFA 3-What is physical and virtual host allocation?
4-How to access resource of cloud computing?
5-Type of backup in cloud?
6-What is disaster recovery?

## Module -4

1-Resource Monitoring Techniques
2-How to access compute (windows and Linux) from internet? describe tools and its security
3-Encryption Technologies and Methods
4-Describe network security in cloud, compute security and storage security

## Module - 5

1-How to configure, develop and maintain Security and Privacy in cloud?
2-What is Portability in cloud?
3-What is Reliability and high Availability in cloud?
4-Describe Mobility Cloud Computing
5-Describe AWS, Azure, Google cloud Platforms
6-Accessing AWS, Azure and Google cloud Platforms (any one portal )
7-Create compute, create network, create storage on AWS , Azure and GCP
8-Compare Cloud pricing of resources and services on all platform Amazon Web Services (AWS):

**Assignment: Ethical hacking**

1. Explain CIA triad.
2. What is a Firewall and why is it used?
3. What is the difference between VA(Vulnerability Assignment) and PT(Penetration Testing)?
4. What is the difference between HIDS and NIDS?
5. Explain SSL Encryption
6. What is Data Leakage?
7. What is a Brute Force Attack? How can you prevent it?
8. Explain MITM attack and how to prevent it?
9. Explain XSS attack and how to prevent it?
10. What is a Botnet?
11. Explain SSL and TLS
12. Define the terms Virus, Malware, and Ransomware.
13. What is Phishing? Provide an example.
14. Define the terms Encryption and Decryption.
15. What is a DDoS attack and how does it work?

16. What is a zero-day vulnerability?
17. What is network sniffing
18. What is a Security Operations Center (SOC)?
19. What is the importance of forensics in cyber security?
20. Discuss the future trends in cyber security. Which skills are important for cyber security professionals?
21. What is the difference between IDS and IPS?

# Cyber Security

# Assignment

## Module 1 CS- Introduction

1 what is meaning of cyber security
2.what are the main objectives of cyber security?
3.What is offensive and defensive in cyber security?
4.what is cyberspace and low
5. What is cyber welfare?
6.Explain the Types of Hacker
7.What is the full form of SOC in cyber security
8.What are the Challenges of Cyber Security

# Module 2 CS- Fundamental of Operating Systems & Networks

1. Difference between hardware and software.
2. Define IP address range and private address range.
3. Explain Network protocol and Port number.
4. Explain Types of Network Devices
5. Which Tools use for Data Backup and Recovery
6. Explain HTTP and HTTPS Protocols
7. What is SSL and TLS Security?
8. Explain the MAC ADDRESS

# Module 3: CS - Cyber threats & CEH

1. What are the different types of hacking methods?
2. Explain Types of Password Attacks
3. Explain Password Cracking Tools: pwdump7,Medusa and Hydra
4. Explain Types of Steganography with QuickStego and Echo
5. Perform Practical on key logger tool.

- **Malware**

1. Define Types of Viruses.
2. Create virus using Http Rat Trojan tool.
3. Explain any one Antivirus with example.

## Module 4: CS - Securing Web Applications Services & Servers

1. Explain MAC spoofing and Email spoofing
2. Perform practical of MITM tool and social engineering Tool
3. Explain Kali linux tool SYN Flooding Attack using Metasploit
4. Find online email encryption service
5. Types of Firewall
6. Explain Evading Firewalls

- Web Based Hacking

1. What is Session Hijacking Explain with Techniques?
2. Find DoS/DDoS Attack Tools
3. Explain SYN Flooding Attack with example
4. List of Web App Hacking Methodology
5. SQL Injection Methodology
6. Explain sql injection with any tool
7. Explain deference between VA And PT 8. How to write vulnerability assessment Report

9.Explain the Zero Day  Attacks .

# Module 5 : CS -  Cryptography and Network Security

1.Explain Mitigation in reference to Cyber Security.

2.What are The difference between IDS & IPS ?

3.Explain NETWORK base IDS

4.Explain How SSL & TLS work ?

5. What is Symmetric Key Cryptography and Asymmetric Key Cryptography.

6. Explain How to Secure Server and Persional Computers.

7.Explain the Suricata,and SolarWinds.

8. Describe the VPN and IPSec .