DIPLOMA IN COMPUTER NETWORKS AND SYSTEMS ADMINISTRATION (DCNSA)

LEVEL III

NETWORK SET-UP

MONDAY: 2 December 2024. Afternoon Paper.   **Time Allowed: 3 hours.**

Answer ALL questions. This paper has two (2) sections. SECTION I has twenty (20) short response questions. Each question is allocated two (2) marks. SECTION II has three (3) practical questions of sixty (60) marks. Marks allocated to each question are indicated in the question.

Required Resources:
- **Linux/Windows computer**
- **Wireshark**
- **Packet tracer/GNS3**

SECTION I (40 MARKS)

1. The technique used in the computer network where the nodes listen to the network to see if it is busy before transmitting data only allowing transmission if there is no activity is called _____ .   (2 marks)

2. When configuring a router, which router prompts show that you are in a privileged EXEC mode?   (2 marks)

3. Active Directory is a network-based service that manages and organises users, computers and other resources. Which technology supports centralised domain management and authentication?   (2 marks)

4. What is the name of the service that helps organisations by providing authentication and authorisation services?   (2 marks)

5. A proxy server acts as an intermediary between clients and the internet, performing tasks such as filtering and caching. A method that allows a server to relay client requests and manage their access to external resources is known as _____.   (2 marks)

6. Which network component handles and directs client requests, improving security and performance by managing traffic between internal networks and external networks, while also performing tasks like IP address masking and content caching?   (2 marks)

7. What defines the network and host portions of an IP address, enabling devices to determine whether to communicate within the same subnet or route traffic externally in a computer network set-up?   (2 marks)

8. Which procedure involves moving a server's activities and responsibilities from one physical or virtual server to another in order to maintain continuity and minimise downtime?   (2 marks)

9. What is the name of the technique for moving server duties and responsibilities to a separate server to allow for upgrades or hardware changes while preserving service availability?   (2 marks)

10. IPv6 (Internet Protocol version 6) offers a significantly larger address space compared to IPv4, making it suitable for the increasing number of devices connected to the internet. Which type of address is used to identify a device on a local network and is not routable over the internet?   (2 marks)

11. Which aspect of subnetting involves reducing the size of routing tables and enhancing routing efficiency by restricting traffic to smaller subnets?   (2 marks)

12. The dedicated hardware device used to capture and analyse network traffic in a network is known as _____.

13. Which practice involves using tools and methods to consistently track and assess the performance, availability and health of servers within a network? (2 marks)

14. Which tool offers comprehensive monitoring of server performance, availability and network services providing alerts and reports? (2 marks)

15. When evaluating server performance and stability, which monitoring approach focuses on observing important indicators such as response times, error rates and resource utilisation in order to manage server health proactively? (2 marks)

16. Which backup method involves making a copy of all data on a system or disk at a certain moment in time to ensure that a complete snapshot of the data is available for recovery? (2 marks)

17. In a network setup, which technique do you use to segment a physical network into multiple logical networks to improve security and reduce broadcast traffic? (2 marks)

18. The slow application response time and degraded user experience when accessing real-time services like VoIP and video conferencing in a computer network is known as _____. (2 marks)

19. The technology that allows users to log in once and access multiple applications, streamlining the authentication process is called _____ . (2 marks)

20. Which component enables a computer or device to connect to a wireless network by permitting communication between the device and the wireless access point? (2 marks)

SECTION II (60 MARKS)

21. Create a word processor document named "Question 21" and use the document to save solutions to questions (a) to (e) below.

    (a) Using a simulator of your own choice, create a basic network with 3 personal computers (PCs) and a switch as shown in Figure 1. (6 marks)
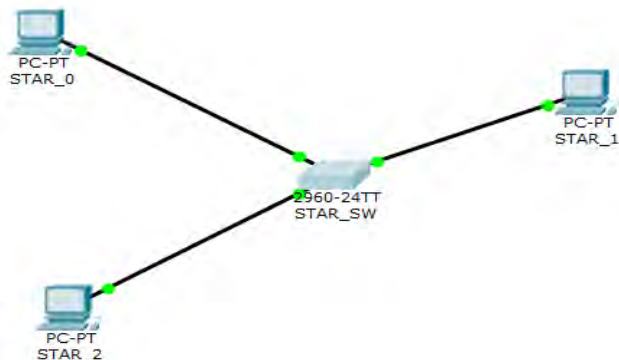
    (b) Assign unique IP addresses to each PC and name them as shown in the table below capturing all the configurations for each PC. (6 marks)

	IP ADDRESS	SUBNET
STAR_0	192.168.1.2	255.255.255.0
STAR_1	192.168.1.3	255.255.255.0
STAR_2	192.168.1.4	255.255.255.0

    (c) Capture the screenshots showing message packets being transmitted on the network (4 marks)

(d)   Capture the screenshot showing the internet connectivity between "Star_0" and "Star_2" using the relevant troubleshooting command.   (2 marks)

(e)   Capture the screenshot showing how to trace the path an Internet Protocol packet takes to its destination captured from Star_0 using a relevant command.   (2 marks)

Save Question 21 and upload it.   **(Total: 20 marks)**

22.   Create a word processor document named "Question 22" and use the document to save solutions to questions (a) to (e) below. Capture and present screenshots of the configured settings.

Local security policies are essential for protecting sensitive data, preventing unauthorised access and reducing potential risks.

(a)   Configure password policy to enhance server security by applying the following settings   (4 marks)
        • Minimum password length: 8 characters
        • Enforce password history for the last 5 passwords
        • Maximum password age: 60 days.

(b)   Assign user rights to improve security for Administrators group only.   (4 marks)

(c)   Enable auditing of login events to track successful and failed login attempts.   (4 marks)

(d)   Strengthen the server's security by disabling unnecessary administrative shares.   (4 marks)

(e)   Setup the account lockout policy to prevent brute-force attacks by applying the following setting as one of the parameters.   (4 marks)

        • Account lockout threshold: 3 invalid login attempts

Save "Question 22" document and upload.
                                                                                            (Total: 20 marks)

23.   Create a word processor document named "Question 23" and use the document to save solutions to questions (a) to (d) below. Capture and present screenshots of the configured settings.

The command line interface (CLI) is a crucial tool for configuring and customising network devices such as routers, switches and firewalls to ensure optimal network performance and security.

(a)   Use an appropriate command utility to continuously test communication between processes within the same system, without involving the external network.   (4 marks)

(b)   Display Network interface statistics for IPv4 ad IPv6   (6 marks)

(c)   Use the appropriate command utility to display detailed information about the IP settings for each network interface, including the following:
        • IP address
        • Subnet mask
        • Default gateway
        • DNS servers
        • DHCP status (whether it's enabled or not)
        • Interface name and description

                                                                                            (6 marks)

(d)   Use appropriate command utility to trace the path to www.gmail.com with a maximum hop count limit of 10.   (4 marks)

Save "Question 23" document and upload.

                                                                                            (Total: 20 marks)

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DIPLOMA IN COMPUTER NETWORKS AND SYSTEMS ADMINISTRATION (DCNSA)

LEVEL III

NETWORK SET-UP

MONDAY: 19 August 2024. Afternoon Paper.   **Time Allowed: 3 hours.**

Answer ALL questions. This paper has two (2) sections. SECTION I has twenty (20) short response questions. Each question is allocated two (2) marks. SECTION II has three (3) practical questions of sixty (60) marks. Marks allocated to each question are indicated in the question.

Required Resources:
- **Windows server 2016/2019/2022 image**
- **Oracle Virtual box**
- **Linux/Windows computer**

SECTION I (40 MARKS)

1.   What is the primary security feature of UNIX servers?   (2 marks)

2.   A server that acts as an intermediary between a client and the internet, forwarding client requests to the target server and returning the responses to the client, often used to enhance security, control access and improve performance is known as _____.   (2 marks)

3.   What is the name given to a group of independent servers that work together as one system to achieve high availability, load balancing and scalability?   (2 marks)

4.   Server storage entails various storage solutions and technologies used to manage and store data on servers in a network environment. Which technology provides redundancy and improves data reliability?   (2 marks)

5.   What is the name of a critical component of the internet infrastructure that is in charge of transforming human-readable domain names (such as www.xyz.com) into IP addresses (such as 192.0.6.1) that computers use to identify themselves on the network?   (2 marks)

6.   In a multi-tier server architecture, which configuration practice is essential for ensuring secure and efficient communication between the application and database layers?   (2 marks)

7.   Which protocol is most commonly used to send and receive email messages between email servers, allowing electronic mail to be transmitted across networks?   (2 marks)

8.   Improving network performance and management by allowing for more efficient routing and reducing the size of broadcast domains is achieved through _____.   (2 marks)

9.   State the server in a network that is responsible for automatically assigning IP addresses and network configuration parameters.   (2 marks)

10.   In the context remote desktop services environment, state the feature that enables users to access published applications and desktops from a web interface.   (2 marks)

11.   State the aspect of the backup server that ensures that important data is backed up at specified intervals without the need for user intervention.   (2 marks)

12. Server role configuration is crucial for ensuring efficient and secure operations within a networked environment. Which feature ensures minimal downtime and uninterrupted operation in the event of hardware or software failures? (2 marks)

13. Name the conversion procedure that ensures that the computer's operating system, applications and data are transferred or converted into a virtual machine. (2 marks)

14. In the context of network servers, which tool is commonly employed for tasks such as filtering packets and Network Address Translation (NAT)? (2 marks)

15. Given an IP address of 192.168.10.0/24 and a requirement of four subnets, what is the broadcast address of the final subnet? (2 marks)

16. State the name of a password-based authentication and key exchange protocol that resists offline dictionary attacks. (2 marks)

17. State the backup approach that ensures that only data that has changed since the previous full backup is backed up. (2 marks)

18. Name the phase in the server recovery procedure which entails reinstalling or repairing the operating system and software components. (2 marks)

19. The process of creating and storing a copy of a server's data on a separate device or location is known as _____. (2 marks)

20. What defines the number of hosts that can be assigned IP addresses within a given subnet by determining the network and host portions of an IP address? (2 marks)

SECTION II (60 MARKS)

REQUIRED RESOURCES
- **Windows server 2016/2019/2022 Image**
- **Oracle Virtual box**
- **Linux/Windows computer**

21. Create a word processor document named "Question 21" and use the document to save your solutions to questions (a) to (e) below:

   (a) A forward lookup zone is used to resolve DNS request from a client on the computer network. Save screenshot that display the forward lookup zone details of your domain for the following transport layer protocol.

       (i) TCP. (3 marks)

       (ii) UDP. (3 marks)

   (b) Create a screenshot of the and display IP security policy known as "Tunnel mode IPsec Policy"? (4 marks)

   (c) Display a screenshot of the authentication method that specifies the trust between the two computers. (3 marks)

   (d) With aid of the resource monitor, display a screenshot of the network activity processes. (3 marks)

   (e) Enable the network connectivity assistant for the local computer server to be Automatic.

       Display a screenshot of the enabled network connectivity assistant. (4 marks)

   Save "Question 21" and upload. **(Total: 20 marks)**

22. Create a word processor document named "Question 22" and use the document to save screenshots of solutions to questions (a) to (e) below:

(a) Create a new DHCP scope named "AfisiScope" with the range "20.0.0.50" to "20.0.0.100" using subnet mask 255.255.255.0. (6 marks)

(b) Display the scope statistics based on what has been configured. (3 marks)

(c) Display Server Options for IPv6. (3 marks)

(d) In the context of DHCP server role display the NIC teaming. (4 marks)

(e) Display Windows Management instrumentation control properties. (4 marks)

Save "Question 22" and upload. **(Total: 20 marks)**

23. Create a word processor document named "Question 23" and use the document to save screenshot of the solutions to questions (a) to (e) below:

Using PowerShell in your computer perform the following:

(a) Display DNS Zones. (4 marks)

(b) Display DNS Records in kasneb.local zone. (4 marks)

(c) Display All DHCP Scopes. (4 marks)

(d) Display Network Interfaces. (4 marks)

(e) Display the Routing Table. (4 marks)

Save "Question 23" and upload. **(Total: 20 marks)**

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DIPLOMA IN COMPUTER NETWORKS AND SYSTEMS ADMINISTRATION (DCNSA)

LEVEL III

NETWORK SET-UP

MONDAY: 22 April 2024. Afternoon Paper.   **Time Allowed: 3 hours.**

Answer ALL questions. This paper has two (2) sections. SECTION I has twenty (20) short response questions. Each question is allocated two (2) marks. SECTION II has three (3) practical questions of sixty (60) marks. Marks allocated to each question are shown at the end of the question.

Required Resources:
- **Windows server 2016/2019/2022 image**
- **Oracle Virtual box**
- **Linux/Windows computer**

SECTION I (40 MARKS)

1.   A hardware component that allows computers to connect to a network and communicate with other devices is known as: (2 marks)

2.   The process of dividing a larger network into smaller, more manageable sub-networks is known as: (2 marks)

3.   A server role in the Windows Server operating system that enables network-based installation of Windows operating systems and deployment of applications is known as: (2 marks)

4.   What is the term used to refer to a set network server tools that enable administrators to use a graphical user interface (GUI) to remotely control servers?   (2 marks)

5.   Which network server service is responsible for automatically allocating IP addresses to network devices?   (2 marks)

6.   In the context of network setup, a feature that provides centralised management and access to network resources is known as: (2 marks)

7.   What is the main purpose of the "Hyper-V" network server role?   (2 marks)

8.   A server role that provides centralised authentication, authorisation and accounting services in a network is known as?   (2 marks)

9.   In relation to network management, state the name of the server that plays an essential role in giving clients on the network centralised storage as well as access to files and resources.   (2 marks)

10.   What is the name of the device that is necessary to map domain names to IP addresses and regulate internet access within a network?   (2 marks)

11.   In relation to network server environment, which feature distributes network traffic evenly?   (2 marks)

12.   A type of data storage device that uses NAND-based flash memory to store large amounts of data with fast access and without moving parts in a network server is known as: (2 marks)

13. Which feature of a network server encompasses a set of features and services related to network access, authentication and authorisation? (2 marks)

14. What is the name of a tool that is frequently used in a network environment to migrate roles and features between servers? (2 marks)

15. A migration approach that involves putting up a new server alongside the existing one and progressively transferring services is known as: (2 marks)

16. The process of copying and archiving computer data so that it may be restored in the event of data loss is known as: (2 marks)

17. Which feature in network operating system provides a centralised way to control the behavior of users and computers in a network, enforcing security settings, managing desktop configurations and automating various administrative tasks? (2 marks)

18. Adrian, a system administrator of a consortium that deals with imports and exports, wanted to set up a network with a subnet mask of 255.255.255.224 in network server. How many subnets can be created? (2 marks)

19. In relation to network configuration, which command can be used to display the local routing table used by the operating system to determine the appropriate network interface for sending packets to a specific destination? (2 marks)

20. A shorthand way of expressing the subnet mask of an IP address and represented by appending a forward slash ("/") followed by the number of significant bits in the subnet mask is known as: (2 marks)

SECTION II (60 MARKS)

21. Create a word processing document named "Question 21" and use it to save your answers to questions (a) to (e).

    (a) Display the network adapter properties of your server. (4 marks)

    (b) Enable Domain Name Resolution by turning on the LAN Manager Hosts (LMHOSTS) lookup. (4 marks)

    (c) Activate Parent suffixes of the primary DNS suffix for IPv6 addresses. (4 marks)

    (d) Enable Network discovery, File and Printer sharing for your network profile. (4 marks)

    (e) Highlight **FOUR** key components of a typical network. (4 marks)

Upload "Question 21" document.

(Total: 20 marks)

22. Create a word processing document named "Question 22" and use it to save your answers to questions (a) to (d).

    (a) Configure Remote desktop services with desktop session host as a role service. (6 marks)

    (b) Display the setup parameters for the remote desktop services' event details. (6 marks)

    (c) Using server Manager tool, configure startup type to Automatic for remote configuration properties of your computer. (4 marks)

    (d) List **FOUR** benefits of remote desktop configuration for organisations and individuals. (4 marks)

Upload "Question 22" document.

(Total: 20 marks)

23.   Create a word processing document named "Question 23" and use it to save your answers to questions (a) to (d) below:

   (a)   Using appropriate tool on your server, configure the network properties to allow users to change the network name, location and icon.   (6 marks)

   (b)   Using appropriate tool on your server, display detailed information about system events.   (4 marks)

   (c)   Display the network activity of the network server's resource monitor.   (4 marks)

   (d)   Use appropriate command utility to perform the following on the network server.

         (i)   Configure and manage interface status of the network.   (2 marks)

         (ii)   Flush the DNS resolver cache to clear outdated or corrupted DNS records.   (2 marks)

         (iii)   Display the local IP routing table.   (2 marks)

Upload "Question 23" document.

(Total: 20 marks)

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DIPLOMA IN COMPUTER NETWORKS AND SYSTEMS ADMINISTRATION (DCNSA)

LEVEL III

NETWORK SET-UP

MONDAY: 4 December 2023. Afternoon Paper.   **Time Allowed: 3 hours.**

Answer ALL questions. This paper has two (2) sections. SECTION I has twenty (20) short response questions. Each question is allocated two (2) marks. SECTION II has three (3) practical questions of sixty (60) marks. Marks allocated to each question are shown at the end of the question.

Required Resources:
- **Windows server 2016/2019/2022 image**
- **Oracle Virtual box**
- **Linux/Windows computer**

SECTION I (40 MARKS)

1.   Which network server feature enables a user to create and manage virtual machines on a single server to consolidate and optimise resources?   (2 marks)

2.   Linux is a popular choice for server environments due to its reliability, security, flexibility and open-source nature. Which feature of a Linux server provides precise control over server configurations and allows automation through scripting?   (2 marks)

3.   Which functionality of a Network server enforces security policies, settings and configurations across multiple servers and client computers in an Active Directory environment?   (2 marks)

4.   The name of the server responsible for allowing host access to domain resources, authenticating users, storing user account information and enforcing security policy for a domain is known as: (2 marks)

5.   State the name of the list that is used by network servers to define permissions for files, directories and other resources.   (2 marks)

6.   When setting up a network server, which command utility can a Network administrator use to display the routing table?   (2 marks)

7.   The structure of the Active Directory database, including the types of objects that may be stored and their characteristics, is defined by: (2 marks)

8.   What is the term that refers to a collection of domains that share a global catalog and a trust relationship?   (2 marks)

9.   Which type of proxy server is used by client devices to access the internet?   (2 marks)

10. DHCP server simplifies the process of configuring and managing IP addresses, especially in larger networks. The term used to describe the process of setting up redundant DHCP servers to ensure high availability is known as: (2 marks)

11. Which network operating system method is used to reorganise data on the disk in order to reduce file fragmentation, which occurs when files are broken into several parts that are spread across different regions on the disk? (2 marks)

12. Which technique is utilised to make a storage device or file system accessible and useful within the file system hierarchy when using a network operating system? (2 marks)

13. Which network server management solution enables administrators to connect to and administer remote servers as if they were physically present? (2 marks)

14. A tool that allows Network administrators to create custom management consoles for various server roles and services is known as? (2 marks)

15. The process that involves collecting data on various server metrics such as CPU usage, memory usage, disk space and network traffic is known as: (2 marks)

16. Ivan Njee an avid computer user is configuring a web server role on a Windows Server network operating system. Which role service will he use to process ASP.NET applications? (2 marks)

17. Which command is normally used to install software packages and server functionalities while utilising a Linux-based network operating system? (2 marks)

18. A server role in a networked server environment that is primarily responsible for storing, managing and giving access to files and folders for network users and devices is known as: (2 marks)

19. The device that enables a computer to connect to the Internet through a wireless connection within the wireless coverage of a wireless local area network (WLAN) is known as: (2 marks)

20. A newly hired network administrator was presented with a subnet mask of 255.255.255.240 to setup a network. Assuming he was given a network address of 192.168.100.0/24, what is the total number of IP addresses in this subnet, including network, broadcast and host addresses? (2 marks)

SECTION II (60 MARKS)

Required Resources
- **Windows server 2016/2019/2022 Image**
- **Oracle Virtual box**
- **Linux/Windows computer**

21. Create a word processing document named "File storage" and use the word processor document to save your answers to questions (a) to (e) below:

    When setting up a network, a file server enables storage and management of files and directories, making them accessible to users and devices.

    Capture screenshots displaying how to perform the following tasks:

    (a) Open the server's File and Storage services and display the volume disk property details. (4 marks)

    (b) Display the available file share profile properties. (4 marks)

    (c) Display the available access file permissions on the share. (4 marks)

    (d) Enable the settings for files and folders. (4 marks)

    (e) State **FOUR** major features and functions of the File server role. (4 marks)

    Save the document "File storage and upload. **(Total: 20 marks)**

22. Create a word processing document named "DHCP" and use the word processor document to save your answers to questions (a) to (d) below:

Dynamic Host Configuration Protocol (DHCP) server role automates the assignment of IP addresses and other network configuration settings to client devices on a network.

Capture screenshots displaying how to perform the following tasks:

(a)   Using Server Manager, display DHCP Manager.   (6 marks)

(b)   Set your computer's default gateway as the Router server option.   (6 marks)

(c)   Display the computers routing table using PowerShell command utility.   (4 marks)

(d)   State the four-step procedure which a client communicates with a DHCP server to receive an IP address.
                                                                                          (4 marks)
   • DHCP Discover
   • DHCP Offer
   • DHCP Request
   • DHCP Acknowledgment

Save the document "DHCP" and upload.   **(Total: 20 marks)**

23. Create a word processing document named "Performance monitor" and use the word processor document to save your answers to questions (a) to (d) below:

Monitoring and managing system resources is crucial for maintaining the performance, reliability and security of a server.

Capture screenshots displaying how to perform the following tasks:

(a)   Using your server dashboard, display performance monitor of your computer with selected counters.
                                                                                          (4 marks)

(b)   Display Routing and Remote Access Properties (Local Computer) with manual startup-type.   (6 marks)

(c)   Create a memory log data collector set in MBytes with sample interval of 4 seconds.   (6 marks)

(d)   Change the properties of the data collector set to Comma Separated.   (4 marks)

Save document "Performance monitor" and upload.   **(Total: 20 marks)**

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DIPLOMA IN COMPUTER NETWORKS AND SYSTEMS ADMINISTRATION (DCNSA)

LEVEL III

NETWORK SETUP

MONDAY: 21 August 2023. Afternoon Paper.   **Time Allowed: 3 hours.**

Answer ALL questions. This paper has two (2) sections. SECTION I has twenty (20) short response questions. Each question is allocated two (2) marks. SECTION II has three (3) practical questions of sixty (60) marks. Marks allocated to each question are shown at the end of the question.

Required Resources:
- Windows server 2016/2019/2022 image
- Oracle Virtual box
- Linux/Windows computer

SECTION I (40 MARKS)

1.   The network address that is made up of 32 binary bits which can be divisible into a network portion and host portion is called _____.   (2 marks)

2.   Class C IP addresses range from 192 to 233. State the default subnet mask for this class.   (2 marks)

3.   Which type of protocol helps users find data about organisations, persons and authenticate users to access the directory?   (2 marks)

4.   What is the binary equivalent of the decimal IP address given by 192.168.123.132?   (2 marks)

5.   With reference to TCP/IP networks, which term **BEST** describes a router that is specified on a host which links the host's subnet to the internet.   (2 marks)

6.   The type of subnetting where all subnets in a sub-netted network have the same subnet mask is called _____.
                          (2 marks)

7.   Khan, a system administrator at Manjit Wholesalers Company was instructed by his supervisor to deploy a windows server as a print server. Which role does he need to install?   (2 marks)

8.   The type of network server monitoring which ensures that the organisational servers are always available and is useful in measuring the reliability and stability of various resources and devices is referred to as_____. (2 marks)

9.   The type of network backup which involves backing up data that was changed since the last full backup is called _____.   2 marks)

10.   The process of salvaging data from a physically crashed hard drive is referred to as _____. (2 marks)

11.   When setting up a network server, which command utility can a network administrator use to trace the path of routers in the internetwork?   (2 marks)

12. The active directory service that keeps track of domain members, verifies their credentials and establishes their access privileges is called _____. (2 marks)

13. The type of server role that provides e-mail services for the network by providing the functions needed for users to both send and receive e-mail messages is known as _____. (2 marks)

14. What is the name given to an administrative feature of a DHCP server that can be used to group multiple scopes as a single administrative entity? (2 marks)

15. The virtualised network connection that connects multiple devices and network nodes from different LANs into one logical network is called _____. (2 marks)

16. The router that provides a gateway between users and the internet and helps to prevent cyber attackers from entering a private network is referred to as _____. (2 marks)

17. When a student types in a domain name into her browser's address bar she experiences an error message that says "DNS server isn't responding". Which is the first step she should take to try and resolve this error? (2 marks)

18. What is the name given to a tool used by server to manage objects in Active Directory? (2 marks)

19. When configuring a network, what is the name given to a wireless terminal device used to enable internet connection through the wireless connection network under the coverage of a wireless local area network? (2 marks)

20. What is the name given to a feature of Active Directory (AD) that allows a domain controller (DC) to provide information on any object in the forest, regardless of whether the object is a member of its domain? (2 marks)

SECTION II (60 MARKS)

Required Resources
Windows server 2016/2019/2022 Image
Oracle Virtual box
Linux/Windows computer

21. Create a word processing document named "Remote" and use the word processor document to save your answers to questions (a) to (e) below:

Capture screenshots displaying how to perform the following tasks:

(a) Enable remote management of your server from other computers in the network. (4 marks)

(b) Allow remote connection to your computers. (4 marks)

(c) Display virtualisation-based security of your network device. (4 marks)

(d) Configuring windows defender firewall and incoming connection of your computer on a domain network. (4 marks)

(e) Configure your PC to obtain the IPv4 address automatically. (4 marks)

Save "Remote" document and upload.

(Total: 20 marks)

22.   Create a word processing document named "Directory" and use the word processor document to save your answers to questions (a) to (e) below:

      (a)   Display how to turn off network discovery and turn on file and printer sharing.   **(4 marks)**

      (b)   Using Active Directory Domain Services, display the Local disk system reserved properties.   (6 marks)

      (c)   Display iSCSI initiator properties for a target.   **(3 marks)**

      (d)   Display iSCSI initiator properties for RADIUS authentication.   **(4 marks)**

      (e)   Display file and storage services share.   **(3 marks)**

      Save "Directory" document and upload.

(Total: 20 marks)

23.   Create a word processing document named "PowerShell" and use the word processor document to save your answers to questions (a) to (d) below:

      PowerShell is a cross-platform task automation solution made up of a command-line shell, a scripting language and a configuration management framework used in windows server. Use windows PowerShell to answer the following questions and capture a screenshot of your findings in the word document:

      (a)   Display the processes associated with the active TCP connections.   **(6 marks)**

      (b)   Display the routing table with the active routes.   **(4 marks)**

      (c)   Type a command used to empty recycle bin of your server.   **(6 marks)**

      (d)   Display a list of all your system processes in a table format.   **(4 marks)**

      Save "Powershell" document and upload.

(Total: 20 marks)

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DIPLOMA IN COMPUTER NETWORKS AND SYSTEMS ADMINSTRATION (DCNSA)

LEVEL III

NETWORK SETUP

MONDAY: 24 April 2023. Afternoon Paper.   **Time Allowed: 3 hours.**

Answer ALL questions. This paper has two sections. SECTION I has twenty (20) short response questions. Each question is allocated two (2) marks. SECTION II has three (3) practical questions of sixty (60) marks. Marks allocated to each question are shown at the end of the question.

Required Resources:
- Windows server 2016/2019/2022 image
- Oracle Virtual box
- Linux/Windows computer

SECTION I (40 MARKS)

1. Which port in a Remote Procedure Call (RPC) enables other systems to identify services available on a machine?
(2 marks)

2. The unique identifier assigned to network interface controllers for use in communications within a network is called?
(2 marks)

3. A centralised security management solution houses all network resources, authenticates and authorises users and computers. Which feature in a networked environment enables organisations to keep their network secure and organised without having to use up excessive IT resources?
(2 marks)

4. A network management strategy that involves the use of various technologies and tools to prioritize traffic and allocate bandwidth based on the specific needs of different applications or types of traffic is called?
(2 marks)

5. A file system relates to the way in which files are named and where they are placed logically for storage and retrieval. Based on the following requirements:

   - The file system must allow file-level security
   - The file system must make efficient use of space on large partitions.
   - The domain controller Sysvol must be stored on the partition.

   Which file system will meet the above requirements when setting up a network server? (2 marks)

6. A server that stores and manages user and group account information, and provides centralized authentication and authorization services for other servers and applications is known as?
(2 marks)

7. When setting up a network server, which command can a system administrator use to display a detailed configuration information about all network adapters installed on a computer, including wired and wireless adapters?
(2 marks)

8. A windows-based network server that stores, manages user accounts, security policies, and other information for the network responsible for authenticating users and computers when they log in to the network is called:
(2 marks)

9. Mr. Puyo, an intern was administering the server by editing its hostname, domain membership, firewall and networking settings. Which program or tool could be used to administer the server?
(2 marks)

10. Domain names are an integral part of the DNS system. Which global DNS setting can be used as a DNS load-balancing configuration setting? (2 marks)

11. Which domain in windows server domain tree allows windows server domain tree to form the basis of subdomain known as child domains? (2 marks)

12. Which PowerShell cmdlet can be used to set one or more IP addresses for DNS servers with an interface? (2 marks)

13. The process of backing up all the critical volumes including system partition, boot partition, and other partitions to ensure all the applications are in a consistent state is known as: (2 marks)

14. Which service of a network server enable users to quickly search for files and items by file name, properties, and full-text contents? (2 marks)

15. Based on the network below which feature will significantly help reduce overall network traffic and improve network performance. (2 marks)
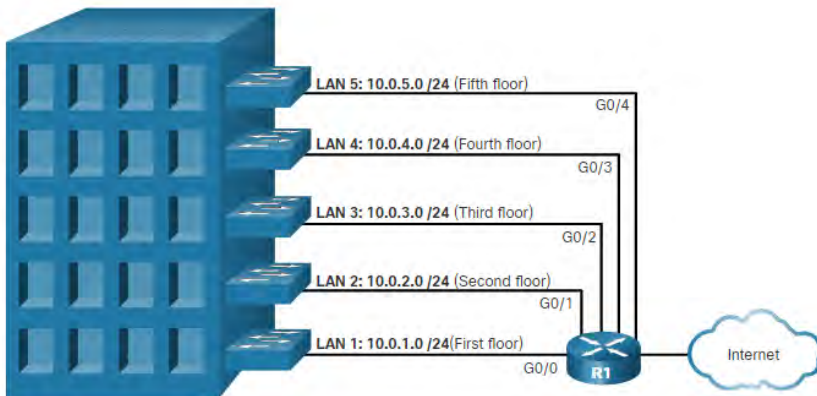
16. When setting up a network server, which intermediary devices will not forward an IPv4 broadcast packet by default? (2 marks)

17. Which term is used to describe copying or moving critical data from one server to another as well as configuring target server to replace the first? (2 marks)

18. What is the name given to the type of backup that involves creating an exact copy of the data on a network as a strategy for disaster recovery? (2 marks)

19. The method of network segmentation that allows a physical network to be divided into multiple logical networks or subnetworks is called? (2 marks)

20. A network address is a unique physical or logical address that distinguishes a network node or device over a computer or telecommunications network. What is required to connect a private network address from a public network requires? (2 marks)

Required Resources:
* Windows Server 2016/2019/2022 image
* Oracle Virtual box
* Linus/Windows computer

21.   Create a word document called "Question 21" and use it to capture your answers for the questions (a) to (e) below:

   (a)   Create and capture a domain called kasneb.com.   (4 marks)

   (b)   Configure and capture a central access rule for protecting confidential documents.   (4 marks)

   (c)   Display basic and advanced permissions for owner rights and capture the screenshot.   (4 marks)

   (d)   Add a condition to limit access if ONLY the conditions are met and capture the screenshot.   (4 marks)

   (e)   Display the default claim for the user account and capture the screenshot.   (4 marks)

   Upload Question 21 document

                                                                              (Total: 20 marks)

22.   Create a word document called "Question 22" and use it to capture the answers for the questions (a) to (d).

   (a)   Configure a custom authentication tunnel rule named "Linda network" to connect two computers using app address in network 172.16.10.0/24.   (6 marks)

   (b)   Display the end points of the two remote computers from the network given in (a) above.   (4 marks)

   (c)   Enable rule application to local area network, remote access and wireless interface types.   (4 marks)

   (d)   Display the following firewall monitoring rules.

      (i)   Core networking-Dynamic host configuration protocol.   (2 marks)

      (ii)   Core Networking -Neighbor Discovery Solicitation.   (2 marks)

      (iii)   Core Networking -Router advertisements.   (2 marks)

   Upload Question 22 document

                                                                              (Total: 20 marks)

23.   Create a word document called "Question 23" and use it to capture the answers to questions (a) to (d) below.

   (a)   Display the server fully qualified domain name with validated IP address.   (4 marks)

   (b)   Configure event data to be captured by the server manager in the network taking note of the severity levels.   (4 marks)

   (c)   Set the performance alert threshold to 70% of CPU Usage and 1024 of Memory availability.   (4 marks)

   (d)   Using command prompt,display directory server diagnosis options.   (4 marks)

   (e)   Use powershell to display active connections of the trasport layer protcol   (4 marks)

   Upload Question 23 document

                                                                              (Total: 20 marks)
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DIPLOMA IN COMPUTER NETWORKS AND SYSTEMS ADMINSTRATION (DCNSA)

LEVEL III

NETWORK SETUP

MONDAY: 5 December 2022. Afternoon Paper.   **Time Allowed: 3 hours.**

Answer ALL questions. This paper has two sections. SECTION I has twenty (20) short response questions. Each question is allocated two (2) marks. SECTION II has three (3) practical questions of sixty (60) marks. Marks allocated to each question are shown at the end of the question.

Required Resources:
- Windows server 2016/2019/2022 image
- Oracle Virtual box
- Linux/Windows computer

SECTION I (40 MARKS)

1.   A logical grouping of related network access technologies is referred to as_____.   (2 marks)

2.   State the component that could be put in place to deploy network virtualisation and centrally manage Data centre Firewall policies.   (2 marks)

3.   The _____ entails users, computers, other groups and other Active Directory objects where administrators can manage it as a single object to simplify network maintenance and administration.   (2 marks)

4.   A mechanism that allows users to group two or more physical Network Interface card (NICs) into a single logical network device is known as_____.   (2 marks)

5.   You have been tasked to create a subnet from private IP address of 172.16.10.0/24 to a server that supports four hosts. The solution must minimise the number of addresses available to the subnet. Demonstrate the subnet that should be used.   (2 marks)

6.   State the Windows Server feature that enables you to group multiple servers together into a fault tolerant cluster to increase availability and scalability of applications and services such as Scale-Out File Server, Hyper-V and Microsoft SQL Server.   (2 marks)

7.   The _____ forms part of computer's DNS name that follows the hostname element such as skypc to make it skypc.accounting.kasneb.or.ke.   (2 marks)

8.   The _____ feature in window server operating system allows users across organisational boundaries to access applications using a single set of login credential.   (2 marks)

9.   The process that eliminates excessive copies of data and significantly decreases storage capacity requirements is referred to as _____.   (2 marks)

10.   State the feature in PowerShell used by administrators to automate the configuration of Windows and Linux operating systems.   (2 marks)

11.   The _____ command utility helps administrators to diagnose Active Directory replication problems between domain controllers running Microsoft Windows operating systems?   (2 marks)

12. A segmented piece of a larger network design strategy where all subnet masks can have varying sizes is known as _____. (2 marks)

13. An IP address is a unique address that identifies a device on the internet or a local network where servers and hosts are located. Determine the usable host addresses that are available in 192.168.10.50/30 network. (2 marks)

14. An upcoming multinational pharmaceutical company has been issued with 2001:DB8: ACAD: :/48 by the service provider. Compute the bits available given the prefix to create 64 subnetworks for the servers located in different site locations if interface ID bits are borrowed. (2 marks)

15. The term that describes the type of backup that only copies data that has been changed or created since the previous backup activity was conducted is known as _____. (2 marks)

16. The process of selecting, preparing, extracting and transforming data before permanently transferring it from one computer storage system to another is referred to as _____. (2 marks)

17. State the name given to the process of gaining visibility into the activity on your servers whether physical or virtual.
18. State the name of the system or router that provides a gateway between users and the internet. (2 marks)

19. The administration of network services such as DNS and DHCP that assign and resolve IP addresses to machines in a TCP/IP network is known as _____. (2 marks)

20. State the server role that refers to a logical grouping of related network access technologies such Routing and Web application proxy. (2 marks)

SECTION II (60 MARKS)

Required Resources:
- Windows Server 2016/2019/2022 image
- Oracle Virtual box
- Linus/Windows computer

Install Oracle Virtual box and Windows server image to your computer and answer the following questions:

21. Create a word processing document named "Domain" and use the word processor document to save your answers to questions (a) to (c):

   (a) With the use of active directory domain, capture a screenshot displaying the following:

       (i) Domain directory named songambele.com. (4 marks)

       (ii) Ethernet properties of a second valid unicast address of 172.16.0.0/24 network. (4 marks)

   (b) Using an appropriate command utility, display the system information of the server you are using. (6 marks)

   (c) Configure the switch teaming mode to "switch independent" and the load belonging mode to be dynamic.

   Capture a screenshot to demonstrate how you have performed the above task. (6 marks)

   Upload domain document

   (Total: 20 Marks)

22. Create a word processing document named "DHCP" and use the word processor document to save your answers to questions (a) to (b).

   (a) Configure DHCP server role using role -based installation.

       (i) Capture screenshot of your configuration settings. (4 marks)

       (ii) Capture a screenshot displaying DHCP server manager console. (4 marks)

(b)   Configure a scope using appropriate name of Network address 10.0.0.0/24 in your DHCP server console.

    (i)   Capture a screenshot showing an address pool of 10.0.0.1 to 10.0.0.254.   (3 marks)

    (ii)   Capture a screenshot of the excluded address from 10.0.0.1 to 10.0.0.4 with a delay of 10 milliseconds.   (3 marks)

    (iii)   Capture a screenshot of lease duration of IP usage to be 1 day 12 hours and 30 minutes.   (3 marks)

    (iv)   Capture a screenshot that specify 10.0.0.1 as the IP address for a router to be used by clients.   (3 marks)

Upload DHCP document.

(Total: 20 marks)

23.   Create a word processing document named "Address" and use the word processor document to save your answers to question (a).

(a)   A reservation ensures DHCP client is always assigned the same IP address.

Configure a reserved client named "printer" for both DHCP and BOOTP using 10.0.0.9 IP address.   (6 marks)

(b)   Capture a screenshot of the available scope options.   (3 marks)

(c)   Using appropriate command, display the Ethernet adapter settings.   (3 marks)

(d)   Using appropriate command utility, query the DNS record of www.altoromutual.com as the remote site.   (4 marks)

(e)   Identify local host address and the remote site address.   (2 marks)

(f)   Capture a screenshot to demonstrate how you have performed the above task.   (2 marks)

Upload Address document.

(Total: 20 marks)

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