



DIPLOMA IN COMPUTER NETWORKS AND SYSTEMS ADMINISTRATION (DCNSA)

LEVEL II

NETWORK SECURITY

TUESDAY: 3 December 2024. Afternoon Paper.

Time Allowed: 2 hours.

This paper consists of fifty (50) Multiple Choice Questions. Answer ALL questions by indicating the letter (A, B, C or D) that represents the correct answer. Each question is allocated two (2) marks.

1. A technician is tasked with preventing unauthorised access to a corporate Wi-Fi network. Which of the following security protocol should be implemented to achieve the highest level of security?
 - A. WEP
 - B. WPA
 - C. WPA2
 - D. Open network(2 marks)

2. Which one of the following security activity is **NOT** crucial for gaining a foundational understanding of the network infrastructure and detecting potential vulnerabilities?
 - A. Conducting a vulnerability scan on the network
 - B. Performing a thorough inventory of all network devices
 - C. Reviewing historical data on network performance
 - D. Implementing an intrusion detection system(2 marks)

3. During a security assessment, a technician discovers that several employees are using weak passwords. What is the **BEST** action the technician should recommend to enhance password security?
 - A. Increase the password length and complexity requirements
 - B. Implement a mandatory password change every week
 - C. Educate employees on password sharing
 - D. Disable all accounts with weak passwords immediately(2 marks)

4. When evaluating network performance, which metric is **MOST** critical for determining the speed at which data is transmitted?
 - A. Latency
 - B. Packet loss rate
 - C. Jitter
 - D. Throughput(2 marks)

5. The subset(s) of packet filtering that allows a firewall to react to an emergent event and update or create rules to deal with the event is known as _____.
 - A. dynamic
 - B. static
 - C. stateful
 - D. protocol(2 marks)

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6. Which one of the following actions is **LEAST** likely to mitigate the risk of internal threats to an organisation's network security posture?
- A. Implementing strict access controls and regular audits of user permissions
 - B. Educating employees about security best practices and potential threats
 - C. Restricting network access to only essential services and applications
 - D. Allowing unrestricted access to all network resources for improved employee efficiency (2 marks)
7. Wendy is facing frequent pop-up ads, a slow computer and unexpected redirects, leading her to suspect malware. What type of malware is responsible for displaying unwanted ads?
- A. Cryptojacking
 - B. Spyware
 - C. Adware
 - D. Rootkit (2 marks)
8. Which one of the following authentication processes is based on something that the user is?
- A. Password
 - B. Retina scan
 - C. Key
 - D. Smart card (2 marks)
9. Which of the following statements describes a potential negative consequence that could arise from performing an aggressive network scan?
- A. Detecting vulnerabilities
 - B. Enhancing network security
 - C. Identifying firewall misconfigurations
 - D. Slowing down network traffic (2 marks)
10. You receive an urgent email from a senior executive requesting payment for a critical project, but it's a whaling attack designed to trick you into transferring company funds. What action should you take?
- A. Delete the email immediately without taking any action, as it may be a phishing attempt
 - B. Reply to the email requesting more information about the payment and vendor before taking any action
 - C. Forward the email to your IT department or security team for verification and follow their instructions
 - D. Click the link in the email to authorise the payment, as it seems to be from a trusted executive (2 marks)
11. When establishing a Zone-Based Firewall for an enterprise, which of the following approaches is the **MOST** effective in guaranteeing comprehensive network protection?
- A. Configuring firewall rules based on individual IP addresses
 - B. Creating specific allow rules based on necessary services and applications
 - C. Using a single set of rules for all zones without distinguishing between internal and external traffic
 - D. Allowing all traffic and only blocking known threats (2 marks)
12. Which one of the following network testing methods is used to measure the throughput and performance of a network?
- A. Load testing
 - B. Packet sniffing
 - C. Port scanning
 - D. DNS resolution testing (2 marks)

13. Which of the following mechanisms is **BEST** for securely connecting remote users to an enterprise network with encrypted data transmission?
- A. Virtual Private Network (VPN)
 - B. Intrusion Detection System (IDS)
 - C. Intrusion Prevention System(IPS)
 - D. Access Control List (ACL)
- (2 marks)
14. Which of the following statements represents a crucial factor to consider for ensuring effective protection of sensitive data?
- A. Assigning static IP addresses to all devices
 - B. Using a single subnet for all devices
 - C. Implementing a firewall between subnets
 - D. Disabling DHCP on all routers
- (2 marks)
15. What practice is crucial for regularly updating and applying software fixes to prevent attackers from exploiting vulnerabilities?
- A. Access control list
 - B. Patch management
 - C. Backup and recovery
 - D. Disaster recovery
- (2 marks)
16. The process of recording information about an employee's action when interacting with data and systems as well as information about the operations of your networking devices is referred to as _____.
- A. accountability
 - B. authenticity
 - C. availability
 - D. non-repudiation
- (2 marks)
17. Which one of the following is primarily intended to safeguard devices from malware and viruses that may compromise data carried across a network?
- A. Generic routing encapsulation
 - B. IP security
 - C. Firewall
 - D. Anti-virus software
- (2 marks)
18. How does disaster recovery planning help reduce downtime and prevent data loss in a network during a major IT incident?
- A. By outlining specific procedures for restoring network services
 - B. By increasing the number of network administrators to handle all IT-related issues
 - C. By providing a set of guidelines for employees on how to handle day-to-day operations
 - D. Securing network infrastructure against attacks
- (2 marks)
19. What practice is essential for maintaining data integrity when multiple users are simultaneously accessing and editing a shared database in a new customer relationship management (CRM) system?
- A. Regular data backups
 - B. Access controls
 - C. Data redundancy
 - D. Data archiving
- (2 marks)

20. Which one of the following steps **BEST** improves the security of a wireless network?
- A. Changing the default SSID and network name regularly
 - B. Disabling guest access on the wireless router
 - C. Setting up a separate network for IoT devices
 - D. Using WPA3 encryption for wireless communication
- (2 marks)
21. Network setup involves connecting multiple devices to share resources and communicate with each other. What is a key benefit of implementing advanced encryption protocols for sensitive data?
- A. Increased network speed
 - B. Enhanced data privacy
 - C. Improved device compatibility
 - D. Reduced hardware costs
- (2 marks)
22. Which one of the following is a potential benefit of adding network security measures to improve overall system efficiency?
- A. Increased bandwidth usage
 - B. Hardware malfunction
 - C. Improved system performance
 - D. Exploitation of known vulnerabilities by attackers
- (2 marks)
23. What potential issues might arise when network devices are not properly configured?
- A. Enhanced data encryption
 - B. Streamlined network traffic
 - C. Unauthorised access to sensitive data
 - D. Improved network speed
- (2 marks)
24. Which of the following represents an impact of password-cracking techniques on the security of user accounts and data?
- A. They increase network performance by optimising user access
 - B. They help in identifying and fixing network vulnerabilities
 - C. They enhance the security of user accounts through better encryption methods
 - D. They may lead to unauthorised access and data theft
- (2 marks)
25. Which of the following statements describes potential risks that can occur for failing to implement effective login and monitoring practices to maintain system integrity and compliance?
- A. Increased vulnerability to undetected breaches
 - B. Enhanced performance and reduced system latency
 - C. Improved data accuracy and quicker system recovery
 - D. Lowered costs and simplified system management
- (2 marks)
26. Which one of the following threats is **MOST** likely to be identified and addressed using automated network security tools and monitoring systems?
- A. Social engineering attacks
 - B. Distributed denial-of-service attacks
 - C. Insider threats
 - D. Zero-day exploits
- (2 marks)

27. Which of the following is the **BEST** technique that network administrators could use to ensure intermediary devices are properly configured and maintained to prevent security breaches and improve network performance?
- A. Avoid conducting routine performance and security assessments to minimise disruptions
 - B. Use outdated protocols to maintain compatibility with legacy systems, even if they are less secure
 - C. Disable login on devices to reduce the amount of stored data and avoid potential security risks
 - D. Regularly update device firmware to fix vulnerabilities and improve functionality (2 marks)
28. An object, person or other entity that represents a constant danger to information systems digital asset is known as a _____.
- A. vulnerability
 - B. attack
 - C. threat
 - D. social engineering (2 marks)
29. What process involves gathering information about a target system or network to identify vulnerabilities before launching an attack?
- A. Crypto mining
 - B. Reconnaissance
 - C. Brute force
 - D. Stalking (2 marks)
30. Which one of the following statements describes an attack where malicious code is inserted into a website to exploit vulnerabilities and potentially compromise user data?
- A. Cross-Site Scripting (XSS)
 - B. Phishing Attack
 - C. Denial of Service (DoS)
 - D. SQL Injection (2 marks)
31. Which one of the following statements defines an impact of common issues related to software conflicts within a network?
- A. Faster data transfer rates
 - B. Enhanced network security
 - C. Increased network bandwidth
 - D. Unresponsive network devices (2 marks)
32. Which one of the following tools optimises network resource performance in real-time?
- A. Network Monitoring System (NMS)
 - B. Network Access Control (NAC)
 - C. Intrusion Detection System (IDS)
 - D. Proxy server (2 marks)
33. Which protocol is commonly used to securely manage and allocate network resources in Internet Protocol networks and the backbone of modern communication?
- A. File Transfer Protocol (FTP)
 - B. Hypertext Transfer Protocol Secure (HTTPS)
 - C. Dynamic Host Configuration Protocol (DHCP)
 - D. Simple Mail Transfer Protocol (SMTP) (2 marks)

34. What security solution could be **MOST** effective in restricting unauthorised applications from accessing network resources while allowing granular control over functions within authorised applications?
- A. Network Access Gateway
 - B. Network Application Control
 - C. Network Administration Console
 - D. Network Automation Control
- (2 marks)
35. Which strategy is used to optimise network resource usage by prioritising traffic based on its type?
- A. Network Address Translation (NAT)
 - B. Network Time Protocol (NTP)
 - C. Simple Network Management Protocol (SNMP)
 - D. Quality of Service (QoS)
- (2 marks)
36. _____ occurs when unauthorised parties infiltrate computer systems, networks or databases to gain access to confidential information.
- A. Phishing
 - B. Data breach
 - C. Exfiltration
 - D. Malware
- (2 marks)
37. Which one of the following statements **BEST** describes how Security Information and Event Management (SIEM) solutions assist organisations in identifying threats?
- A. SIEM solutions analyse and correlate data to detect suspicious activities
 - B. SIEM solutions integrate with firewalls to block unauthorised access attempts
 - C. SIEM solutions collect and store sensitive business data to prevent breaches
 - D. SIEM solutions encrypt all network traffic to enhance security
- (2 marks)
38. Which one of the following security measures requires users to provide two forms of identification before being granted access to a system or account?
- A. Biometric authentication
 - B. Two-factor authentication
 - C. Password-based authentication
 - D. Multi-factor authentication
- (2 marks)
39. Which one of the following statements **BEST** describes the importance of regularly reviewing and updating a network security policy?
- A. It improves the performance of the network and speeds up data transmission
 - B. It reduces the need for user authentication across the organisation
 - C. It increases employee productivity by reducing security protocols
 - D. It ensures compliance with evolving legal and regulatory requirements
- (2 marks)
40. In the context of risk analysis, which method is most frequently employed to evaluate vulnerabilities within a network?
- A. Penetration testing
 - B. Network monitoring
 - C. Data encryption
 - D. Firewalls
- (2 marks)

41. Which practice is **NOT** part of the implementation phase of a network security framework for a small tech startup company that has conducted a risk assessment and developed security protocols?
- A. Conducting a vulnerability assessment
 - B. Deploying firewalls and intrusion detection systems
 - C. Developing security awareness training materials
 - D. Reviewing and updating security policies
- (2 marks)
42. Which one of the following is **MOST** likely to be recognised as a critical asset during network assessment?
- A. Standard employee records
 - B. Routine email communications
 - C. Sensitive financial data
 - D. Publicly available company brochures
- (2 marks)
43. Which one of the following methods is used to manage user permissions and access to systems and data within the framework of logical security controls?
- A. Data encryption
 - B. Network segmentation
 - C. Physical access control
 - D. Role-based access control
- (2 marks)
44. Which one of the following techniques is **MOST** effective for detecting and analysing anomalies in network traffic protocols?
- A. Stress testing
 - B. Network monitoring
 - C. Protocol analysis
 - D. Packet capture
- (2 marks)
45. What is the primary objective of a ransomware attack on a company's IT infrastructure, considering that ransomware has become increasingly sophisticated and poses a serious threat to individuals and organisations worldwide?
- A. To demand payment for decrypting files
 - B. To improve system performance
 - C. To steal financial data
 - D. To enhance network security
- (2 marks)
46. Which one of the following is a potential drawback of implementing a robust network security system?
- A. Increased risk of unauthorised access
 - B. Higher operational costs
 - C. Simplified management and monitoring
 - D. Increased network performance
- (2 marks)
47. Which type of fraudulent activity targeting a network involves using fake support requests to obtain sensitive data from employees?
- A. Shoulder surfing
 - B. Pretexting
 - C. Vishing
 - D. Scareware
- (2 marks)

48. Which one of the following attack methods exploits weaknesses in a trusted third-party vendor to get access to a target organisation's systems?
- A. Watering hole attack
 - B. Dumpster diving
 - C. Supply chain attack
 - D. Fileless malware
- (2 marks)

49. Which one of the following is a likely impact of Malware attack?
- A. Disruption of essential services and potential endangerment of public safety
 - B. Enhanced collaboration between governmental and private sectors for cybersecurity
 - C. Increased public awareness and education about cybersecurity
 - D. Improved security measures and resilience in public safety systems
- (2 marks)

50. The following practices are part of a network security implementation, **EXCEPT** _____.
- A. Risk assessment
 - B. Asset management
 - C. Incident response
 - D. Data protection
- (2 marks)

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DIPLOMA IN COMPUTER NETWORKS AND SYSTEMS ADMINISTRATION (DCNSA)

LEVEL II

NETWORK SECURITY

TUESDAY: 20 August 2024. Afternoon Paper.

Time Allowed: 2 hours.

This paper consists of fifty (50) Multiple Choice Questions. Answer ALL questions by indicating the letter (A, B, C or D) that represents the correct answer. Each question is allocated two (2) marks.

1. What is the principal objective of instituting Network Access Control (NAC) within an organisation?
 - A. To enhance the overall performance and efficiency of the network infrastructure
 - B. To continuously monitor and analyse network traffic for security and optimisation
 - C. To enforce and manage policies governing access to network resources
 - D. To secure data by encrypting it during transmission across the network (2 marks)

2. What is the **MAIN** difference between penetration testing and vulnerability assessment as used in network security?
 - A. Penetration testing aims to exploit vulnerabilities, while vulnerability assessment identifies and quantifies them
 - B. Vulnerability assessment focuses on network performance, while penetration testing tests software functionality
 - C. Penetration testing scans for malware, while vulnerability assessment tests network encryption
 - D. Vulnerability assessment evaluates network speed, while penetration testing assesses firewall effectiveness (2 marks)

3. Which one among the following is a potential risk associated with performing a network scan?
 - A. Improved network performance
 - B. Accidental disclosure of sensitive information
 - C. Unintended escalation of network security vulnerabilities
 - D. Enhanced user productivity (2 marks)

4. Which one of the following actions should be taken after receiving an email containing phishing content?
 - A. Click on the provided link to confirm your identity
 - B. Ignore the email and delete it immediately
 - C. Forward the email to your friends and family to warn them about the phishing attempt
 - D. Reply to the email with your account details to verify your identity and secure your account (2 marks)

5. In the context of Network security, which one of the following statements **BEST** depicts the purpose of Firewall?
 - A. Encrypting network traffic
 - B. Authenticating users
 - C. Detecting and removing malware
 - D. Monitoring and controlling network traffic (2 marks)

6. Which one of the following is a common indicator of a Distributed Denial of Service (DDoS) attack?
 - A. Unusually high network traffic volume
 - B. Unexpected software fixes and updates
 - C. Increased system uptime
 - D. Decreased CPU usage (2 marks)

7. In terms of network security, what is the purpose of network segmentation?
A. Encrypting network traffic
B. Monitoring network activity
C. Dividing the network into smaller, isolated segments
D. Identifying and removing malware infections (2 marks)
8. Which security measure determines who has access to network resources and what actions should be taken?
A. Patch Management
B. Access Control
C. Intrusion Detection
D. Disaster Recovery (2 marks)
9. Which testing method involves having full knowledge of the network and systems being tested?
A. Black-box testing
B. White-box testing
C. Gray-box testing
D. Blue-box testing (2 marks)
10. How do network technicians utilise logging and monitoring in network security operations?
A. Encrypting network traffic
B. Establishing secure connections
C. Providing authentication
D. Identifying security incidents (2 marks)
11. Which one of the following describes a proactive security approach in which security experts actively look for indications of malicious activity or advanced threats within the network environment of an organisation?
A. Threat Modelling
B. Threat Intelligence
C. Threat hunting
D. Threat landscape (2 marks)
12. What is the primary objective of network security's incident response and disaster recovery procedures?
A. Minimising the impact of security breaches
B. Preventing unauthorised access
C. Monitoring network activity
D. Securing network infrastructure against attacks (2 marks)
13. Which network security concept involves ensuring that users have access only to the resources they are authorised to use?
A. Strong Password Policy
B. Network Hardening
C. Least Privilege
D. Data Encryption (2 marks)
14. Which one of the following statements **BEST** depicts the essence of network security for business operations?
A. It ensures uninterrupted business operations
B. It reduces the cost of hardware
C. It simplifies software development
D. It lowers employee training costs (2 marks)
15. Which feature of network security promotes confidence among customers and partners?
A. Reducing the cost of IT services
B. Enhancing data protection
C. Simplifying network management
D. Increasing network traffic (2 marks)

16. Which one of the following techniques involves concealing the true destination of data by modifying its headers?
A. Network Address Translation (NAT)
B. Data masking
C. Firewall configuration
D. Digital encryption (2 marks)
17. Which one of the following actions is as a result of misconfigured network devices?
A. Enhanced network performance
B. Open unintended access points
C. Reduced power consumption
D. Automatic software updates (2 marks)
18. Which is the **MAIN** threat posed by Man-in-the-Middle (MitM) attacks?
A. Decreasing network bandwidth
B. Enhancing encryption methods
C. Disabling network hardware
D. Altering data between two parties (2 marks)
19. Which component of network security structure involves defining roles, responsibilities and procedures to ensure network protection?
A. Security policy management
B. Network intrusion management
C. Security operations
D. Identity and access management (2 marks)
20. Which one of the following statements **BEST** describes a potential insider threat?
A. External hackers trying to penetrate the network
B. Contractors using their network access maliciously
C. Automated malware infections
D. Natural disasters affecting network infrastructure (2 marks)
21. What technology is commonly used to achieve non-repudiation in network communications?
A. Firewalls
B. Anti-Malware
C. Digital signatures
D. Intrusion Detection Systems (IDS) (2 marks)
22. In the context of encryption algorithms, which one of the following is considered a symmetric key encryption method?
A. RSA
B. Diffie-Hellman
C. ECC
D. AES (2 marks)
23. Which term defines the persuasion of persons into disclosing secret information or taking activities that jeopardise security?
A. Credential Stuffing
B. Cryptojacking
C. Social Engineering
D. Advanced Persistent Threat (APT) (2 marks)
24. The primary purpose of implementing Network Segmentation in a large enterprise network is to _____.
A. simplify network management tasks
B. isolate and contain security breaches
C. increase network latency
D. reduce the need for encryption (2 marks)

25. In the context of encryption algorithms, which one of the following is a public-key cryptography algorithm which uses prime factorisation as the trapdoor one-way function.?
- A. RSA
 - B. Diffie-Hellman
 - C. ECC
 - D. AES
- (2 marks)
26. Which type of network security device tracks the state of active connections and makes decisions based on the context of the traffic?
- A. Packet-filtering Firewall
 - B. Proxy Firewall
 - C. Next-Generation Firewall
 - D. Stateful Inspection Firewall
- (2 marks)
27. Which one of the following is **NOT** a security solution that helps organisations manage and secure access network resources?
- A. Intrusion Detection System (IDS)
 - B. Network Access Control (NAC)
 - C. Virtual Private Network (VPN)
 - D. Firewall
- (2 marks)
28. Secure Sockets Layer (SSL) and Transport Layer Security (TLS) are cryptographic protocols designed to provide secure communication over a network. Which of the following aspects of the two cryptographic protocols ensures that data transmitted over a network is only readable by the intended recipient?
- A. Authentication
 - B. Encryption
 - C. Data Integrity
 - D. Handshake Process
- (2 marks)
29. A centralised interface that allows network administrators to manage, monitor and maintain a network's infrastructure to ensure the security and performance of network components is known as _____.
- A. Network Access Gateway
 - B. Network Application Control
 - C. Network Administration Console
 - D. Network Automation Control
- (2 marks)
30. Which endpoint security component is intended to detect and respond to threats on specific devices?
- A. Intrusion Detection System (IDS)
 - B. Endpoint Detection and Response (EDR)
 - C. Firewall
 - D. Proxy Server
- (2 marks)
31. Which security measure helps protect web applications from common vulnerabilities?
- A. Intrusion Prevention System (IPS)
 - B. Network Address Translation (NAT)
 - C. Web Application Firewall (WAF)
 - D. Content Delivery Network (CDN)
- (2 marks)
32. Which one of the following is the main function of Security Information and Event Management (SIEM) systems?
- A. Provide real-time analysis of security alerts
 - B. Encrypt data transmissions
 - C. Filter network traffic
 - D. Establish secure connections over the internet
- (2 marks)
33. The physical security measure that is typically emphasised from a security perspective is _____.
- A. two-factor authentication
 - B. encryption protocols
 - C. security cameras
 - D. anti-virus software
- (2 marks)

34. Why is it essential for a security policy to align closely with an organisation's specific requirements?
A. It increases the likelihood of security incidents
B. It ensures compliance with industry standards
C. It improves employee morale
D. It mitigates risks effectively (2 marks)
35. Which security principle emphasises the importance of regularly updating software and systems to protect against vulnerabilities?
A. Least privilege
B. Patch management
C. Defense-in-depth
D. Network segmentation (2 marks)
36. Which one of the following is an example of a network vulnerability?
A. Regular software updates
B. Strong encryption protocols
C. Weak password policies
D. Employee training programs (2 marks)
37. Which one of the following is **NOT** a logical security control measure?
A. Firewalls
B. Encryption
C. Intrusion Detection Systems (IDS)
D. Physical access controls (2 marks)
38. Which security measure entails checking systems for flaws and deploying updates quickly?
A. User education and awareness
B. Vulnerability management
C. Application security
D. Incident response planning (2 marks)
39. A set of rules or patterns that security systems use to identify and classify malicious activity is referred to as _____.
A. attack pattern
B. attack path
C. attack surface
D. attack signature (2 marks)
40. Which one of the following statements **BEST** describes the main purpose of a network testing plan?
A. To design the network topology
B. To ensure the reliability, security and performance of the network
C. To install network hardware
D. To monitor network traffic (2 marks)
41. Which one of the following is an example of a testing method used in a network testing plan?
A. Conducting vulnerability assessments
B. Installing antivirus software
C. Monitoring network traffic
D. Configuring firewalls (2 marks)
42. Which one of the following **BEST** describes an internal threat to an organisation's Network security posture?
A. Malware attacks from external hackers
B. Unauthorised access by a former employee
C. Distributed denial-of-service (DDoS) attacks
D. Natural disasters causing infrastructure damage (2 marks)

43. Hackers attempting to infiltrate an organisation's network from outside can be categorised as _____.
- A. internal threat
 - B. physical threat
 - C. cyber threat
 - D. environmental threat
- (2 marks)
44. Which one of the following consequences is posed by a ransomware attack?
- A. Employee misconduct
 - B. Physical damage to company property
 - C. Destruction of hardware components
 - D. Disruption of business operations
- (2 marks)
45. Which one of the following statements distinguishes pretexting from phishing?
- A. It primarily uses emails to deceive targets
 - B. It relies on exploiting software vulnerabilities
 - C. It uses technical tools to intercept data
 - D. It involves creating a fabricated identity
- (2 marks)
46. Which strategy of reverse social engineering entails conducting penetration testing to identify vulnerabilities within an organisation?
- A. Awareness Training
 - B. Counterintelligence
 - C. Behavioral Analysis
 - D. Mock Attacks
- (2 marks)
47. Which is the common method used to prevent unauthorised access to a wireless network?
- A. Implementing IP routing
 - B. Using MAC address filtering
 - C. Using HTTP Secure (HTTPS)
 - D. Performing data backups
- (2 marks)
48. Which type of malware is designed to spread from one infected machine to another?
- A. Trojan Horse
 - B. Spyware
 - C. Worm
 - D. Ransomware
- (2 marks)
49. Which one of the following is **NOT** usually included in a network security framework?
- A. Security Policies and Procedures
 - B. Network Monitoring Software
 - C. Encryption
 - D. Social Media Platforms
- (2 marks)
50. In the context of network setup, what is the primary objective of security audits and assessments?
- A. To provide remote access to the network
 - B. To enforce security policies and procedures
 - C. To identify and address security vulnerabilities
 - D. To increase network performance
- (2 marks)
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DIPLOMA IN COMPUTER NETWORKS AND SYSTEMS ADMINISTRATION (DCNSA)

LEVEL II

NETWORK OPERATING SYSTEMS

MONDAY: 22 April 2024. 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. The role responsible for centralising the management of identity and access in Windows Server is known as: (2 marks)
2. What is the term used to describe the middle tier of a three-tier client-server architecture? (2 marks)
3. What is the name of a network operating system that maintains a centralised database of user accounts, group memberships and networked devices, making administration and resource access easier? (2 marks)
4. A type of Network Operating System (NOS) where in the network is controlled centrally is referred to as: (2 marks)
5. Write down the Windows server role which is responsible for providing certificate services including digital certificate creation and maintenance. (2 marks)
6. State the hierarchical directory structure that allows logical and structured approach to store and retrieve information with the root directory and subdirectories branching out from it. (2 marks)
7. State the name of the command used to prepare a file system for usage on a Windows operating system-based storage medium, such as a USB drive, hard disk or other storage device. (2 marks)
8. During booting, the primary partition containing the operating system and marked as active is referred to as: (2 marks)
9. In the context of Network Operating system, how many primary partitions exists in a conventional Master Boot Record (MBR)? (2 marks)
10. During installation, the component that controls how the underlying hardware and the way Network Operating system communicates is referred to as: (2 marks)
11. What is the name given to installation technique that enables the Network operating system to be installed simultaneously on several computers by the administrator from a single location? (2 marks)
12. A feature in network operating system that allows administrators to define and manage system settings for users and computers within an Active Directory environment is known as: (2 marks)

13. Which configuration setting present in many operating systems governs how the graphical user interface (GUI) looks and functions? (2 marks)
14. Which feature of Active Directory Certificate Services (ADCS) allows non-Windows devices like routers, switches and network appliances to get digital certificates for secure network communication? (2 marks)
15. What should be considered while selecting a network operating system in terms of compatibility? (2 marks)
16. What is the term used to describe a network's ability to prioritise particular types of traffic, ensuring that key applications receive the resources they require while being unaffected by non-essential traffic? (2 marks)
17. A security component in a network operating system environment designed to protect a network by monitoring and controlling incoming and outgoing traffic is known as: (2 marks)
18. The process of dividing a disk into sectors that the disk controller can read and write, before a disk can store data is known as: (2 marks)
19. What is the term used to describe a logical grouping of network objects like people, computers and devices that share a common directory database? (2 marks)
20. Which type of networking technology allows sites from two networking operating systems to connect securely and encrypted through the internet? (2 marks)

SECTION II (60 MARKS)

Create a word processing document named “Question 21” and use it to save your answers to questions (a) to (f) below.

21. In a network context, a file server is a type of server role that is in charge of organising, controlling and granting access to files and folders.
 - (a) Configure file services as a server role. (4 marks)
 - (b) Enable group policy management feature. (2 marks)
 - (c) Display the disk, volume and storage pool. (2 marks)
 - (d) Display Windows Update Services (WSUS) Content Properties. (2 marks)
 - (e) Using WSUS display the performance alert threshold for CPU usage and memory. (6 marks)
 - (f) Using system configuration tool, enable Microsoft iSCSI target server service. (4 marks)

Save “Question 21” document and upload.

(Total: 20 marks)

22. Create a word processing document named “Question 22” and use it to save your answers to questions (a) to (e) below.

Using local security policy settings of your server manager enable the following:

- (a) Limit with default settings of local account use of blank passwords to console logon only. (3 marks)
- (b) Enable Require domain controller authentication to unlock workstation. (3 marks)
- (c) Enable temporary state of networks that are in the process of being identified to private. (4 marks)
- (d) State the number logon attempts that causes a user account to be locked out to be 3. (4 marks)
- (e) Configure the firewall to be in a position to block inbound connection and allow outbound connections. (6 marks)

Save “Question 22” document and upload.

(Total: 20 marks)

23. Create a word processing document named “Question 23” and use it to save your answers to questions (a) to (e) below.

PowerShell is a cross-platform task automation system consisting of a command-line shell, a scripting language and a configuration management framework. Use PowerShell to perform the following:

- (a) Use appropriate command utility to display network connection profiles on the system. (4 marks)
- (b) Use appropriate command utility to retrieve information about IP addresses assigned to network Interfaces. (4 marks)
- (c) Use appropriate command utility to display retrieves DNS server addresses configured on the system. (4 marks)
- (d) Use appropriate command utility to retrieve information about the firewall profiles on the system. (4 marks)
- (e) Use appropriate command utility to retrieve information about active TCP connections on the system. (4 marks)

Save “Question 23” document and upload.

(Total: 20 marks)

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DIPLOMA IN COMPUTER NETWORKS AND SYSTEMS ADMINISTRATION (DCNSA)

LEVEL II

NETWORK OPERATING SYSTEMS

MONDAY: 4 December 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. State the types of drives appropriate in a network operating system environment because of their speed, dependability, durability and energy efficiency for applications demanding high-speed access, decreased latency and enhanced reliability: (2 marks)
2. State the peer-to-peer (P2P) network feature which ensures that users manage their own resources, determine which resources to share and regulates who gets access to their resources. (2 marks)
3. The network operating system utility primarily used to check the integrity of a storage device's file system is known as: (2 marks)
4. The type of network operating system that lets users share network resources saved in a common, accessible location and where all devices are treated equally in terms of functionality is known as: (2 marks)
5. What is the name of the feature that improves the security of system limiting application software to standard user privileges until an administrator authorises an increase or elevation. (2 marks)
6. The process of installing and configuring software on a computer or device without the assistance of a graphical user interface (GUI), physical monitor, keyboard and mouse is known as: (2 marks)
7. State the type feature of network operating system that allows users to collaborate and work together more efficiently and also helps to reduce cost by allowing multiple users to share expensive resources. (2 marks)
8. State the policy type that allows Active Directory to guard against brute force attacks by blocking an account after a certain number of failed login attempts? (2 marks)
9. What are the lightweight commands that perform specific actions or operations within the PowerShell environment? (2 marks)
10. When using Active Directory, state the containers that are used to represent an organisation's hierarchical structure, such as departments, teams or geographical locations. (2 marks)
11. A distributed data repository with a subset of properties for all objects in the forest is referred to as: (2 marks)

12. Which computer configuration allows you to install and operate numerous operating systems on a single computer or device and is beneficial for a variety of tasks such as testing alternative operating systems, running older software or separating work and personal environments? (2 marks)
13. A directory that contains the files required to install an operating system on a computer over the network is known as: (2 marks)
14. In the event that something goes wrong during the installation or upgrade process, which method of a software installation is utilised to provide an organised and documented plan for reverting to the prior state or version of a system? (2 marks)
15. In network operating systems and settings such as Active Directory, which security model is utilised to implement strict access control restrictions based on security labels and clearances? (2 marks)
16. To enable certain network tasks and user authentication, what is the name of the network operating system that normally provides such features like web servers, email servers and Active Directory? (2 marks)
17. Which software applications and utilities are used to assist network administrators and IT professionals in ensuring that networks run smoothly, provide a positive user experience and quickly discover and resolve issues? (2 marks)
18. Which users in a network operating system often refer to individuals or accounts having greater control and access to various resources, configurations and settings than normal or standard users? (2 marks)
19. State the command utility which is used to join a machine to a domain and is specifically built for administering Active Directory domains and trusts. (2 marks)
20. The process of enhancing a server's performance, capacity and capabilities in a computer network or data center is referred to as: (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 "Firewall" and use it to save your answers to questions (a) to (e) below:

Proper configuration of firewall is crucial for securing network operating system and controlling traffic based on an organisation's needs and security policies.

- (a) Open windows defender firewall with advanced security settings and display the following active Firewall Rules. (2 marks)
- (b) Customise the outbound rule for email and account properties on local area network and remote access only. (4 marks)
- (c) Allow edge traversal for windows remote management (HTTP-In) properties. (4 marks)
- (d) Create a connection Rule named LAN - Authentication to Authenticate your computer to the gateway with appropriate Certificate Authority? (6 marks)
- (e) Customise the logging settings for domain profile to allow dropped packets and successful connections. (4 marks)

Save "Firewall" document and upload.

(Total: 20 marks)

22. Create a word processing document named “Group policy” and use it to save your answers to questions (a) to (d) below:

Group Policy allows a system administrator to centrally manage and apply various settings and preferences to user and computer objects in Active Directory domain.

- (a) Configure the network operating system to automatically connect to suggested open hotspot, network shared by contacts and to hotspot offering paid services. (4 marks)
- (b) Configure the network operating system to let applications access cellular data. (4 marks)
- (c) Open policy-based quality of service and enable Inbound TCP throughput to maximum. (6 marks)
- (d) Configure user permissions to allow users to change the network name, location and icon on a connected network. (6 marks)

Save “Group policy” document and upload. **(Total: 20 marks)**

23. Create a word processing-document named “NPAS” and use it to save your answers to questions (a) to (e) below.

Network policy and access services (NPAS) plays a crucial role in managing network access and enforcing network policies within your organisation's infrastructure.

- (a) Open server manager in your network operating system and install Network policy and Access Services. (6 marks)
- (b) Configure NPAS to log accounting data to a local text file on a local computer. (4 marks)
- (c) Within NPAS, display Network Interface Card teaming for the server. (4 marks)
- (d) Display Network operating system server logs in relation to Network policy and access services. (4 marks)
- (e) Display the way a user can shutdown a server from NPAS. (2 marks)

Save “Network policy” document and upload. **(Total: 20 marks)**

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DIPLOMA IN COMPUTER NETWORKS AND SYSTEMS ADMINISTRATION (DCNSA)

LEVEL II

NETWORK OPERATING SYSTEMS

MONDAY: 21 August 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. The network operating system feature that allows the network administrator to configure the server to assign IP addresses to clients on the network is called _____. (2 marks)
2. What is the name of a small program responsible for locating and loading the network operating system? (2 marks)
3. The type of network operating system that provides users with access to resources through a server is called _____. (2 marks)
4. What is the name of a network operating system feature that improves the security of system limiting application software to standard user privileges until an administrator authorises an increase or elevation? (2 marks)
5. Active Directory (AD) groups simplify the administration of user accounts or computers in different AD domains by collating them and assigning ubiquitous access rights. How many types of groups are available in Active Directory? (2 marks)
6. The active directory service that keeps track of domain members, verifies their credentials and establishes their access privileges is called? (2 marks)
7. What is the name of an image of the system configuration and settings that helps in restoring the system to an earlier date when the system was running perfectly? (2 marks)
8. Rana, a newly hired intern at an IT consulting company logs into Active Directory on a workstation and then discovers user home directory does not redirect to a network share on a file server. State the command which could be used to verify the group policy settings? (2 marks)
9. A network technician was preparing to install a Network Operating System (NOS) in a workstation. The process that prepares a file system in a partition for files to be stored is known as _____. (2 marks)
10. The activity that determines the hardware that servers require is referred to as _____. (2 marks)
11. State the term that describes the type of installation used to install a network operating system on a brand new server. (2 marks)

12. The process of dividing a disk into one or more regions to ensure better data organisation is called _____ . (2 marks)
13. A network security device that monitors, filters incoming, and outgoing network traffic based on an organisation's previously established security policies is called _____ . (2 marks)
14. The network operating that distributes traffic across several servers by using the TCP/IP networking protocol is referred to as _____ . (2 marks)
15. The term that best describes the hardware and software that enables network connectivity and communication between users, devices and applications is called _____ . (2 marks)
16. An object-oriented automation engine and scripting language with an interactive command-line shell that was developed to help IT professionals configure systems and automate network administrative tasks is known as _____ . (2 marks)
17. Name the term that describes the digital ecosystem that allows devices and users to communicate and share data in a network. (2 marks)
18. What is the name given to separate form of volume management that allows volumes to have noncontiguous extents on one or more physical disks? (2 marks)
19. The use of unique biological features for digital authentication and access control is known as _____ . (2 marks)
20. The universal tool used to reboot or repair a system or boot a live system from a USB is referred to as _____ . (2 marks)

SECTION II (60 MARKS)

INSTRUCTIONS

Required Resources:

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

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

Task Manager provides information about computer performance and running software such as processes, CPU and GPU load, commit charge, I/O details, logged-in users, and Windows services.

Using task manager of the network operating system perform the following:

- (a) Open performance tab and display the following:
- (i) CPU Utilisation of the server
 - (ii) Memory Usage
 - (iii) Ethernet Throughput
- (b) Open Resource monitor and display the current TCP connections with listening ports. (6 marks)
- (c) Display the user of the system with the running process. (4 marks)
- (d) Display process ID with the status. (4 marks)

Save "Task manager" document and upload.

(Total: 20 marks)

22. Create a word processing document named “Environment variable” and use it to save your answers to questions (a) to (d) below.

Use the network operating system to display the following:

- (a) The environment variables for your Network operating system. (6 marks)
- (b) The window for adjusting the settings for processor scheduling to allocate resources to programs. (6 marks)
- (c) Active directory site and services console. (4 marks)
- (d) Active directory users and computers console document. (4 marks)

Save “Environment variable” and upload.

(Total: 20 marks)

23. Create a word processing document known as “Quota Management” and use it to save your answers to questions (a) to (e) below.

Using the network operating system perform the following:

- (a) Display procedure for compressing drive to save disk space of your Network operating system. (4 marks)
- (b) Display tools for error checking and Optimizing/Defragmenting the drive. (4 marks)
- (c) Enable Quota Management for the disk. (4 marks)
- (d) Display Windows Management Instrumentation control properties for security. (4 marks)
- (e) Display the window for turning on Active Directory Lightweight Directory Services. (4 marks)

Save “Quota Management” document and upload.

(Total: 20 marks)

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DIPLOMA IN COMPUTER NETWORKS AND SYSTEMS ADMINISTRATION (DCNSA)

LEVEL II

NETWORK OPERATING SYSTEMS

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. What is the name of the default terminal server application in Windows Server? (2 marks)
2. The task performed by the Central Processing Unit that decides the way and order in which processes should be executed is known as: (2 marks)
3. The name of the group that provides users with access to network resources and to assign permissions to control access to these resources is known as: (2 marks)
4. Raid ensures data is copied onto multiple drives for faster throughput, error correction, fault tolerance and improved mean time between failures. Which type of RAID can be used to configure two drives for maximum performance? (2 marks)
5. Multitasking operating system (OS) can work on more than one task at a time by switching between the tasks very rapidly. Which part of an operating system is the active program running but not visible to the user? (2 marks)
6. A cross-platform command-line shell designed for system administration such as automation and configuration is known as: (2 marks)
7. A level of security where only digitally signed programs from trusted publishers are allowed to run, and all user-installed programs are blocked is known as: (2 marks)
8. Which is the service that is used to transfer files between computers on a network? (2 marks)
9. What is the name given to a client-server interface that allows computers in a network to be booted from the server on the network before deploying the obtained PC image in local and remote offices? (2 marks)
10. Kennedy wishes to install an operating system into his computer and maintain his files. Which type of operating system installation preserves system settings, personal files, and applications from an older operating system version? (2 marks)
11. What is the name of the logical drive that is created to create more than one physical part of the same size? (2 marks)
12. Which component of a network operating system uses both hardware and software to enable a computer to compensate for physical memory shortages, temporarily transferring data from random access memory (RAM) to disk storage? (2 marks)

13. Which specification of a software program is used by operating system to communicate and provide a lightweight BIOS alternative that uses only the information needed to launch the OS boot process? (2 marks)
14. Which is the unique identifiers assigned to each user or group in Windows Server that controls access to resources on the network? (2 marks)
15. A tool used by administrators in a network operating system to examine the way programs running on their computers affect performance in real time is known as: (2 marks)
16. What is the name given to a logical construct used by Active Directory Domain Services (ADDS) to group one or more domains? (2 marks)
17. The process of creating multiple virtual instances of an operating system on a single physical server is called: (2 marks)
18. What is the name given to the process of removing a user sensitive data a set of data in an active directory by randomising data using various data shuffling and manipulation techniques? (2 marks)
19. Boot Configuration Data (BCD) files provide a store that is used to describe boot applications and boot application settings. Which command line tool is used to display and modify the boot configuration datastore? (2 marks)
20. Which storage mechanism is used to retrieve processes from the secondary storage into the main memory? (2 marks)

SECTION II (60 MARKS)

INSTRUCTIONS

Install Oracle virtual box and Window server image to your computer and answer the following questions:

Required Resources:

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

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

A web server is software and hardware that uses HTTP (Hypertext Transfer Protocol) and other protocols to respond to client requests made over the World Wide Web.

- (a) Add appropriate web server. Capture a screen shot. (6 marks)
- (b) Open a web browser and type 127.0.0.1 at the address bar. Capture the image. (2 marks)
- (c) Locate the wwwroot file and capture the screen shot of its contents: (2 marks)
- (d) In the folder wwwroot, create a file index.html and key in the following text. Capture an appropriate screen shot: (5 marks)
- (e) Reopen a web browser and type 127.0.0.1 at the address bar. Capture the screen shot: (5 marks)

Upload “Question 21” document.

(Total: 20 marks)

22. Create a word document named “Question 22” and use it to save your answers to questions (a) to (c):
- (a) Display the number of processor and maximum memory used by your Network Operating System. Capture the screen shot. (4 marks)
 - (b) Using appropriate tool activate the following services.
 - (i) Network connectivity assistant. Capture the screen shot. (3 marks)
 - (ii) Network connections. Capture a suitable screen shot. (3 marks)
 - (iii) Network list service. Capture a suitable screen shot. (3 marks)
 - (iv) Network setup. Capture a suitable screen shot. (3 marks)
 - (c) Display in-depth record of events related to the system of your Network operating system. Capture the screen shot’ . (4 marks)
- Upload “Question 22” document.

(Total: 20 marks)

23. Create a word document known as “Question 23” and use it to save your answers to questions (a) to (e).

Kerberos is the default authentication policy used by Network Operating system to authenticate computers and users on a network.

- (a) Enable enforcement of user logon restrictions. Capture a screen shot. (4 marks)
- (b) Set maximum lifetime for service ticket to 10hrs. Capture a screen shot. (4 marks)
- (c) Set maximum lifetime for user ticket to 10hrs. Capture a screen shot. (4 marks)
- (d) Set maximum lifetime for user renewal to 7 days. Capture a screen shot. (4 marks)
- (e) Set maximum tolerance for computer clock synchronization 5 minutes. Capture a screen shot. (4 marks)

Upload “Question 23” document.

(Total: 20 marks)

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DIPLOMA IN COMPUTER NETWORKS AND SYSTEMS ADMINISTRATION (DCNSA)

LEVEL II

NETWORK OPERATING SYSTEMS

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. An institution has a policy in place to undertake a full backup every Sunday. Every other day of the week, staff members are required to back up only the changes since the last full backup. State the name of the backup type to be used for Thursday. (2 marks)
2. The installation feature in network operating system that provides a minimal environment for running specific server roles such as reduction of the maintenance and management requirements is known as: (2 marks)
3. What is name given to the network operating system tool intended to duplicate, test and deliver new installation based on an established installation? (2 marks)
4. A consortium that has been operational for a good number of years have requested you to setup 10 servers and 20 workstations. Windows deployment services are used whenever a new workstation is setup. Advise on the tool to be used to automate installation with little human interaction. (2 marks)
5. Group policy has been used to manage users and computers in Active Directory Domain Services (AD DS) running on network operating system. State what you would use to view the effect of applied group policy on individual computer. (2 marks)
6. A user account is an identity created for a person in a computer or computing system. You are required to grant a set of users permissions to a specific folder. State the group in which the user accounts should be placed. (2 marks)
7. A computer network for a Law firm contains Active Directory domain named lawfirm.com. The Active Directory Recycle bin is enabled for lawfirm.com. A support technician accidentally deletes a user account named learnedfriend1. You need to restore the learnedfriend1 account. Write down the appropriate tool that should be used. (2 marks)
8. State the command utility that provides management facilities for Active Directory Domain Services (AD DS) and Active Directory Lightweight Directory Services (AD LDS). (2 marks)
9. State the name given to a security feature in Network operating system to prevent unauthorised changes to the operating system. (2 marks)

10. Write down the protocol that uses an arbitrary authentication method, such as certificates, smart cards, or credentials on network operating system. (2 marks)
11. Which settings of a Network operating system (NOS) can be configured on a log file server for data collected to ensure the contents are automatically deleted when the file reaches 100MB in size? (2 marks)
12. An in-depth analysis on a network showed it contained a Hyper-V host named Server1 that hosts 20 virtual machines. You need to view the amount of memory resources and processor resources each virtual machine uses currently. Which tool can be used on the server to view the amount of memory and processor resources used by each of the virtual machine? (2 marks)
13. Which feature that is used to control the types of files users can save and generate notifications when users attempt to save unauthorised files in a network operating system? (2 marks)
14. State the tool that could be used to track all connections to shared resources on a Network operating system? (2 marks)
15. The policy setting which when enabled ensures file access, modification and deletion can be tracked in the event log is referred to as? (2 marks)
16. Indicate the tool in network operating system that can be used by administrators to examine the way system programs are running and their effect on performance. (2 marks)
17. The administrative tool which provides a view of all organisational units, domains and sites across an enterprise is called _____ . (2 marks)
18. Which command utility can be used to create Network Access Protection event to trace log files in client computer? (2 marks)
19. What is the name given to the tool used to mount a Network operating system image from Virtual Hard Disk (VHD) file? (2 marks)
20. State the name of the graphical user interface (GUI) tool with scope pane on left used to navigate Active Directory namespace. (2 marks)

SECTION II (60 MARKS)

INSTRUCTIONS

Install Oracle virtual box and Window server image to your computer and answer the following questions:

Required Resources:

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

Create a word processing document named “Task Manager” and use it to save your answers to questions (a) to (e).

21. Task manager, which is regarded as a system monitor is very common with the Network operating system. It assists in giving information about computer performance and running software.

Required:

Using task manager of your Network operating system:

- (a) Capture a screenshot of statuses that are running and stopped. (4 marks)
- (b) Display the current CPU utilisation. (3 marks)
- (c) Display the streams of instructions currently running. (3 marks)
- (d) Click on the memory chart and display the following:
 - (i) Total physical memory (MB). (2 marks)
 - (ii) Total available memory. (2 marks)

- (e) Click on the Ethernet chart and display the following:
 - (i) Link speed. (2 marks)
 - (ii) Network Connection. (2 marks)
 - (iii) IPv4 address in use. (2 marks)

Capture and save screenshots to show how you have performed the above task.

Upload “Task Manager” document.

(Total: 20 marks)

22. Create a word processing document named “Memory Usage” and use it to save your answers to questions (a) to (e) below:

With the help of task manager, perform the following:

- (a) Click on Memory heading and state the effect exhibited on the columns. (4 marks)
- (b) Display the memory usage to be in percentage values. (4 marks)
- (c) State the way memory usage in Percent values could be useful to a system administrator (2 marks)
- (d) Display list of the usernames which are logged into the system. (4 marks)
- (e) Display the tabs that perform the following:
 - (i) List the processes that are started automatically. (2 marks)
 - (ii) Lists the historical resources usage (2 marks)
 - (iii) Displays process information such as process ID (PID), status, and memory utilisation. (2 marks)

Upload “Memory usage” document.

(Total: 20 marks)

23. Create a word processing document named “Virtual memory” and use it to save answers to questions (a) to (d) below:

Virtual memory is a common technique used in Network operating systems. It is used on both hardware and software to enable a computer compensate for physical memory shortages, temporarily transferring data from random access memory (RAM) to disk storage.

Required:

- (a) List current size of the virtual memory (paging file) used by your network operating system. (4 marks)
- (b) Display the Drive [Volume Label] that contains the paging file. (6 marks)
- (c) Capture a screenshot to illustrate the way you can use Disk Management to create a second partition with at least 2GB. (6 marks)
- (d) Capture a screenshot showing configuration of the virtual memory using the recommended file size in the Initial size (MB) field and file size in the Maximum size (MB) field. (4 marks)

Upload “Virtual memory” document.

(Total: 20 marks)

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DIPLOMA IN COMPUTER NETWORKS AND SYSTEM ADMINISTRATION (DCNSA)

LEVEL II

NETWORK OPERATING SYSTEMS

MONDAY: 1 August 2022. Afternoon paper.

Time Allowed: 3 hours.

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

SECTION I

1. A _____ is a computer program or device that provides a service to another computer program and its user, also known as the client. (2 marks)
2. _____Manages the Virtual Machines and provides access to host computer resources . (2 marks)
3. What is the mode of operation where two or more processors in an operating system simultaneously process two or more different portions of the same program? (2 marks)
4. A collection of active directory objects such as users and computers are called a _____? (2 marks)
5. _____comprises hardware and software, systems and devices, and it enables computing and communication between users, services, applications and processes. (2 marks)
6. A System Administrator was planning to deploy a Nano Server to function as a Hyper-V server for Finance network. Which parameter would you advise to include on the nano server image command line? (2 marks)
7. Virtualisation has become an important tool in network administration. Which advantage of Virtualisation is attributed to deployment of new virtual servers that can be accomplished in hours, rather than the days needed to approve, obtain, and install hardware for a new physical server? (2 marks)
8. _____enables administrators to manage permissions and access to network resources and stores data as objects. (2 marks)
9. _____ is a collection of policy settings available to define the configuration or behavior of users or Computers. (2 marks)
10. Which of the role provided by a windows server is seen as an inhibiting use of IPV6 in networks? (2 marks)
11. Which command utility in command line interface (CLI) can be used to view computers IP address? (2 marks)
12. _____ is a server computer that responds to security authentication requests such as logging within a Windows domain. (2 marks)
13. A server role is a set of software programs that, when they are installed and properly configured, lets a computer perform a specific function for multiple users or other computers within a network. What server role must be installed on a server in order for it to be considered a domain controller? (2 marks)

14. Windows_____ is setting the appearance of the desktop and apps make it look better and reflect your personal likes. (2 marks)
15. Assuming you have been tasked by your immediate supervisor to create a new user account on Network operating system using the command prompt. Which command would you use? (2 marks)
16. You have recently been hired as administrator for a small pharmaceutical company with four servers. You have one file server named X that runs Windows Server 2016. You have a junior administrator who needs to do backups on this server. You need to ensure that the junior admin can use Windows Server Backup to create a complete backup of X. What should you configure to allow the junior admin to do the backups? (2 marks)
17. _____ is an Active Directory object that represents a replication connection from a source domain controller to a destination domain controller. (2 marks)
18. Which active directory service is responsible for establishing the replication topology and ensuring that all domain controllers are kept up-to-date? (2 marks)
19. _____ is a communication protocol that Microsoft created for providing shared access to files and printers across nodes on a network. (2 marks)
20. Which DOS command would you use to immediately restart a server whose graphical user interface has failed?

SECTION II

21. Windows Server is a group of operating systems that supports enterprise-level management, data storage, applications and communications.

Install oracle virtual box and Window server image to your Linux or windows computer and answer the following questions:

Required Resources

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

Create a word processing document named Question 21 and use it to save answers to questions (i) to (v).

- (i) Capture a screenshot displaying server based operating system Dashboard (4 marks)
- (ii) Capture a screenshot displaying local server properties (4 marks)
- (iii) Display Routed Protocol configuration details (4 marks)
- (iv) Capture a screenshot displaying add roles and features wizard (4 marks)
- (v) Configure Role based installation (4 marks)

Upload Question 21.

(Total: 20 marks)

22. Create a word processor document named Question 22 and use it to save answers to questions (i) to (iv) below.

- (i) Capture a screenshot displaying the active directory domain services window configuration. (6 marks)
- (ii) Create user account objects of Active Directory Users using the correct snap-in console (4 marks)
- (iii) Configure server domain name to be "togetherasone" (6 marks)
- (iv) Capture a screenshot restricting logon of users at specific times and days. (4 marks)

Upload Question 22 document.

(Total: 20 marks)

23. Create a word processor document named Question 23 and use it to save answers to questions (i) to (iv) below. Set the following settings on windows server:

- (i) Enforce password history to 5 times
- (ii) Maximum password age 30 days
- (iii) Minimum password length 5 characters
- (iv) Password complexity requirements:

Disable the following settings:

- Contain at least one character, either uppercase (A a Z), lowercase (a - z)
- a numeric digit (0 to 9)
- non-alphabetic characters such as \$% #).

Upload Question 23.

(Total: 20 marks)

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