Ofqual QAN	610/6138/4
Quartz ID	2335
Qualification	Level 2 Diploma in Computing

Unit ID	2337
Assessment	Computer Systems and Networking
Assessment Type	Local Examination
Assessment Cycle	Sample Examination

Marking Scheme

This marking scheme has been prepared as a **guide only** to markers. This is not a set of model answers, or the exclusive answers to the questions, and there will frequently be alternative responses which will provide a valid answer. Markers are advised that, unless a question specifies that an answer be provided in a particular form, then an answer that is correct (factually or in practical terms) **must** be given the available marks.

If there is doubt as to the correctness of an answer, the relevant NCC Education materials should be the first authority.

SECTION A - Multiple Choice Question
Circle ONE (1) correct answer from A, B, C, or D for each question.
Each question is worth 1 mark.

Question 1

How do the CPU and RAM interact in a computer system?

A The CPU stores data in RAM permanently

B RAM sends instructions to the CPU for execution

C The CPU fetches data and instructions from RAM to process them

D RAM controls the speed of the CPU

1 mark

Mark Scheme
C - The CPU fetches data and instructions from RAM to process them

Question 2

Which of the following is an example of data retrieval from a computer system?

A Typing a document using a keyboard

B Viewing a photo stored on the hard drive

C Scanning a document into the computer

D Saving a file to a USB drive

1 mark

Mark Scheme
B - Viewing a photo stored on the hard drive

Question 3

What is the term for the smallest unit of data in a computer?

A Byte

B Bit

C Pixel

D Hertz

1 mark

Mark Scheme
B - Bit

Marks

Question 4

What is the binary equivalent of the denary number 13?

A 1100 **B** 1110

C 1011 **D** 1101

1 mark

Mark Scheme
D - 1101

Question 5

Which of the following best describes the use of hexadecimal in computing?

A It is used to store sound files **B** It is used to perform arithmetic operations

C It is used to represent large binary numbers more compactly **D** It is used to display images

1 mark

Mark Scheme
C - It is used to represent large binary numbers more compactly

Question 6

A text file contains 2,000 characters. If each character takes 1 byte, how much storage is required?

A 2 kilobytes **B** 2 megabytes

C 2 gigabytes **D** 2 terabytes

1 mark

Mark Scheme
A - 2 kilobytes

Question 7

Which type of storage typically offers the fastest data access speeds?

A DVD **B** Hard Disk Drive (HDD)

C Solid State Drive (SSD) **D** USB Flash Drive

1 mark

Mark Scheme
C - Solid State Drive (SSD)

Marks

Question 8

What is the first step when installing a new operating system on a computer?

A Connect to the internet

B Format the storage drive

C Install antivirus software

D Open a word processor

1 mark

Mark Scheme
B - Format the storage drive

Question 9

What is the safest way to clean dust from inside a computer?

A Use a wet cloth

B Blow into it with your mouth

C Use a can of compressed air

D Shake the computer gently

1 mark

Mark Scheme
C - Use a can of compressed air

Question 10

What is the purpose of assigning an IP address to a network device?

A To increase internet speed

B To install software updates

C To connect to Bluetooth devices

D To identify the device on a network

1 mark

Mark Scheme
D - To identify the device on a network

Question 11

A user reports that they cannot access any websites, but other users on the same network can. What is the most likely cause?

A The router is offline

B The user's monitor is broken

C The user's network adapter is disabled or misconfigured

D The internet is down for everyone

1 mark

Mark Scheme
C - The user's network adapter is disabled or misconfigured

Marks

Question 12

Which of the following tools is most appropriate for checking physical connectivity issues?

A Cable tester

B Task Manager

C Ping command

D IP scanner

1 mark

Mark Scheme
A - Cable tester

Question 13

Which of the following is an example of a Personal Area Network (PAN)?

A A school's computer lab network

B A city-wide public Wi-Fi system

C A Bluetooth connection between a phone and wireless earbuds

D A company's internal email system

1 mark

Mark Scheme
C - A Bluetooth connection between a phone and wireless earbuds

Question 14

Why are network protocols important in communication between devices?

A They increase the speed of the internet

B They ensure devices can understand and interpret data correctly

C They reduce the size of data packets

D They prevent devices from overheating

1 mark

Mark Scheme
B - They ensure devices can understand and interpret data correctly

Question 15

Which OSI layer is responsible for end-to-end communication and error recovery?

A Application Layer

B Data Link Layer

C Network Layer

D Transport Layer

1 mark

Mark Scheme
D Transport Layer

Marks

Question 16

Which of the following best describes the difference between TCP and UDP?

A TCP is faster but less reliable than UDP

B UDP is used for web browsing, while TCP is used for video streaming

C TCP ensures reliable delivery of data, while UDP is faster but does not guarantee delivery

D UDP encrypts data, while TCP does not

1 mark

Mark Scheme
C - TCP ensures reliable delivery of data, while UDP is faster but does not guarantee delivery

Question 17

What does the Domain Name System (DNS) do?

A It encrypts data for secure communication

B It converts IP addresses into MAC addresses

C It translates domain names into IP addresses

D It manages internet traffic speed

1 mark

Mark Scheme
C - It translates domain names into IP addresses

Question 18

Which of the following is a good strategy to improve both network security?

A Allowing all incoming traffic

B Regularly updating software

C Using public Wi-Fi for sensitive tasks

D Disabling encryption to speed up data transfer

1 mark

Mark Scheme
B - Regularly updating software

Marks

Question 19

Which of the following is an example of authentication in network security?

A Encrypting a file

B Using a username and password to log in

C Compressing data before sending

D Installing a printer driver

1 mark

Mark Scheme
B - Using a username and password to log in

Question 20

What does a Denial of Service (DoS) attack do?

A Overloads a system or network to make it unavailable

B Encrypts files and demands payment

C Sends spam emails to users

D Steals login credentials through fake websites

1 mark

Mark Scheme
A - Overloads a system or network to make it unavailable

Question 21

Where is a firewall typically placed in a network?

A Between the keyboard and the monitor

B Between the user and the internet

C Inside the printer

D On the cloud storage server only

1 mark

Mark Scheme
B - Between the user and the internet

Question 22

What is a key feature of FIDO passkeys?

A They require users to remember complex passwords

B They use biometric or device-based authentication without passwords

C They rely on email verification only

D They are only used for Wi-Fi access

1 mark

Mark Scheme
B - They use biometric or device-based authentication without passwords

Marks

Question 23

How does Multi-Factor Authentication (MFA) improve security?

A It allows users to log in faster

B It requires users to use multiple devices at once

C It adds an extra layer of verification beyond just a password

D It automatically updates all software

1 mark

Mark Scheme
C - It adds an extra layer of verification beyond just a password

Question 24

What is the purpose of ethical hacking in network security?

A To test and improve security systems legally

B To steal data from competitors

C To create viruses for testing

D To bypass firewalls for fun

1 mark

Mark Scheme
A - To test and improve security systems legally

Question 25

What is the main purpose of blockchain technology?

A To store large files on the cloud

B To create websites

C To record transactions in a secure, decentralised way

D To improve Wi-Fi speed

1 mark

Mark Scheme
C - To record transactions in a secure, decentralised way

Marks

Question 26

What is a key benefit of using edge computing in network architecture?

A It increases the cost of data processing

B It centralises all data in one location

C It eliminates the need for security protocols

D It reduces latency by processing data closer to the source

1 mark

Mark Scheme
D - It reduces latency by processing data closer to the source

Question 27

Which of the following correctly matches an OS component with its function?

A Kernel – displays icons and windows

B System libraries – manage hardware directly

C User interface – allows users to interact with the system

D File system – runs background processes

1 mark

Mark Scheme
C - User interface – allows users to interact with the system

Question 28

What does multitasking mean in the context of operating systems?

A Running multiple operating systems on one computer

B The ability of an OS to run multiple processes simultaneously

C Performing multiple tasks manually at the same time

D Using multiple monitors with one computer

1 mark

Mark Scheme
B - The ability of an OS to run multiple processes simultaneously

Marks

Question 29

Which type of memory does the operating system mainly use to run programs and store data temporarily?

A Virtual memory

B Cache

C Hard drive

D RAM

1 mark

Mark Scheme
D - RAM

Question 30

In the Discretionary Access Control (DAC) model, who controls access to resources?

A The operating system

B The network administrator

C The resource owner

D The firewall

1 mark

Mark Scheme
C - The resource owner

End of paper

Learning Outcomes Matrix

Question	Learning Outcomes assessed
1	1
2	1
3	1
4	1
5	1
6	1
7	1
8	1
9	2
10	2
11	2
12	2
13	2
14	3
15	3
16	3
17	3
18	3
19	4
20	4
21	4
22	4
23	4
24	4
25	5
26	5
27	6
28	6
29	6
30	6

Marks

Grade Descriptors

Learning Outcome	Fail	Pass	Merit	Distinction
Understand the core components and functions of computer systems, including how hardware, software, and networks work together to enable effective performance and communication.	Demonstrates lim ited or no understanding of the basic components of a computer system. Unable to explain how hardware, software, and networks function or interact.	Demonstrates a basic understanding of the main components of a computer system (e.g., CPU, RAM, storage, operating system, network devices). Can identify how hardware, software, and networks contribute to system performance and communication.	Demonstrates a clear and accurate understanding of the core components and their functions. Can explain how hardware, software, and networks work together to support system performance and communication.	Demonstrates a comprehensive and in-depth understanding of computer system components and their interdependence. Can analyse and evaluate how hardware, software, and networks interact to optimise performance and enable communication.
Develop practical problem-solving skills in managing and troubleshooting computer systems, storage, and networks, with an emphasis on operating systems and network protocols.	Demonstrates littl e or no ability to identify or resolve basic issues in computer systems, storage, or networks. Shows limited understanding of operating systems or network protocols. Unable to apply troubleshooting steps effectively.	Demonstrates a basic ability to identify and resolve common problems in computer systems, storage, or networks. Shows some understanding of operating systems and network protocols. Can follow simple troubleshooting procedures with guidance.	Demonstrates a clear and consistent ability to troubleshoot and manage a range of system, storage, and network issues. Shows a good understanding of how operating systems and network protocols function. Applies logical problem-solving steps effectively.	Demonstrates a high level of skill and independence in diagnosing and resolving complex issues in systems, storage, and networks. Shows a comprehensive understanding of operating systems and network protocols, including their configuration and interaction. Applies structure d, efficient, and well-reasoned approaches to troubleshooting.

Marks

Understand the types of networks, protocols, models, data transmission, addressing and recognise basic security measures to protect these systems.	Demonstrates lim ited or no understanding of network types, protocols, or models. Unable to explain how data is transmitted or how addressing works. Shows little awareness of basic security measures.	Demonstrates a basic understanding of different types of networks (e.g., LAN, WAN) and common protocols (e.g., HTTP, IP). Can identify basi c elements of data transmission and addressing (e.g., IP addresses). Shows some awareness of simple security measures (e.g., passwords, firewalls).	Demonstrates a clear understanding of network types, protocols, and communication models (e.g., OSI, TCP/IP). Can explain how data is transmitted and how addressing supports communication. Recognises and describes comm on security measures and their purposes.	Demonstrates a comprehensive and detailed understanding of network types, protocols, models, data transmission, and addressing. Can analyse how these components work together to enable secure and efficient communication. Explains security risks and appropriate mitigation strategies with insight.
Demonstrate an understanding of network security by identifying common cyber threats and vulnerabilities, selecting appropriate security tools and practices, and applying ethical and legal principles to safeguard digital systems and data.	Shows little or no understanding of cyber threats or vulnerabilities. Unable to identify or apply appropriate security tools or practices. Demonstrates lim ited awareness of ethical or legal responsibilities in protecting data.	Identifies basic cyber threats (e.g., malware, phishing) and common vulnerabilities. Can name and describe simple security tools (e.g., antivirus, firewalls) and practices (e.g., strong passwords). Shows some awareness of ethical and legal principles (e.g., data protection, privacy).	Clearly explains a range of cyber threats and vulnerabilities with relevant examples. Selects and justifies appropri ate security tools and practices for different scenarios. Demonstrates a good understanding of ethical and legal responsibilities in safeguarding systems and data.	Demonstrates a thorough understanding of cyber threats, vulnerabilities, and their impact on systems. Evaluates and applies effective security tools and best practices in context. Shows a strong grasp of ethical and legal principles, including real-world implications (e.g., GDPR, Computer Misuse Act).

Marks

Explore how emerging technologies, such as IoT, AI, 5G, and blockchain, are shaping the future of computing and networking, and how they may drive innovation and change in the industry.	Demonstrates little or no understanding of emerging technologies or their relevance to computing and networking. Unable to describe how technologies like IoT, AI, 5G, or blockchain function or impact the industry. Shows minimal awareness of innovation or future trends.	Demonstrates a basic understanding of emerging technologies and their general purpose. Can identify how technologies like IoT, AI, 5G, or blockchain are used in computing or networking. Shows some awareness of how these technologies may influence future developments.	Demonstrates a clear understanding of how emerging technologies function and interact with computing and networking systems. Can explain how emerging technologies are driving innovation and change in specific areas (e.g., smart homes, automation, faster connectivity). Shows good awareness of industry trends and potential impacts.	Demonstrates a comprehensive and insightful understanding of emerging technologies and their transformative role in computing and networking. Can analyse and evaluate the impact of IoT, AI, 5G, and blockchain on industry practices, innovation, and future developments. Shows strong awareness of current trends, ethical considerations, and potential challenges.
Understand the concept of operating systems, including their purpose, functions, components, and management of processes, memory, files, devices, and security.	Demonstrates limited or no understanding of operating systems. Unable to clearly explain the purpose or functions of operating systems. Key concepts such as memory, process, or file management are missing or incorrect.	Shows a basic understanding of the purpose and functions of operating systems. Can identify some components and describe simple management tasks (e.g., memory or file handling).	Demonstrates a good understanding of operating systems, including their main functions and components. Can explain how operating systems manage processes, memory, files, and devices with mostly accurate terminology.	Provides a thorough and insightful explanation of operating systems. Accurately describes all major functions and components, including detailed understanding of process scheduling, memory allocation, file systems, device drivers, and security mechanisms.