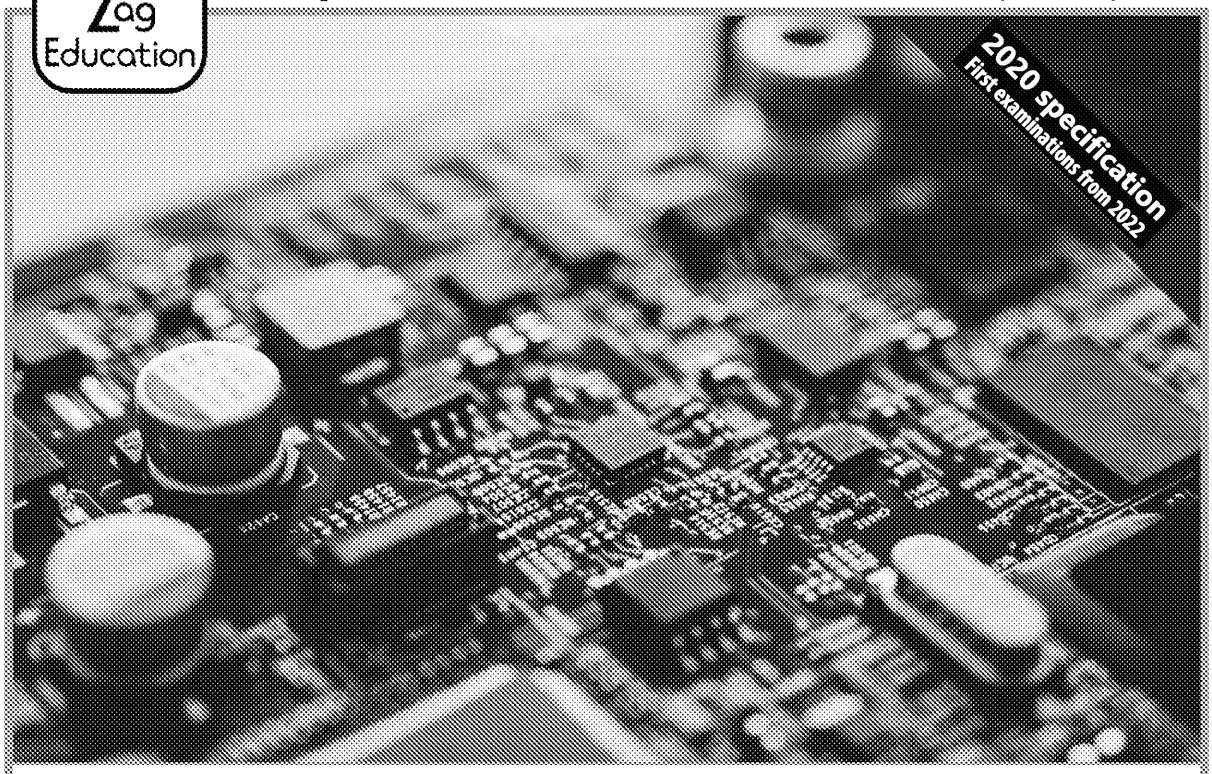
Zig Zag Education

Computer Science GCSE (9–1) | OCR | J277



Multiple Choice Questions

for OCR GCSE Computer Science (J277)

Component 1: Computer Systems

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Contents

Teacher's Introduction

This pack of multiple-choice questions has been produced specifically for use with the OCR GCSE Computer Science (J277) specification, for first teaching September 2020; first exams in 2022.

It contains 15 question banks covering the prescribed content for **Component 1: Computer Systems**. Each OCR specification topic is covered by 2 or more question banks, with each question bank covering a variety of concepts within that specification topic. By design, the question banks for a given topic are not mutually exclusive in the concepts that they cover; there is some overlap between them. This means that you do not need to issue all question banks for a given topic at the same time if you do not wish to; for example, you could set question bank [1] for a topic and then revisit question bank [2] to fill in any gaps and reinforce concepts at a later date.

Each tests consists of approximately 25 questions, each worth a single mark for simplicity. For the majority of questions, there is one correct answer, and where this is not the case, the question will explicitly state the number of correct answers needed to gain the mark. To aid student engagement and support different learning styles, there is a mixture of text-only questions and questions that are based on some given data, image or diagram.

The Answers section includes the answers in a concise grid format, to facilitate quick and easy marking, either by the teacher or the students themselves. There is also additional commentary for a many of the questions, to support understanding and potentially prompt further discussion.

Ian Dickinson, July 2021

1.1 Systems Architecture [1]

1 Where are data and instructions stored on a computing device?

- ❑ SSD dri
- ❑ CPU me
- ❑ ROM ©
- ❑ Hard Disk D ⓓ

2 The CPU is made up of several parts. What does ALU stand for?

- ❑ Addition Logic U Ⓐ
- ❑ Arithmetic Logic Unit Ⓑ
- ❑ Arithmetic Logical Unit ©
- ❑ Analogue Logic U

3 The CPU is made up of several parts. What does MAR stand for?

- ❑ Memory Address Regist Ⓐ
- ❑ Machine Address Regi Ⓑ
- ❑ Memory Application Re ist r ©
- ❑ Memory Address Record

4 A CPU can contain more than one processing unit. What is each unit called?

- ❑ A CPU Ⓐ
- ❑ A core Ⓑ
- ❑ Cache ©
- ❑ A register Ⓓ

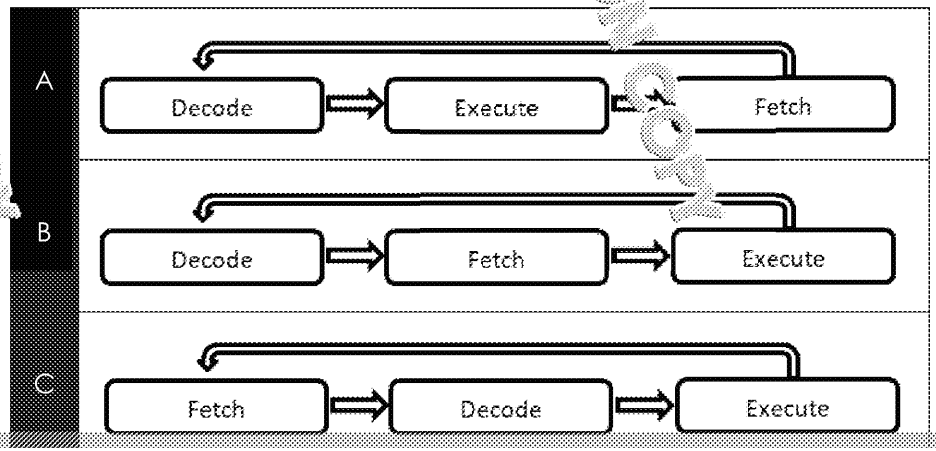
7 Which of the CPUs below will have a higher performance?

- ❑ 3.2 GHz Dual Core CPU Ⓐ
- ❑ 3.2 GHz Quad Core CPU Ⓑ
- ❑ 3.0 GHz Dual Core CPU ©
- ❑ 4.2 GHz Single Core CPU Ⓓ

8 What is cache memory?

- ❑ Memory that is part of the main memo Ⓐ
- ❑ Another word for ROM memory Ⓑ
- ❑ Another word for RAM memory ©
- ❑ A very small and fast memory located nea the CPU Ⓓ

9 Which diagram below shows the correct order of what the CPU does with data?



10 What are the tasks that the control unit carries out?

- ❑ The control unit controls the flow of data within the system Ⓐ
- ❑ Fetches the data and instructions, decodes it and sends the signals via buses to the hardware components Ⓑ
- ❑ To store the address location of the next instructions to be executed Ⓒ
- ❑ All of the Ⓓ

11 The most common (or popular) architecture used in modern computers is known as ...

- ❑ Von Neumann Ⓐ
- ❑ Von Newman Ⓑ
- ❑ Linux Ⓒ
- ❑ Windows Ⓓ

12 If the number of cores is increased from 2 to 4, what is the effect on performance?

- ❑ The max number of instructions executed per second will stay the same Ⓐ
- ❑ The max number of instructions executed per second will halve Ⓑ
- ❑ The max number of instructions executed per second will quadruple Ⓒ
- ❑ The max number of instructions executed per second will double Ⓓ

13 What is the purpose of the accumulator?

- ❑ Holds memory addresses of instructions for each cycle Ⓐ
- ❑ Holds any memory address about to be used by the CPU Ⓑ
- ❑ Stores intermediate results of calculations Ⓒ
- ❑ Holds data and instructions Ⓓ

16 What does the Arithmetic Logic Unit (ALU) do?

- ❑ Holds the address of the next instruction that will be executed Ⓐ
- ❑ Accumulates instructions of running programs Ⓑ
- ❑ Performs mathematical and logical calculations such as addition, subtraction, Boolean Ⓒ

❑ Ⓓ

17 Which part of the CPU would perform an operation such as 2+7?

- ❑ Arithmetic and Logic Unit (ALU) Ⓐ
- ❑ Accumulator Ⓑ
- ❑ Cache Ⓒ
- ❑ Program Counter (PC) Ⓓ

18 The speed of a Central Processing Unit (CPU) is measure in:

- ❑ Miles Ⓐ
- ❑ Hertz Ⓑ
- ❑ Gigahertz Ⓒ
- ❑ Nibbles Ⓓ

19 How does clock speed affect the performance of a computer?

- ❑ A higher clock speed will improve performance Ⓐ
- ❑ More space will be available in RAM Ⓑ
- ❑ The Hard Disk Drive will work faster Ⓒ
- ❑ Wi-Fi will work faster Ⓓ

20 Which one would NOT affect the performance of a CPU?

- ❑ Number of cores Ⓐ

22 Which feature below best describes cache memory in the CPU?

- ❑ It is used as part of the boot-up sequence Ⓐ
- ❑ Very fast Ⓑ
- ❑ Non-volatile Ⓒ
- ❑ Easy to [illegible] Ⓓ

23 Which one of the [illegible] is an embedded system?

- ❑ Smart watch Ⓐ
- ❑ Smart phone Ⓑ
- ❑ Laptop Ⓒ
- ❑ Washing machine Ⓓ

24 What is the definition of an embedded system?

- ❑ An embedded system is a computer system that has a dedicated function within a larger system Ⓐ
- ❑ An embedded system is a program that is used to communicate with users on social media Ⓑ
- ❑ An embedded system is a piece of software used to defragment a hard disk Ⓒ
- ❑ An embedded system is an operating system used by a laptop computer Ⓓ

25 What are the two advantages of an embedded system?

- ❑ Cheap to produce Ⓐ
- ❑ Can be updated easily Ⓑ
- ❑ Easy to design Ⓒ

1.1 Systems Architecture [2]

1 What is a register in a CPU?

- ❑ A locati[illegible]he CPU that holds the list of programs that are ru[illegible] Ⓐ
- ❑ Memory[illegible]ons that hold small amounts of data needed by t[illegible] Ⓑ
- ❑ Part of the CPU that does all the calculations Ⓒ
- ❑ A list of nam[illegible]of people who have used the computer Ⓓ

2 The CPU goes th[illegible]h a cycle called...

- ❑ Execute - Fetch [illegible]ecode Ⓐ
- ❑ Decode - Fetch [illegible]ecute Ⓑ
- ❑ Fetch - Decode - [illegible]ute Ⓒ
- ❑ Decode - Execute [illegible]tch Ⓓ

3 Identify from the optio[illegible]elow the two parts of the CPU:

- ❑ Mouse and keyboard Ⓐ
- ❑ RAM and ROM Ⓑ
- ❑ Hard drive and SSD driv[illegible] Ⓒ
- ❑ Cache and ALU Ⓓ

4 ALU stands for:

- ❑ Arithmetical Logical Unit Ⓐ
- ❑ Addition Logic Unit Ⓑ
- ❑ Arithmetic Logic Unit Ⓒ
- ❑ Appropriate Logic Unit Ⓓ

7 Which statement below is true?

- ❑ Cache memory is very fast Ⓐ
- ❑ Cache memory is slow Ⓑ
- ❑ Ⓒ
- ❑ Ⓓ

8 Which level of cache is the fastest?

- ❑ 1 Ⓐ
- ❑ 2 Ⓑ
- ❑ 3 Ⓒ
- ❑ Ⓓ

9 What are the tasks that the arithmetic logic unit c[illegible]es out?

- ❑ It carries out calculations and comparisons to see if one value is larger than another Ⓐ
- ❑ It fetches data and instructions, decodes it and se[illegible]s the signals via buses to the hardware components Ⓑ
- ❑ It holds temporary data and instructions Ⓒ
- ❑ It holds the address of the next instruction to be executed Ⓓ

10 Which component below is located between the processor and main memory?

- ❑ Clocks Ⓐ
- ❑ Cache memory Ⓑ
- ❑ RAM memory Ⓒ

12 Is a CPU considered to be hardware or software?

- ❑ Hardware Ⓐ
- ❑ Software Ⓑ

13 Select three components of the CPU from the choices below. (You must select all three correct answers to get your mark.)

- ❑ Arithmetic Logic Unit (ALU) Ⓐ
- ❑ Program Counter (PC) Ⓑ
- ❑ Memory Address Register (MAR) Ⓒ
- ❑ Division Access Register (DAR) Ⓓ

14 How many levels of cache memory are there in a CPU?

- ❑ 1 Ⓐ
- ❑ 2 Ⓑ
- ❑ 3 Ⓒ
- ❑ 4 Ⓓ

15 Which statement is true?

- ❑ Cache memory has high storage capacity Ⓐ
- ❑ Cache memory has low storage capacity Ⓑ
- ❑ Cache memory is slow Ⓒ
- ❑ Cache memory can be upgraded Ⓓ

Use the diagram below to answer Q16–18.

Central Processing Unit (CPU)

16. What is the part of the CPU labelled X?

- ❑ Cache memory Ⓐ
- ❑ Accumulator Ⓑ
- ❑ Memory Data Register Ⓒ
- ❑ Program Counter Ⓓ

17 What is the part of the CPU labelled Y?

- ❑ Accumulator Ⓐ
- ❑ Memory Address Register Ⓑ
- ❑ Program Counter Ⓒ
- ❑ Cache memory Ⓓ

18 What is the part of the CPU labelled Z?

- ❑ Program Counter Ⓐ
- ❑ Accumulator Ⓑ
- ❑ Memory Data Register Ⓒ
- ❑ Memory Address Register Ⓓ

19. If the processing speed of a CPU goes up from 1 GHz to 4 GHz, how would this affect the speed of the processor?

- ❑ 4 times faster Ⓐ
- ❑ 2 times faster Ⓑ
- ❑ Stays the same Ⓒ
- ❑ 2 times slower Ⓓ

20 Which one of the choices below will not affect the performance of a CPU?

- ❑ The RAM available Ⓐ

22 When software and hardware are integrated on a circuit board, what type of system is it called?

- ❑ Operating system Ⓐ
- ❑ A network system Ⓑ
- ❑ Embedded system Ⓒ
- ❑ A desktop computer system Ⓓ

23 Identify the three embedded systems.

- ❑ Traffic lights Ⓐ
- ❑ Smartphone Ⓑ
- ❑ Vending machine Ⓒ
- ❑ Cash machine (ATM) Ⓓ

24 Select the three systems that are not embedded systems from the list below.

- ❑ Desktop PC Ⓐ
- ❑ Central heating unit Ⓑ
- ❑ Laptop Ⓒ
- ❑ Tablet computer Ⓓ

25 Select the two statements that are true of an embedded system.

- ❑ They are used in general purpose computers Ⓐ
- ❑ They are built into other devices Ⓑ
- ❑ They perform dedicated tasks Ⓒ
- ❑ They perform many tasks at the same time Ⓓ

26 Select two properties associated with an embedded system.

- ❑ High cost Ⓐ
- ❑ Easy to update Ⓑ
- ❑ Small size Ⓒ
- ❑ Low cost Ⓓ

27 Embedded systems using a combination of hardware and software are sometimes called ...

- ❑ Software Ⓐ
- ❑ Firmware Ⓑ
- ❑ Hardware Ⓒ
- ❑ Nowhere Ⓓ

28 Processors that do one job in microwaves, dishwashers, satnavs, etc. are called what types of systems?

- ❑ Programming systems Ⓐ
- ❑ Input-output systems Ⓑ
- ❑ Embedded systems Ⓒ
- ❑ Processing systems Ⓓ

1.2 Memory & Storage [1]

1 What is the purpose of RAM in a computer system?

- ❑ RAM is used to save documents when the computer is switched off
- ❑ RAM is used to boot up the computer Ⓑ
- ❑ RAM stores input from the keyboard and mouse Ⓒ
- ❑ RAM stores the running programs and data and the CPU can access them quickly Ⓓ

2 What does non-volatile storage mean?

- ❑ Data is not passed in between the RAM and the CPU Ⓐ
- ❑ When the power is switched off, data is lost and not saved on the device Ⓑ
- ❑ When the power is switched off, data is saved onto external storage Ⓒ
- ❑ When the power is switched off, data is saved on the storage device Ⓓ

3 What is primary storage?

- ❑ Storage using tape drives Ⓐ
- ❑ Memory that can be accessed directly by the CPU Ⓑ
- ❑ Memory where the data is saved when the computer is switched off, e.g. a hard disk Ⓒ
- ❑ The use of virtual memory to speed up a computer Ⓓ

4 Optical storage devices use a laser beam to read and write data. In the diagram below, identify the parts of the CD-ROM labelled A and B.

5 Why does a computer require secondary storage?

- ❑ To access programs that are currently running Ⓐ
- ❑ To store data, files and software for future use Ⓑ
- ❑ To access the data stored in the CPU cache Ⓒ
- ❑ To organise the virtual memory Ⓓ

6 What is the definition of a 'bit'?

- ❑ A small part of a computer Ⓐ
- ❑ A binary digit, either 0 or 1 Ⓑ
- ❑ A part of the CPU Ⓒ
- ❑ A number system used by computers Ⓓ

7 What are the smallest units of data used by a computer (the two digits)?

- ❑ 1 and 0 Ⓐ
- ❑ 1 and 2 Ⓑ
- ❑ 0 and 2 Ⓒ
- ❑ 0 and 3 Ⓓ

8 Which list is in the correct order, from the smallest up to the largest?

- ❑ Terabyte, Gigabyte, Megabyte, Kilobyte Ⓐ
- ❑ Gigabyte, Terabyte, Kilobyte, Megabyte Ⓑ
- ❑ Kilobyte, Megabyte, Gigabyte, Terabyte Ⓒ
- ❑ Megabyte, Terabyte, Kilobyte, Gigabyte Ⓓ

9 What is a character set?

- ❑ A collection of numbers typed into the computer using a keyboard Ⓐ

11 What is the character set that uses 8-bit binary code called?

- ❑ More ASCII Ⓐ
- ❑ Don't ASCII Ⓑ
- ❑ Extendable ASCII Ⓒ
- ❑ Extended ASCII Ⓓ

Use the table below to answer Q12–13.

Character	Binary number	Denary number
7	[redacted]	55
H	1001000	B

12 What would be the binary number at position A?

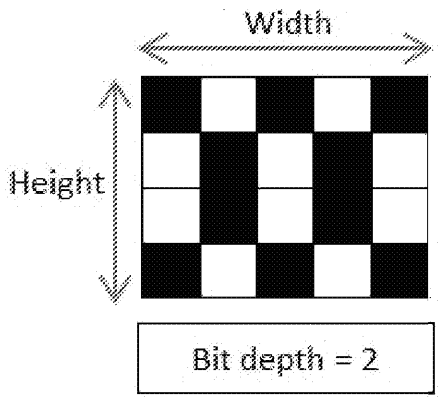
- ❑ 0110111 Ⓐ
- ❑ 0101111 Ⓑ
- ❑ 0011110 Ⓒ
- ❑ 1010110 Ⓓ

13 What would be the denary number at position B?

- ❑ 34 Ⓐ
- ❑ 68 Ⓑ
- ❑ 72 Ⓒ
- ❑ 93 Ⓓ

14 What is the smallest unit of data that can be represented in an image?

Use the image below to answer Q16–17.



16 Calculate the number of bits in the image file.

- ❑ 10 Ⓐ
- ❑ 20 Ⓑ
- ❑ 40 Ⓒ
- ❑ 80 Ⓓ

17 Calculate the image file size in bytes.

- ❑ 5 Ⓐ
- ❑ 10 Ⓑ
- ❑ 15 Ⓒ
- ❑ 20 Ⓓ

18 What is the result of adding these two binary numbers together: 0001 + 0001?

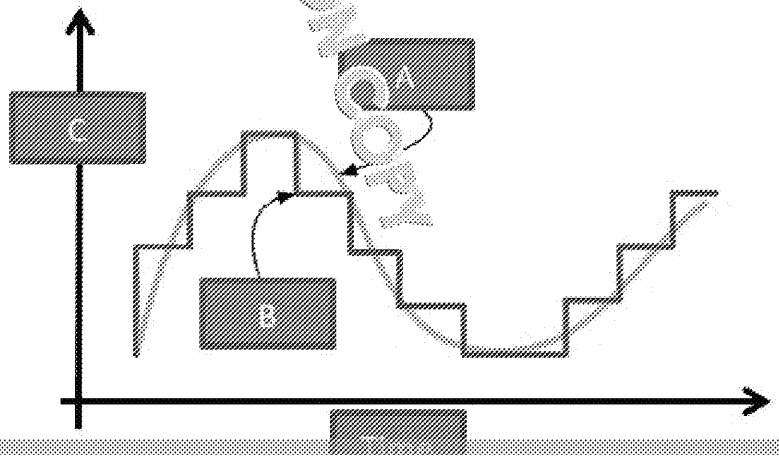
20 Convert this denary number into the hexadecimal number 10.

- ❑ F Ⓐ
- ❑ C Ⓑ
- ❑ A Ⓒ
- ❑ B Ⓓ

21 What formula is used to calculate 'bit rate'?

- ❑ Bit rate = sample size x bits per second Ⓐ
- ❑ Bit rate = bytes per sample x frequency Ⓑ
- ❑ Bit rate = file size x sampling frequency Ⓒ
- ❑ Bit rate = sampling frequency x sample size Ⓓ

Use the image below to answer Q22–24.



23 What type of data is represented by B?

- ❑ Sample data Ⓐ
- ❑ Bit rate data Ⓑ
- ❑ Analogue data Ⓒ
- ❑ Digital data Ⓓ

24 What is measured along the axis Y?

- ❑ Frequency Ⓐ
- ❑ Wavelength Ⓑ
- ❑ Amplitude Ⓒ
- ❑ Time Ⓓ

25 What is compression?

- ❑ Squeezing the mouse hard when working at a computer Ⓐ
- ❑ Reducing the size of files to save storage space Ⓑ
- ❑ Reducing the amount of RAM used in a computer Ⓒ
- ❑ Using a smaller keyboard Ⓓ

26 Which one of the following file formats is not compressed?

- ❑ MP4 Ⓐ
- ❑ MP3 Ⓑ
- ❑ Bitmap Ⓒ
- ❑ JPEG Ⓓ

27 What is lossy compression?

- ❑ Keeps all the information in a file to reduce file size Ⓐ
- ❑ [illegible] Ⓑ

1.2 Memory & Storage [2]

1 Virtual memory is...

- ❑ Fast me[illegible]next to the CPU Ⓐ
- ❑ Used wi[illegible]M memory is full Ⓑ
- ❑ The main storage device in a computer Ⓒ
- ❑ Used to ba[illegible] files Ⓓ

2 Primary storage is volatile; which choice from the list is non-volatile?

- ❑ RAM Ⓐ
- ❑ CPU registers Ⓑ
- ❑ ROM Ⓒ
- ❑ Cache Ⓓ

Use the table below to answer Q3–4.

Memory	Access Speed	Volatility	Data can be changed
X	Slow	Volatile	Yes
ROM	Medium	Non-volatile	No
RAM	Fast	Volatile	Yes
Y	Very Fast	Volatile	Yes

3 What type of memory would be at X?

- ❑ Cache Ⓐ

5 Select the type of memory used by embedded systems.

- ❑ RAM Ⓐ
- ❑ SSD Ⓑ
- ❑ ROM Ⓒ
- ❑ Hard Disk Drive Ⓓ

6 Secondary storage is used to store data and programs permanently. True or false?

- ❑ TRUE Ⓐ
- ❑ FALSE Ⓑ

7 Two advantages of optical storage are...

- ❑ Robust Ⓐ
- ❑ They will last forever Ⓑ
- ❑ They cannot be damaged Ⓒ
- ❑ Can be used by many devices, such as PCs and music systems Ⓓ

8 Which two devices would typically use an SD card?

- ❑ Digital camera Ⓐ
- ❑ Smartphone Ⓑ
- ❑ Desktop PC Ⓒ
- ❑ Smart TV Ⓓ

Use the binary addition table below to answer Q9–11.

0	+	X	=	0

10 Which binary digit would be placed at Y?

- ❑ 1 Ⓐ
- ❑ 0 Ⓑ

11 Which bina[illegible]t would be placed at Z?

- ❑ 1 Ⓐ
- ❑ 0 carry 1 ov[illegible]
- ❑ 0 Ⓒ
- ❑ 1 carry 1 ove[illegible]

12 How many bits in a [illegible]obyte (KB)?

- ❑ 8000 Ⓐ
- ❑ 1000 Ⓑ
- ❑ 8 Ⓒ
- ❑ 2 Ⓓ

13 Typically, which file type w[illegible]d have the biggest file size?

- ❑ A video file Ⓐ
- ❑ A word document Ⓑ
- ❑ An audio file Ⓒ
- ❑ A graphic image Ⓓ

14 In the binary number system, the digit 1 can also be represented by...

- ❑ OFF Ⓐ
- ❑ ON Ⓑ

15 What extra bit is added to the 7-bit binary code so that it fits into one byte?

17 Additional Information stored about an image is called...

- ❑ Metadata Ⓐ
- ❑ File size Ⓑ
- ❑ Colour depth Ⓒ
- ❑ Resolution Ⓓ

18 Which of the following file formats is NOT [illegible]n image file?

- ❑ MP4 Ⓐ
- ❑ JPEG Ⓑ
- ❑ GIF Ⓒ
- ❑ Bitmap Ⓓ

19 What is the denary result of adding these two [illegible]ry numbers together: 00001111 + 00001111?

- ❑ 8 Ⓐ
- ❑ 4 Ⓑ
- ❑ 15 Ⓒ
- ❑ 30 Ⓓ

20 Convert the denary number 17 to hexadecimal.

- ❑ A Ⓐ
- ❑ C Ⓑ
- ❑ 11 Ⓒ
- ❑ 14 Ⓓ

21 What is the results of adding these two binary numbers together: 00011111 + 00001111?

23 Which of the following is not true if you increase the sample rate of an audio file?

- ❑ Better quality of recording Ⓐ
- ❑ Larger file size Ⓑ
- ❑ Decreased quality Ⓒ
- ❑ Needs greater storage space Ⓓ

24 Which of the following is true if you decrease the bit rate?

- ❑ File size increases Ⓐ
- ❑ File size decreases Ⓑ
- ❑ Sound quality increases Ⓒ
- ❑ Sound quality decreases Ⓓ

25 Select two advantages of lossless compression.
(You must select both correct answers to get your mark.)

- ❑ Temporary removal of data which is put back when uncompressed Ⓐ
- ❑ The quality of the file is better than the original file Ⓑ
- ❑ Can be used on text files Ⓒ
- ❑ They cannot be lost Ⓓ

26 Select one disadvantage of lossy compression.

- ❑ They are easy to send over the Internet Ⓐ
- ❑ Permanently removes data from the file Ⓑ
- ❑ They need a password to access and view them Ⓒ
- ❑ It is difficult to compress the files using lossy compression Ⓓ

27 Why do we need to compress files?

1.2 Memory & Storage [3]

1 What instructions are stored in main memory when a computer is first switched on?

- ❑ Passwo
- ❑ None Ⓑ
- ❑ The operati ystem Ⓒ
- ❑ Documents

2 Two examples of pr ary storage are...

- ❑ ROM Ⓐ
- ❑ Hard disk Ⓑ
- ❑ SSD drive Ⓒ
- ❑ RAM Ⓓ

Use the diagram below to answ Q3–Q5.

5 Select the two types of memory that are volatile.

- ❑ W Ⓐ
- ❑ X Ⓑ
- ❑ Y Ⓒ
- ❑ Z Ⓓ

6 Select one disadvantage of magnetic stora e.

- ❑ Prone to damage and performance can crease over time Ⓐ
- ❑ It is difficult to replace when it goes wr Ⓑ
- ❑ Magnetic storage is expensive compared t ll other types Ⓒ
- ❑ Is non-volatile, meaning it cannot store da without power Ⓓ

7 A disadvantage of solid state memory is...

- ❑ Data not lost when no power Ⓐ
- ❑ Number of writes can be limited Ⓑ
- ❑ No moving parts, so reliable Ⓒ
- ❑ Devices are robust Ⓓ

Select one advantage of memory cards and flash driv

- ❑ Data not lost when no power Ⓐ
- ❑ They come in a variety of colours Ⓑ
- ❑ Data is automatically saved Ⓒ
- ❑ They are easily lost Ⓓ

9 Optical storage is mainly used to store what?

- ❑ Programs Ⓐ

11 What is the hexadecimal representation of this denary number: 10?

- ❑ 1 Ⓐ
- ❑ F Ⓑ
- ❑ A Ⓒ
- ❑ 5 Ⓓ

12 What is the hexadecimal representation of this denary number: 16?

- ❑ 10 Ⓐ
- ❑ A Ⓑ
- ❑ C Ⓒ
- ❑ F Ⓓ

13 The calculation to find the file size of a text file is...

- ❑ Bytes per character x Number of characters Ⓐ
- ❑ Bits per character x Number of characters Ⓑ
- ❑ Bits per character / Number of characters Ⓒ
- ❑ Bytes per character / Number of characters Ⓓ

14 352 KB (kilobytes) is equivalent to...

- ❑ 0.3 MB Ⓐ
- ❑ 0.35 GB Ⓑ
- ❑ 3.5 MB Ⓒ
- ❑ 0.35 MB Ⓓ

15 Which binary number represents a nibble?

- ❑ 101011 Ⓐ
- ❑ 1010111 Ⓑ

Use the table below to answer Q17-18.

ASCII Character	Decimal ASCII Code
i	105
k	107
s	115
B	66
D	68
I	73
O	79
S	83

17 Which ASCII code is missing from this word: _isk?

- ❑ 68 Ⓐ
- ❑ 73 Ⓑ
- ❑ 105 Ⓒ
- ❑ 83 Ⓓ

18 Using the table, which ASCII code is missing from this word: BI_S?

- ❑ 107 Ⓐ
- ❑ 115 Ⓑ
- ❑ 79 Ⓒ

20 How would an increased number of pixels affect a bitmap image?

- ❑ Image quality would remain the same Ⓐ
- ❑ Image quality would be reduced Ⓑ
- ❑ Image quality would be increased but file size would be larger Ⓒ
- ❑ Image quality would be increased and file size would remain the same Ⓓ

21 How many colours can be used for each pixel if the colour depth is 8 bit?

- ❑ 256 Ⓐ
- ❑ 32 Ⓑ
- ❑ 64 Ⓒ
- ❑ 1024 Ⓓ

22 What is the result of adding these two binary numbers together:
00001100 + 00000111?

- ❑ 00010011 Ⓐ
- ❑ 10001001 Ⓑ
- ❑ 00101010 Ⓒ
- ❑ 01111100 Ⓓ

23 What are analogue signals converted into so that a computer can use them?

- ❑ Character sets Ⓐ
- ❑ Text files Ⓑ
- ❑ Microwaves Ⓒ
- ❑ Digital signals Ⓓ

24 What unit is the sample rate measured in?

- ❑ Bytes Ⓐ
- ❑ MHz (megahertz) Ⓑ
- ❑ Hz (hertz) Ⓒ
- ❑ Bits Ⓓ

25 Which of these is not a sound file?

- ❑ WMA Ⓐ
- ❑ WAV Ⓑ
- ❑ MP3 Ⓒ
- ❑ MP4 Ⓓ

26 Select the device you would use to input sound into a computer.

- ❑ Mouse Ⓐ
- ❑ Speaker Ⓑ
- ❑ Keyboard Ⓒ
- ❑ Microphone Ⓓ

1.2 Memory & Storage [4]

1 What do the letters ROM stand for?

- ❑ Random Access Memory Ⓐ
- ❑ Random Access Memory Ⓑ
- ❑ Read Only Memory Ⓒ
- ❑ Read On Memory Ⓓ

2 Compared to secondary storage, primary storage has...

- ❑ A low storage capacity Ⓐ
- ❑ A high storage capacity Ⓑ

3 The very first instructions for a computer when it is switched on are stored where?

- ❑ In cache memory Ⓐ
- ❑ In RAM Ⓑ
- ❑ On the hard disk Ⓒ
- ❑ In ROM Ⓓ

4 What is the denary number of this 8-bit binary number: 00000001?

- ❑ 1 Ⓐ
- ❑ 10 Ⓑ
- ❑ 100 Ⓒ
- ❑ 128 Ⓓ

5 What is the denary result of adding these two binary numbers together:

6 The diagram shows a binary number that has been 'shifted'. What has happened to this binary number?

Binary Number	1	0	0	1	1	0	0	1
	0	1	0	0	1	1	0	0

- ❑ The number has doubled Ⓐ
- ❑ The number is halved Ⓑ
- ❑ Nothing happens to the number Ⓒ
- ❑ The number is multiplied by 4 Ⓓ

7 What are the two missing digits at X and Y of the left-shifted number (one place) shown in the diagram?

Binary Number	0	1	0	1	0	1	0	1
	1	0	X	0	0	0	1	Y

- ❑ X=0, Y=0 Ⓐ
- ❑ X=1, Y=1 Ⓑ
- ❑ X=1, Y=0 Ⓒ
- ❑ X=0, Y=1 Ⓓ

8 What is the definition of virtual memory?

9 When virtual memory is being used by a computer, where is the data stored and fetched from before being put into the RAM?

- ❑ ROM Ⓐ
- ❑ The CPU cache Ⓑ
- ❑ CPU reg[illegible] Ⓒ
- ❑ Hard dis[illegible]e Ⓓ

10 What do you call 8 bits?

- ❑ A byte Ⓐ
- ❑ A nibble Ⓑ
- ❑ A word Ⓒ
- ❑ A sequence Ⓓ

11 A terabyte (TB) is what?

- ❑ 1000 bytes Ⓐ
- ❑ 1000 megabytes (MB) Ⓑ
- ❑ 1000 bits Ⓒ
- ❑ 1000 gigabytes (GB) Ⓓ

12 Why do computers use binary data?

- ❑ Because they prefer it to other number systems Ⓐ
- ❑ Because hexadecimal is too large Ⓑ
- ❑ Because the computer only understands binary Ⓒ
- ❑ Because its easier for a computer to use binary Ⓓ

13 What is meant by a bit?

- ❑ A small [illegible]

14 Which statement is true?

- ❑ Primary storage has non-volatile memory and low capacity compared to secondary storage Ⓐ
- ❑ Primary storage has non-volatile memory and high capacity compared to secondary storage Ⓑ
- ❑ Primary storage has volatile memory and low capacity compared to secondary storage Ⓒ
- ❑ Primary storage has volatile memory and high capacity compared to secondary storage Ⓓ

15 if you were using a desktop PC and there was a power cut, what would happen?

- ❑ The data in RAM would be lost Ⓐ
- ❑ The instructions in the ROM would be lost Ⓑ
- ❑ The document you are working on would be saved Ⓒ
- ❑ The data would be saved in virtual memory Ⓓ

16 How many characters can be represented when using the extended ASCII character set?

- ❑ 256 Ⓐ
- ❑ 512 Ⓑ
- ❑ 1024 Ⓒ
- ❑ 2048 Ⓓ

17 Which of the following is an image file?

- ❑ PPT Ⓐ
- ❑ MP3 Ⓑ

19 Convert the denary number 61 into a hexadecimal number.

- ❑ 2C Ⓐ
- ❑ 3F Ⓑ
- ❑ 2A Ⓒ
- ❑ 3D Ⓓ

20 What is a binary shift?

- ❑ A method of multiplying and dividing hexadecimal numbers Ⓐ
- ❑ A method of multiplying and dividing binary numbers Ⓑ
- ❑ A method of adding and subtracting binary numbers Ⓒ
- ❑ A method of converting a binary number to hexadecimal Ⓓ

21 What is the height of an analogue wave called?

- ❑ Height Ⓐ
- ❑ Frequency Ⓑ
- ❑ Amplitude Ⓒ
- ❑ Wavelength Ⓓ

Use the table below to answer Q22–23.

22 What is the missing value at X?

ASCII Character	Binary	Denary
a	0 110 0001	97
A	X	65

23 What is the missing value at Y?

- ❑ 0 011 1011 Ⓐ
- ❑ 56 Ⓑ
- ❑ 12 Ⓒ
- ❑ 32 Ⓓ

24 Sending a compressed file over the Internet will allow it to...

- ❑ Be automatically uncompressed at the destination computer Ⓐ
- ❑ Be sent more quickly Ⓑ
- ❑ Be sent even if the Internet connection is not working Ⓒ
- ❑ Stored automatically on the destination hard disk Ⓓ

25 Select <u>two</u> file types that have lossless compression.

- ❑ PNG Ⓐ
- ❑ MP3 Ⓑ
- ❑ MP4 Ⓒ
- ❑ TXT Ⓓ

26 When a key is pressed on a keyboard, what is sent to the computer's CPU?

- ❑ A magnetic signal Ⓐ
- ❑ A pulse of light Ⓑ
- ❑ An electrical signal which is converted to binary Ⓒ
- ❑ The character you pressed Ⓓ

27 How many bits does the ASCII character set use?

- ❑ 7 bits Ⓐ

1.3 Computers, networks, connections and protocols [1]

1 When talking about computer networks, what is meant by a 'topology'?

- ❑ How you display the computers on top of each other Ⓐ
- ❑ Where the file server is located Ⓑ
- ❑ The logical layout of a network, the arrangement of the computers Ⓒ
- ❑ How many printers are attached to a network Ⓓ

2 What does LAN stand for?

- ❑ Local Access Network Ⓐ
- ❑ Land Area Network Ⓑ
- ❑ Local Area Network Ⓒ
- ❑ Local Address Network Ⓓ

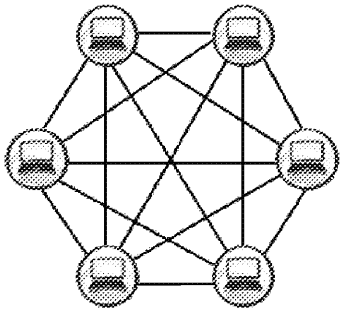
3 What is a client in a computer network?

- ❑ A computer that requests accesses the services/ resources provided by a server Ⓐ
- ❑ The network manager Ⓑ
- ❑ Any of the users that use the network Ⓒ
- ❑ The router used in a computer network Ⓓ

4 What is the definition of a WAN?

- ❑ A network in a single building Ⓐ
- ❑ A network that only uses Wi-Fi for connecting to other devices Ⓑ
- ❑ LANs connected in different geographical locations Ⓒ

6 Which type of network topology is shown here on the right?



- ❑ Star Ⓐ
- ❑ Peer-to-peer Ⓑ
- ❑ Full mesh Ⓒ
- ❑ Partial mesh Ⓓ

7 What type of network would a business with three separate buildings typically use?

- ❑ LAN Ⓐ
- ❑ WAN Ⓑ

8 What is meant by the World Wide Web?

- ❑ A connection to the Internet Ⓐ
- ❑ Using social media to connect to other users Ⓑ
- ❑ Collection of websites and web pages that can be viewed by web browsers Ⓒ
- ❑ The wires and routers that connect everything together Ⓓ

9 What is a wireless access point?

- ❑ A device that connects devices to wired networks Ⓐ
- ❑ A device that collects wireless signals Ⓑ
- ❑ A device that connects smartphones together Ⓒ
- ❑ A networking hardware device that allows wireless devices to access the wired network Ⓓ

10 What is the definition of a router?

- ❑ A device that connects different computer networks, such as LANs a

12 What does NIC stand for?

- ❑ Network Interchange Card Ⓐ
- ❑ Network Interface Core Ⓑ
- ❑ Network Interface Card Ⓒ
- ❑ Network Interface Clock Ⓓ

13 What is one advantage of a wired network using Ethernet cable over a wireless network?

- ❑ Ethernet cable can be hundreds of miles long Ⓐ
- ❑ The connection can be more reliable Ⓑ
- ❑ The user has complete control over security settings on a wired network Ⓒ
- ❑ Data is never corrupted Ⓓ

14 What type of network could Ethernet cables be used for?

- ❑ A wireless network Ⓐ
- ❑ A wired network Ⓑ
- ❑ A Bluetooth network Ⓒ
- ❑ A rail network Ⓓ

15 Wi-Fi and Bluetooth are both examples of what type of connection?

- ❑ Layered Ⓐ
- ❑ Banded Ⓑ
- ❑ Wired Ⓒ
- ❑ Wireless Ⓓ

16 Select one disadvantage of a wireless network.

- ❑ Signal problems due to distance from the router or other wireless devices Ⓐ

18 Unencrypted messages are referred to as...

- ❑ Cipher text Ⓐ
- ❑ Text file Ⓑ
- ❑ Text message Ⓒ
- ❑ Plain text Ⓓ

19 Why do we need standards when using computers and computing devices?

- ❑ So that the computers and devices can communicate with each other Ⓐ
- ❑ So that users in different countries can speak the same language Ⓑ
- ❑ So that manufacturers can charge users more money Ⓒ
- ❑ Ⓓ

Use the table below to answer Q20–22.

Layer	Sending Data	Receiving Data	Function of layer	Protocols used
4	A	A	Makes sure the data is in the correct format for the software (applications and websites)	HTTP, HTTPS, FTP, SMTP
3	Transport	Transport	Controls the flow of data and splits the data into packets	C
2	Internet	Internet	B	IP
1			Deliver the	

21 Layer 2 is the Internet layer. What sentence would be appropriate to put into B to explain what it does?

- ❑ Switches are used to connect computers in a local area network Ⓐ
- ❑ Attaches the sender and receiver IP addresses when sending messages across the internet Ⓑ
- ❑ Wi-Fi connections connect all the portable devices in a building Ⓒ
- ❑ Makes sure the data is in the correct format for the software, i.e. applications and websites Ⓓ

22 What protocol should be inserted at the position labelled C?

- ❑ POP Ⓐ
- ❑ SMTP Ⓑ
- ❑ TCP Ⓒ
- ❑ IMAP Ⓓ

23 Which one of these is not a protocol used for sending messages or emails?

- ❑ SMTP Ⓐ
- ❑ HTTP Ⓑ
- ❑ IMAP Ⓒ
- ❑ POP Ⓓ

24 What set of protocols are used to encrypt wireless data?

- ❑ WPA2, WALL, WIG Ⓐ
- ❑ WPA, IPA, WEP Ⓑ
- ❑ WEP, WIP, WUP Ⓒ
- ❑ WEP, WPA, WPA2 Ⓓ

1.3 Computers, networks, connections and protocols [2]

1 What is the [illegible]et?

- ❑ A WAN [illegible]onnects computers and devices all over the world Ⓐ
- ❑ Software ap[illegible]ations and programs that users use Ⓑ
- ❑ The documen[illegible]and media that are put onto it Ⓒ
- ❑ Apps that yo[illegible]e on your smartphone Ⓓ

2 What does WAN s[illegible] for?

- ❑ Wide Array Netw[illegible]rk Ⓐ
- ❑ Wide Area Netwo[illegible] Ⓑ
- ❑ Wide Application N[illegible]ork Ⓒ
- ❑ Wi-Fi Area Network Ⓓ

3 Select one factor that can [illegible]ect the performance of a network.

- ❑ How fast a user can log [illegible] Ⓐ
- ❑ How many documents a[illegible]ved on the file server Ⓑ
- ❑ Number of devices connect[illegible] to the network Ⓒ
- ❑ The speed a printer can print documents Ⓓ

4 Select one true fact about a Local Area Network (LAN).

- ❑ They always use a star topology Ⓐ
- ❑ Can be wired with Ethernet cable or use Wi-Fi (wireless) Ⓑ
- ❑ They cover a wide geographical area Ⓒ
- ❑ Only use peer-to-peer topology Ⓓ

6 Select one disadvantage of a network compared to computers that are not on a network.

- ❑ The hardware is more reliable Ⓐ
- ❑ More security risks Ⓑ
- ❑ File can easily be shared Ⓒ
- ❑ Software is always up to date Ⓓ

7 In the diagram, what device would be at [illegible]

- ❑ Network Interface Card (NIC) Ⓐ
- ❑ File server Ⓑ
- ❑ Switch Ⓒ
- ❑ Router Ⓓ

8 In the diagram, what device would be at Y?

- ❑ Switch Ⓐ
- ❑ Router Ⓑ
- ❑ Network Interface Card (NIC) Ⓒ
- ❑ Keyboard Ⓓ

9 Select the advantages of a client-server network.

- ❑ No duplication of documents Ⓐ
- ❑ Easy backups Ⓑ
- ❑ Easier to update software Ⓒ
- ❑ All of these Ⓓ

10 Select the list that orders transmission media from fastest to slowest.

- ❑ [illegible]

12 What does DNS stand for?

- ❑ Dominant Name Server Ⓐ
- ❑ Domain Net Server Ⓑ
- ❑ Domain Name Server Ⓒ
- ❑ Domain Name Sender Ⓓ

13 What is latency?

- ❑ Being lazy Ⓐ
- ❑ The delay from transmission of the data to receiving it Ⓑ
- ❑ Data that has been corrupted Ⓒ
- ❑ The speed of a graphics card Ⓓ

14 Select one advantage of a full mesh network.

- ❑ Broken connections can be rerouted through another switch Ⓐ
- ❑ Can be very expensive Ⓑ
- ❑ Not very reliable Ⓒ
- ❑ Can be complicated to set up Ⓓ

15 What is one advantage of a wired network using Ethernet instead of a wireless network?

- ❑ They can be expensive to set up Ⓐ
- ❑ No data is ever lost Ⓑ
- ❑ Wired connections are usually faster than wireless connections Ⓒ
- ❑ Wires never break Ⓓ

16 Bluetooth is a wireless technology standard used to connect computing devices. True or false?

18 Which technology would headphones/earphones use to connect to a smartphone?

- ❑ Wi-Fi Ⓐ
- ❑ Ethernet Ⓑ
- ❑ Bluetooth Ⓒ
- ❑ Ⓓ

19 Which statement is true about Bluetooth?

- ❑ It is a non-standard wireless technology Ⓐ
- ❑ It is named after a Scandinavian king who lived about 1,000 years ago Ⓑ
- ❑ It is a long-range communication signal Ⓒ
- ❑ Ⓓ

20 What is an SSID used for?

- ❑ To connect to a Bluetooth device Ⓐ
- ❑ To connect to a wireless network Ⓑ
- ❑ To connect to the Internet Ⓒ
- ❑ To connect to a cabled network Ⓓ

21 Which technology is being used for communication at X?

- ❑ Wi-Fi Ⓐ
- ❑ Ethernet Ⓑ
- ❑ Bluetooth Ⓒ
- ❑ Fibre-optic Ⓓ

22 Which technology is being used for communication at Y?

- ❑ Bluetooth Ⓐ

24 Once a message has been encrypted, what has to happen to it before it can be read by the receiver?

- ❑ Incrypted Ⓐ
- ❑ Decrypted Ⓑ
- ❑ Recrypt
- ❑ Uncrypte

25 What is a MAC address?

- ❑ A system for sending data over the Internet Ⓐ
- ❑ A unique identifier assigned to a device that cannot be changed Ⓑ
- ❑ Where an Apple Mac computer lives Ⓒ
- ❑ A way of adding binary numbers together Ⓓ

26 Which one of the following would be a typical IPv4 address?

- ❑ 183.54.215 Ⓐ
- ❑ 183.54 Ⓑ
- ❑ 183.54.215.12.78 Ⓒ
- ❑ 183.54.215.12 Ⓓ

27 What is each IP address made up of?

- ❑ A network interface card (NIC) Ⓐ
- ❑ Network part and host part Ⓑ
- ❑ Ethernet cables Ⓒ
- ❑ The user's postcode Ⓓ

28 What is the TCP/IP protocol used for?

- ❑ [illegible]

29 What does HTTPS stand for?

- ❑ Hyper Text Protocol Security Ⓐ
- ❑ Hidden Text Transfer Protocol Secure Ⓑ
- ❑ Hyper Text Transfer Protocol Secure Ⓒ
- ❑ Hyper Text Transfer Protocol Stati

30 What is the POP protocol used for?

- ❑ Used for file transfer Ⓐ
- ❑ Used to retrieve emails from an email se Ⓑ
- ❑ Used to encrypt messages Ⓒ
- ❑ Used to manage file servers Ⓓ

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1.3 Computers, networks, connections and protocols [3]

1 What is a p[illegible]-peer network?

- ❑ A type o[illegible]work that has a file server Ⓐ
- ❑ A type of ne[illegible]ork that does not have a server computer Ⓑ
- ❑ A type of ne[illegible]k that spies on its users Ⓒ
- ❑ A network th[illegible]es encrypted data Ⓓ

2 What is the definit[illegible]of a LAN?

- ❑ A network that c[illegible]s a wide geographical area Ⓐ
- ❑ A network that us[illegible]rinters and laptops only Ⓑ
- ❑ A network that use[illegible] cloud to store data Ⓒ
- ❑ A network that cover[illegible] small geographical area on a single site, i.e. in the same building Ⓓ

3 What is Ethernet?

- ❑ A standard of copper ca[illegible]opular for connecting wired networks Ⓐ
- ❑ A large net used to catch da[illegible] Ⓑ
- ❑ Another term used to describe the Internet Ⓒ
- ❑ A standard of optical cable popular for connecting networks Ⓓ

4 What is an ISP?

- ❑ Internet Silence Protocol Ⓐ
- ❑ International Service Provider Ⓑ
- ❑ Individual Service Provider Ⓒ

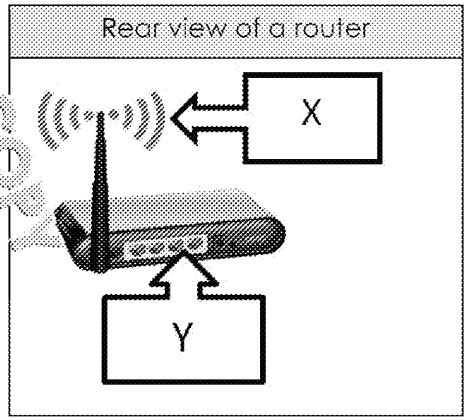
6 What is the largest WAN on the planet?

- ❑ The World Wide Web (www) Ⓐ
- ❑ All WANs owned by large companies Ⓑ
- ❑ The Internet Ⓒ
- ❑ Social media Ⓓ

7 Which metal is used in Ethernet cables?

- ❑ Silver Ⓐ
- ❑ Iron Ⓑ
- ❑ Copper Ⓒ
- ❑ Aluminium Ⓓ

Use the image below to answer Q8–9.



8 The antenna is transmitting a Wi-Fi signal. The device at X is acting as a...

10 What device allows wireless devices to access the network?

- ❑ A switch Ⓐ
- ❑ A wireless access point Ⓑ
- ❑ A router Ⓒ
- ❑ Ethernet Ⓓ

11 What is passed down fibre-optic cables as data?

- ❑ Electrical signals Ⓐ
- ❑ Light signals Ⓑ
- ❑ Radio waves Ⓒ
- ❑ Wi-Fi Ⓓ

12 What does a Domain Name Server (DNS) do?

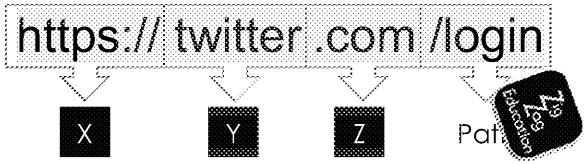
- ❑ Converts fibre-optic signals into signals the computer can understand Ⓐ
- ❑ Converts web addresses into web pages Ⓑ
- ❑ Converts IP addresses into graphics that are used by computers Ⓒ
- ❑ Converts web addresses to the numerical IP addresses Ⓓ

13 A business has six desktop PC in a single office and 15 other wireless laptop users who work around the rest of the building. What type of network connections would best suit this situation?

- ❑ All desktop PCs connected using Ethernet cable Ⓐ
- ❑ All desktop PCs connected using Wi-Fi Ⓑ
- ❑ All desktop PCs connected using Bluetooth Ⓒ
- ❑ A combination of Ethernet and Wi-Fi connections Ⓓ

14 What is cipher text?

Use the image below to answer Q16–Q18.



16 What does the part of the web address labelled X represent?

- ❑ Top-level domain Ⓐ
- ❑ Protocol in use Ⓑ
- ❑ Domain name Ⓒ
- ❑ Port Ⓓ

17 What does the part of the web address labelled Y represent?

- ❑ Domain name Ⓐ
- ❑ Port Ⓑ
- ❑ Top-level domain Ⓒ
- ❑ Protocol in use Ⓓ

18 What does the part of the web address labelled Z represent?

- ❑ Protocol in use Ⓐ
- ❑ Domain name Ⓑ
- ❑ Port Ⓒ
- ❑ Top-level domain Ⓓ

19 Which protocol is used when sending email messages from a client to its destination?

21 What does MAC stand for?

- ❑ Magnetic Access Control Ⓐ
- ❑ Media Accelerator Control Ⓑ
- ❑ Memory Access Control Ⓒ
- ❑ Media Access Control Ⓓ

22 Why do we now need IPv6?

- ❑ Because 6 is higher than 4 Ⓐ
- ❑ Because IPv6 is faster Ⓑ
- ❑ Because we ran out of IPv4 addresses Ⓒ
- ❑ Because IPv6 only works on old networks Ⓓ

23 Why do manufacturers of hardware and software need to use the same standards?

- ❑ So that all hardware looks the same Ⓐ
- ❑ So that software will download faster from the Internet Ⓑ
- ❑ So that they can make products or services that are compatible with each other Ⓒ
- ❑ To stop fraudsters stealing users' account information Ⓓ

24 What device is used to send data between computers on a LAN?

- ❑ A router Ⓐ
- ❑ A file server Ⓑ
- ❑ A client computer Ⓒ
- ❑ A hub Ⓓ

25 Which definition would best describe a client-server network?

1.4 Network security [1]

1 What is a brute force attack?

- ❑ When p… use physical force to gain access to a computer sy… Ⓐ
- ❑ Bad sof… hat will help the criminal by 'sniffing' (spying) for …mes and pass…rds Ⓑ
- ❑ Use of soft… to attempt to guess a password through trial and e… Ⓒ
- ❑ When a pers… s forced to hand over their identify for fraudulent us… Ⓓ

Use the table below to …swer Q2–Q4.

Forms of attack	Description
X	Fraudulent e…ils or websites pretending to come from legitimate or…isations
Y	Malicious softw…re that infects a computer system
Z	Use of software t… guess" people's passwords using trial and error

2 What type of security risk is being described in box X?

- ❑ Malware Ⓐ
- ❑ Brute force Ⓑ
- ❑ Phishing Ⓒ
- ❑ Denial of service Ⓓ

5 How could phishing take place at a call centre? Select three options.

- ❑ Staff respond to fake email Ⓐ
- ❑ Staff get a wage increase Ⓑ
- ❑ Staff respond to pop-up message…
- ❑ Staff respond to fake link Ⓓ

6 Which one will NOT affect a company th… as had a DoS attack?

- ❑ Loss of revenue Ⓐ
- ❑ Customers can't access services Ⓑ
- ❑ Profits will increase Ⓒ
- ❑ Reputation of the company is damaged Ⓓ

7 Jo has had a message pop-up on her laptop as…g her to pay £500 to have her files decrypted. Select one way this could ha… happened.

- ❑ Opened an email attachment containing ranso…are Ⓐ
- ❑ Used a spell checker on her word processor Ⓑ
- ❑ Updated her antivirus software Ⓒ
- ❑ Entering a wrong password when she tried to log …n Ⓓ

8 What are the potential outcomes of security breaches?

- ❑ System no longer responds Ⓐ
- ❑ Theft of data Ⓑ
- ❑ Identity theft Ⓒ
- ❑ All of these Ⓓ

9 What is SQL injection?

11 Which type of malware puts unwanted advertising on your computer and can change your Internet browser settings?

- ❑ Firmware Ⓐ
- ❑ Trojan Ⓑ
- ❑ Virus Ⓒ
- ❑ Adware Ⓓ

12 How can phishing scams be prevented?

- ❑ Staff trained to be cautious of emails Ⓐ
- ❑ Locking computer room doors Ⓑ
- ❑ Using strong passwords Ⓒ
- ❑ Making sure you log off after using a computer Ⓓ

13 What are <u>three</u> features of a strong password?

- ❑ At least eight characters Ⓐ
- ❑ Include upper case Ⓑ
- ❑ Use the name of your pet Ⓒ
- ❑ Include special characters Ⓓ

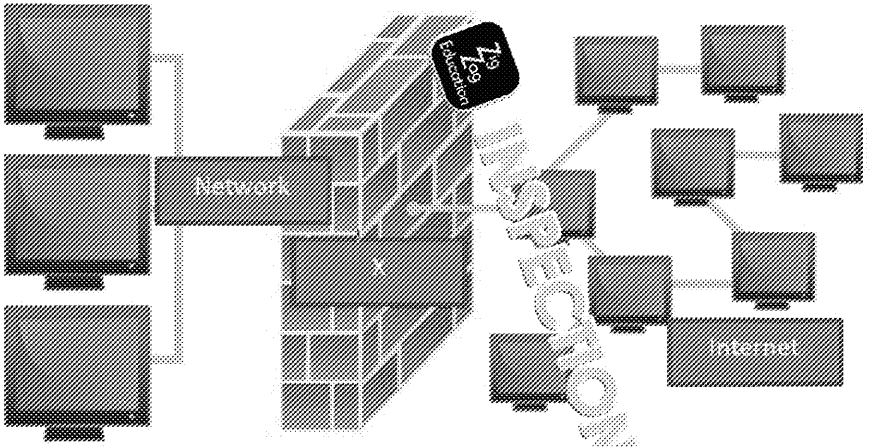
14 Which of these passwords would be the most secure?

- ❑ mypassword Ⓐ
- ❑ Mypassword! Ⓑ
- ❑ MyPassword@7! Ⓒ
- ❑ MYPASSWORD Ⓓ

15 What is a Data Protection Policy?

- ❑ Making sure users do not break the law Ⓐ

16 What is the name of the security software labelled X that will help protect a network from vulnerabilities?



- ❑ Firewall Ⓐ
- ❑ Spam filter Ⓑ
- ❑ Anti-virus Ⓒ
- ❑ FireWire Ⓓ

17 What is one way to protect a room that computers are in?

- ❑ Make sure antivirus software is up to date Ⓐ
- ❑ Lock the computer room door Ⓑ
- ❑ Make sure the room is cleaned regularly Ⓒ
- ❑ Use a firewall Ⓓ

19 'PzxFy@ugcw%' is considered a strong password. Why?

- ❑ It has more than eight characters Ⓐ
- ❑ It uses special characters Ⓑ
- ❑ It uses upper- and lower-case letters Ⓒ
- ❑ All of the above Ⓓ

20 What does DoS stand for in system security?

- ❑ Denial of Security Ⓐ
- ❑ Denial of Service Ⓑ
- ❑ Defragmentation of Software Ⓒ
- ❑ Database Security Ⓓ

21 What is a DoS attack?

- ❑ Flooding a server with worthless data to stop it working Ⓐ
- ❑ An email that tries to get personal information from you Ⓑ
- ❑ Data in a database is deleted or changed Ⓒ
- ❑ Bad software that will help the criminal by 'sniffing' (spying) for usernames and passwords Ⓓ

22 If a user gets caught out by a phishing scam, what can happen to the user?

- ❑ They can win a prize Ⓐ
- ❑ The user's usernames and passwords can be stolen, giving criminals access to their bank accounts Ⓑ
- ❑ They will get updates to their operating systems Ⓒ
- ❑ They will be able to go fishing when they go to the seaside Ⓓ

23 What is meant by social engineering?

- ❑ Getting people to give confidential information when they think it is safe

24 What is one way that data interception can be prevented?

- ❑ Use strong passwords Ⓐ
- ❑ Use encryption Ⓑ
- ❑ Do not share passwords Ⓒ
- ❑ Have a data protection policy Ⓓ

25 Which types of attack would be more difficult to stop once started?

- ❑ DoS Ⓐ
- ❑ DDoS Ⓑ
- ❑ Phishing scam Ⓒ
- ❑ Adware being placed on a laptop Ⓓ

1.4 Network security [2]

1 Select one example of malware.

- ❑ Encrypti
- ❑ Firewall
- ❑ IP addressing Ⓒ
- ❑ Worm Ⓓ

2 What does SQL stand for?

- ❑ Sound Query Lin Ⓐ
- ❑ Structured Que nguage Ⓑ
- ❑ Structured Query .a er Ⓒ
- ❑ Sampled Query Lo Ⓓ

3 What is meant by the t 'hacking'?

- ❑ Stealing a laptop Ⓐ
- ❑ Cutting network cable Ⓑ
- ❑ Gaining unauthorised a s to data to a computer system Ⓒ
- ❑ Opening up a desktop P steal its RAM Ⓓ

4 What word best describes soft re that does bad things to computers?

- ❑ Badware Ⓐ
- ❑ Malware Ⓑ
- ❑ Trojan Ⓒ
- ❑ Worm Ⓓ

5 Select one type of malware.

7 What is meant by data interception and theft?

- ❑ Emails or websites pretend to come from legitimate companies Ⓐ
- ❑ Trial and error to find passwords Ⓑ
- ❑ The criminal secretly monitors data network to read the traffic and steal the data Ⓒ
- ❑ Flooding a server with worthless d stop it working Ⓓ

8 Below are four web addresses that have e through in an email. Which one are you most likely to trust?

W	http://joey.amaz.on.cz.com
X	http://amazon.co.uk
Y	ttp://amazon.uk.admin.org
Z	h p://Tolg.amazon\admin.biz

- ❑ W Ⓐ
- ❑ X Ⓑ
- ❑ Y Ⓒ
- ❑ Z Ⓓ

9 What is an advantage of using a firewall?

- ❑ It ensures strong passwords are used Ⓐ
- ❑ It uses CAPTCHA responses Ⓑ
- ❑ It backs up all your files Ⓒ
- ❑ Blocks suspicious incoming network traffic Ⓓ

11 People can be weak points in a network. Select the prevention method that would NOT help make the network more secure.

- ❑ Set the SQL database permissions for users Ⓐ

13 Which one of the following would be the strongest password?

- ❑ admin Ⓐ
- ❑ 87654321 Ⓑ
- ❑ London123 Ⓒ
- ❑ AdiSBm Ⓓ

14 How can SQL injection threats be prevented?

- ❑ Validating input to a system Ⓐ
- ❑ Locking the computer room door Ⓑ
- ❑ Make sure antivirus software is up to date Ⓒ
- ❑ Use a multitasking operating system Ⓓ

15 An example of network lockout policy would be used when...

- ❑ A burglar has tried to break in to the computer room Ⓐ
- ❑ A laptop will not switch on Ⓑ
- ❑ Three unsuccessful attempts have been made by a user to log in to a system Ⓒ
- ❑ A user has tried to select a file they are not allowed to open Ⓓ

16 Which device would be best to protect a network against threats?

- ❑ An icecap Ⓐ
- ❑ Firewall Ⓑ
- ❑ A padlock Ⓒ
- ❑ A security guard Ⓓ

18 How can DoS attacks be prevented?

- ❑ [illegible]

20 What type of security threat is being shown in the diagram?

- ❑ Denial of Service Ⓐ
- ❑ Brute force attack Ⓑ
- ❑ Phishing scam Ⓒ
- ❑ Data interception and theft Ⓓ

21 What should you do if you get an email from someone you do not know?

- ❑ Open it and read it Ⓐ
- ❑ Delete it Ⓑ
- ❑ Click on any links in the email Ⓒ
- ❑ Save it Ⓓ

22 What is network forensics?

- ❑ Collecting fingerprints from computer devices Ⓐ
- ❑ The examination of a smartphone data Ⓑ
- ❑ Investigations that organisations undertake to find the cause of attacks on their network Ⓒ
- ❑ The examination of a laptop hard disk Ⓓ

24 Which term best describes 'user access levels'?

- ❑ Limits users to what they can access on a computer Ⓐ
- ❑ Stops users entering a computer room Ⓑ
- ❑ Limits the number of users that can access computers in a room Ⓒ
- ❑ Stops all users using a network Ⓓ

25 Which definition best describes 'penetration testing'?

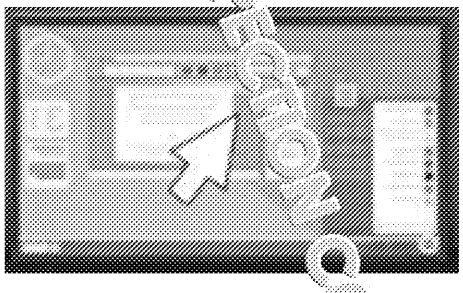
- ❑ Making sure passwords have at least eight characters Ⓐ

1.5 System software [1]

1 What is one advantage of a GUI such as Windows?

- ❑ Very fast
- ❑ Efficient
- ❑ Can write scripts with it ©
- ❑ User-friendly

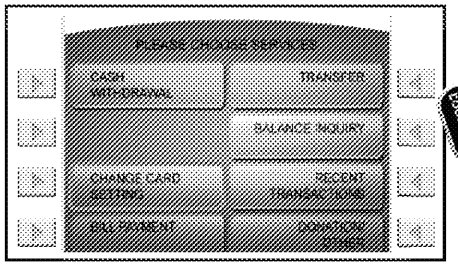
2 Which user interface is shown below?



- ❑ Menu-driven interface Ⓐ
- ❑ Natural-language interface Ⓑ
- ❑ Command line interface Ⓒ
- ❑ Graphical user Interface Ⓓ

3 Which user interface is shown below?

4 Which user interface is shown below?



- ❑ Natural-language interface Ⓐ
- ❑ Graphical user interface Ⓑ
- ❑ Command line interface Ⓒ
- ❑ Menu-driven interface Ⓓ

5 An operating system that supports multiple users at one or different times is called...

- ❑ Many-user Ⓐ
- ❑ Multi-user Ⓑ
- ❑ Single-user Ⓒ
- ❑ Social-user Ⓓ

6 Linuz is an operating system. True or false?

- ❑ TRUE Ⓐ
- ❑ FALSE Ⓑ

7 Which type of user interface has windows, icons, menus and pointers?

9 Which software is used to control hardware devices and allow the operating system to make use of the hardware?

- ❑ Applications software Ⓐ
- ❑ Utility software Ⓑ
- ❑ Device drivers Ⓒ
- ❑ Operating system Ⓓ

10 The operating system will use what when the RAM is full?

- ❑ Virtual memory Ⓐ
- ❑ Cache memory Ⓑ
- ❑ ROM Ⓒ
- ❑ BIOS Ⓓ

11 What is meant by utility software?

- ❑ Software that runs a computer system Ⓐ
- ❑ Software that runs the computer; manages hardware, applications, resources and users Ⓑ
- ❑ Software that helps to configure, optimise and maintain a computer system Ⓒ
- ❑

12 What is meant by a fragmented hard disk drive?

- ❑ Instructions and data are spread across tracks and sectors on the drive Ⓐ
- ❑ The drive is broken Ⓑ
- ❑ The drive is split into two different sections Ⓒ
- ❑ Instructions and data are not spread out across the tracks and sectors on the drive Ⓓ

15 What is defragmentation software?

- ❑ Software that stops malware from damaging computer systems Ⓐ
- ❑ Software that reorganises files on a hard disk after the fragments are scattered all over the hard disk Ⓑ
- ❑ Software that makes copies of files in case the originals are lost Ⓒ
- ❑ Software that puts data into a form that cannot be understood Ⓓ

16 Device drivers control peripherals. Which one of the following is a peripheral?

- ❑ CPU Ⓐ
- ❑ Internal hard disk Ⓑ
- ❑ Graphics card Ⓒ
- ❑ Monitor Ⓓ

17 What does backup software do?

- ❑ Copies of files are created in case the originals are lost Ⓐ
- ❑ Reorganises files on a hard disk Ⓑ
- ❑ Gets hard disks ready for use Ⓒ
- ❑ Stops malware from damaging computer systems Ⓓ

18 Which definition best describes an operating system?

- ❑ Software that creates presentations Ⓐ
- ❑ Software that runs the computer; manages hardware, applications, resources and users Ⓑ
- ❑ Software that creates word processing documents Ⓒ
- ❑ Software that initialises the computer on start-up Ⓓ

21 Device drivers control peripherals. Which one of the following is NOT a peripheral?

- ❑ Mouse Ⓐ
- ❑ Screen Ⓑ
- ❑ CPU Ⓒ
- ❑ Printer Ⓓ

22 When programs are loaded into memory, the OS decides where to put them. This is called:

- ❑ Memory allocation Ⓐ
- ❑ User administration Ⓑ
- ❑ Memory management Ⓒ
- ❑ User access Ⓓ

23 Select the feature that is NOT a file management action of an operating system.

- ❑ Spell check Ⓐ
- ❑ Renaming files Ⓑ
- ❑ Defragmentation of the hard disk Ⓒ
- ❑ Deleting files Ⓓ

24 What is one advantage of a command line user interface?

- ❑ It is graphical Ⓐ
- ❑ Uses a mouse to enter instructions Ⓑ
- ❑ It is efficient Ⓒ
- ❑ It is very slow Ⓓ

25 The diagram below shows files saved on to a hard disk. Each colour represents one file. What does the diagram show?

A	B		B	D	D	C
C			E	E		A
	D	C	B	D	C	D
D	E	E		C		C
D	D	A	C	E		C
C	C		E			B
A	B	C	D	C	E	E
	E	E		B	D	

- ❑ That the files are defragmented Ⓐ
- ❑ That the files are fragmented Ⓑ
- ❑ That the files are compressed Ⓒ
- ❑ That the files are encrypted Ⓓ

1.5 Systems software [2]

1 From the choices below, select the option that requires device drivers.

- ❑ Software
- ❑ Hardware

2 An important task of the operating system is...

- ❑ To ensure the connection to the Internet is reliable Ⓐ
- ❑ To make sure users use strong passwords Ⓑ
- ❑ To make sure users adhere to the Data Protection Act Ⓒ
- ❑ The creation, modification and deleting of files Ⓓ

3 Select two types of user interface.

- ❑ Command line Ⓐ
- ❑ Facetime Ⓑ
- ❑ Natural-language Ⓒ
- ❑ Mouse menu Ⓓ

4 What is meant by a multi-user computer system?

- ❑ Two users can use a computer system at the same time Ⓐ
- ❑ When an operating system allows multiple users to use a computer at different times Ⓑ
- ❑ When many users have access to the same printer Ⓒ
- ❑ When a single user can use several different computers at the same time Ⓓ

Use the image below to answer Q5–8.

5 Which image represents a device driver being used?

- ❑ W Ⓐ
- ❑ X Ⓑ
- ❑ Y Ⓒ
- ❑ Z Ⓓ

6 Which image represents file management?

- ❑ W Ⓐ
- ❑ X Ⓑ
- ❑ Y Ⓒ
- ❑ Z Ⓓ

7 Which image represents fragmentation of a hard disk drive?

- ❑ W Ⓐ
- ❑ X Ⓑ
- ❑ Y Ⓒ
- ❑ Z Ⓓ

8 Which image represents a GUI?

- ❑ W Ⓐ
- ❑ X Ⓑ
- ❑ Y Ⓒ
- ❑ Z Ⓓ

9 One task of memory management is to...

- ❑ Allocate sections of RAM to the processor Ⓐ

11 Which user interface uses simple key presses to access the system, e.g. on a cashpoint machine?

- ❑ GUI Ⓐ
- ❑ WIMP Ⓑ
- ❑ Comma[illegible] Ⓒ
- ❑ Menu-d[illegible] Ⓓ

12 If an operating s[illegible]tem can run more than one program at the same ti[illegible] this is called...

- ❑ Multitasking Ⓐ
- ❑ Handshaking Ⓑ
- ❑ Multi-user Ⓒ
- ❑ Slicing Ⓓ

13 An example of applicati[illegible] software is...

- ❑ A device driver Ⓐ
- ❑ The operating system Ⓑ
- ❑ A word processor Ⓒ
- ❑ Data packets Ⓓ

14 Two features of a graphical user interface (GUI) are...

- ❑ Interactive Ⓐ
- ❑ Fast Ⓑ
- ❑ Text only Ⓒ
- ❑ Intuitive Ⓓ

15 A natural-language interface is one that uses what?

17 What is meant by access rights?

- ❑ The permission a user has to read, write, modify or delete files on a computer system Ⓐ
- ❑ Being able to log on to a computer w[illegible]out a password Ⓑ
- ❑ Permission to do anything an a co[illegible] Ⓒ
- ❑ Permission to enter a computer ro[illegible]

18 Which software is used to set access righ[illegible]n a computer system?

- ❑ A word processor Ⓐ
- ❑ A device driver Ⓑ
- ❑ Compression software Ⓒ
- ❑ The operating system Ⓓ

19 You are using your computer and have a word p[illegible]essor, presentation software and a web browser all running at the sa[illegible]time. This is called...

- ❑ Multi-programming Ⓐ
- ❑ Multi-doing Ⓑ
- ❑ Multi-tasking Ⓒ
- ❑ Multi-browsing Ⓓ

20 Linux is an operating system. True or false?

- ❑ TRUE Ⓐ
- ❑ FALSE Ⓑ

21 Dividing the processor time between processes so that they seem to multi-task is known as...

- ❑ [illegible]

23 When a hard disk becomes fragmented, what happens when reading and writing files?

- ❑ No difference Ⓐ
- ❑ It becomes faster Ⓑ
- ❑ More virtual memory is required Ⓒ
- ❑ It becomes slower Ⓓ

24 Why should a solid state drive NOT be defragmented?

- ❑ Because they are very reliable Ⓐ
- ❑ Because they are robust Ⓑ
- ❑ Because they have no moving parts to slow down the data transfers Ⓒ
- ❑ Because they are portable Ⓓ

25 Why is it important to defragment your hard disk?

- ❑ To keep the hard disk clean Ⓐ
- ❑ To ensure the connection to the Internet is always fast Ⓑ
- ❑ So that reading and writing of files does not slow down your system Ⓒ
- ❑ So that virtual memory is always available Ⓓ

26 Device drivers control peripherals.
Which <u>two</u> of the following are peripherals?

- ❑ Mouse Ⓐ
- ❑ CPU Ⓑ
- ❑ Keyboard Ⓒ
- ❑ RAM Ⓓ

27 Select <u>two</u> ways in which an operating system manages the memory of a computer.

- ❑ Deciding where programs are loaded into memory Ⓐ
- ❑ Deciding whether to use RAM or BIOS memory Ⓑ
- ❑ Using the BIOS memory when the computer boots up Ⓒ
- ❑ Using virtual memory when the main memory is full Ⓓ

28 What is the difference between a full backup and an incremental backup?

- ❑ A full backup copies all the files in one go; an incremental backup copies the files in stages Ⓐ
- ❑ A full backup copies all the files on a system; an incremental backup copies only the files that have changed since the last backup Ⓑ
- ❑ An incremental backup copies all the files; a full backup copies all the files that have changed since the last backup Ⓒ
- ❑ An incremental backup copies only the files that are most frequently used; a full backup copies all the files on the system Ⓓ

1.6 Ethical, legal, cultural and environmental impacts of digital technology [1]

1 What does ethical mean?

- ❑ Not breaking the law Ⓐ
- ❑ Laws that are created Ⓑ
- ❑ Something which raises questions of right and wrong Ⓒ
- ❑ The owners' rules about how their work can be used Ⓓ

2 What is meant by privacy issues?

- ❑ Where someone's personal data is recorded, with or without their permission Ⓐ
- ❑ When a hacker steals a password Ⓑ
- ❑ Using face recognition to find out who someone is Ⓒ
- ❑ When somebody has done something illegal Ⓓ

3 Which issue is represented by picture X?

- ❑ Cultural Ⓐ
- ❑ Ethical Ⓑ
- ❑ Environmental Ⓒ
- ❑ Legal Ⓓ

4 Which issue is represented by picture Y?

- ❑ Ethical Ⓐ

6 Which act makes it illegal to make unauthorised access to data with the intent to commit offences or modify data?

- ❑ Computer Misuse Act Ⓐ
- ❑ Data Protection Act Ⓑ
- ❑ Freedom of Information Act Ⓒ
- ❑ Copyright Designs and Patents Act Ⓓ

7 What is meant by environmental impact?

- ❑ Hacking in to someone's account Ⓐ
- ❑ Copying someone's work Ⓑ
- ❑ Considering ethical issues about technology Ⓒ
- ❑ How the environment is affected by something Ⓓ

8 Select a cultural issue.

- ❑ The impact of technology on our daily lives Ⓐ
- ❑ Throwing technology devices into landfill Ⓑ
- ❑ Deciding if something is legal or illegal Ⓒ
- ❑ Making sure you have a licence for software you use Ⓓ

9 Proprietary software is...

- ❑ Software that can be changed Ⓐ
- ❑ Software that cannot be changed by the user Ⓑ
- ❑ Software that is always paid for Ⓒ
- ❑ Software that is always free to use Ⓓ

10 What is a patent?

- ❑ Something that is protected

12 What was made illegal under the Computer Misuse Act 1990?

- ❑ Copying someone else's programs Ⓐ
- ❑ Copying DVDs and selling them Ⓑ
- ❑ Throwing [illegible]used devices into landfill Ⓒ
- ❑ Unauth[illegible]ccess to data Ⓓ

13 State one principle of the Freedom of Information Act 2000.

- ❑ Data should be accurate and up to date Ⓐ
- ❑ Members of the public can request information from public bodies about their activities Ⓑ
- ❑ Data should be used for the purpose specified Ⓒ
- ❑ Data cannot be transferred outside the EU unless the country has adequate data protection laws Ⓓ

14 Which of the software examples below is the odd one out?

A	B	C	D
Python Programming Language	Linux Operating System	Microsoft Office	Firefox Web Browser

- ❑ A Ⓐ
- ❑ B Ⓑ
- ❑ C Ⓒ

16 Select examples of three stakeholders in a school.

- ❑ Teachers Ⓐ
- ❑ Doctor Ⓑ
- ❑ Pupils Ⓒ
- ❑ Parents Ⓓ

17 A hospital has medical records of thousands of patients. Which legislation is most relevant to these records?

- ❑ The Computer Misuse Act Ⓐ
- ❑ Copyright Designs and Patents Act Ⓑ
- ❑ The Freedom of Information Act Ⓒ
- ❑ The Data Protection Act Ⓓ

18 Which of the following is an example of an advantage of using technology?

- ❑ Allows instant communication Ⓐ
- ❑ Can be used to create fake news Ⓑ
- ❑ Can be used to bully people Ⓒ
- ❑ Has created a digital divide Ⓓ

19 E-waste would be in which category?

- ❑ Ethical Ⓐ
- ❑ Environmental Ⓑ
- ❑ Legal Ⓒ
- ❑ Cultural Ⓓ

20 What is meant by globalisation?

- ❑ Using the Internet Ⓐ
- ❑ Making use of the World Wide Web Ⓑ

22 Which of the following is an example of a disadvantage of using technology?

- ❑ Fake news Ⓐ
- ❑ Scams Ⓑ
- ❑ Trolling
- ❑ All of the

23 Who is responsible for making sure the Data Protection Act is upheld in an organisation?

- ❑ The boss of the organisation Ⓐ
- ❑ The workers in an organisation Ⓑ
- ❑ The network manager Ⓒ
- ❑ The Data Controller

24 Select one principle of the Data Protection Act.

- ❑ Make it illegal for any unauthorised access to data with the intent to commit offences Ⓐ
- ❑ Make it illegal for any unauthorised access to data with the intent to modify data; for example with viruses Ⓑ
- ❑ The processing of personal data for any purpose must be lawful and fair Ⓒ
- ❑ Prevent hacking into a computer system Ⓓ

25 Select one way a government could misuse technology.

- ❑ It could send out fake news during an election period Ⓐ
- ❑ It could allow anyone to use the Internet Ⓑ
- ❑ It could upgrade broadband speeds so everyone has a fast connection to the Internet Ⓒ

1.6 Ethical, legal, cultural and environmental impacts of digital technology [2]

1 What does [illegible]and for?

- ❑ Data Produ[illegible]n Act Ⓐ
- ❑ Digital Prote[illegible]n Act Ⓑ
- ❑ Data Product[illegible] Act Ⓒ
- ❑ Data Protection [illegible]t Ⓓ

2 What does legislati[illegible]ean?

- ❑ Keeping personal [illegible]a safe Ⓐ
- ❑ Locking computer [illegible]s to protect them Ⓑ
- ❑ Making sure all com[illegible]ers are protected Ⓒ
- ❑ Laws that are created Ⓓ

3 Explain what e-waste is.

- ❑ Waste produced when de[illegible]s are made Ⓐ
- ❑ Waste produced when devic[illegible]s are no longer needed Ⓑ
- ❑ Waste produced when devices are left switched on Ⓒ
- ❑ Waste produced when lights are left switched on Ⓓ

4 The terms and conditions under which you can use an application or software is called...

- ❑ Copyright Licence Ⓐ
- ❑ [illegible]

6 Sending offensive messages via online communities is called...

- ❑ Pharming Ⓐ
- ❑ Trolling Ⓑ
- ❑ Phishing Ⓒ
- ❑ Scamming Ⓓ

7 Open source software is...

- ❑ Software that cannot be changed Ⓐ
- ❑ Software that usually has to be paid for[illegible] Ⓑ
- ❑ Software that can be changed, edited, cop[illegible]d Ⓒ
- ❑ Software that has to be bought from an o[illegible]e shop Ⓓ

8 Which one could be considered a cultural issu[illegible]

- ❑ A hacker gaining access to your computer Ⓐ
- ❑ A government preventing criticism of itself by [illegible]ers by blocking certain websites Ⓑ
- ❑ Not recycling technology devices Ⓒ
- ❑ Not using a creative commons licence Ⓓ

9 State <u>three</u> principles of the Data Protection Act 1998.

- ❑ Data should be processed fairly and lawfully Ⓐ
- ❑ Users must be trained not to click on links in emails Ⓑ
- ❑ Data should be relevant and not excessive Ⓒ
- ❑ Data should only be kept for as long as necessary Ⓓ

10 Select <u>two</u> features of open source software.

- ❑ [illegible]

12 Who are stakeholders?

- ❑ People who eat a lot of meat Ⓐ
- ❑ The owners of licenced software Ⓑ
- ❑ People who break copyright laws Ⓒ
- ❑ People that have an interest in a business or an organisation Ⓓ

13 Give examples of <u>three</u> stakeholders in a business.

- ❑ Investors Ⓐ
- ❑ Employees Ⓑ
- ❑ Participant Ⓒ
- ❑ Customers Ⓓ

14 Select an environmental issue connected with the manufacturing, use and disposal of computer technology.

- ❑ Computers contain hazardous materials Ⓐ
- ❑ Trees will be cut down from forests so crops can be grown Ⓑ
- ❑ Companies may make a lot of profit by selling updated technology Ⓒ
- ❑ It's OK to put e-waste in landfill sites Ⓓ

15 Is proprietary software free or paid-for?

- ❑ It's always free Ⓐ
- ❑ It's always paid-for Ⓑ
- ❑ It can be either, or even both Ⓒ
- ❑ It's usually free but sometimes you have to pay Ⓓ

16 Which legislation covers the act of hacking?

- ❑ The Environmental Information Act Ⓐ

17 State <u>two</u> impacts of technology on stakeholders of a bank.

- ❑ Customers may have less money to spend Ⓐ
- ❑ Fewer ATMs for customers as more people use banking apps Ⓑ
- ❑ Fewer jobs for banking staff as more people use online banking Ⓒ
- ❑ More banks will be opened on the high street for new customers Ⓓ

18 Which type of software is distributed with the source code?

- ❑ Proprietary Ⓐ
- ❑ Open source Ⓑ
- ❑ Freeware Ⓒ
- ❑ Malware Ⓓ

19 An employee accesses workers' files and deletes some of them without authority to do so. Which legislation does this apply to?

- ❑ Copyright Designs and Patents Act Ⓐ
- ❑ The Freedom of Information Act Ⓑ
- ❑ The Computer Misuse Act Ⓒ
- ❑ The Data Protection Act Ⓓ

20 Where might toxic chemicals from digital devices end up in the environment if not recycled correctly?

- ❑ Rivers Ⓐ
- ❑ Landfill Ⓑ
- ❑ Air Ⓒ
- ❑ All of these Ⓓ

22 What is the collective name used to describe groups of people that have an interest in an organisation – such as employees, employers and customers?

- ❑ Developers Ⓐ
- ❑ Stakeholders Ⓑ
- ❑ Data controllers Ⓒ
- ❑ Network managers Ⓓ

23 Select three attributes of open source software.

- ❑ Support for the software is provided by the 'community' Ⓐ
- ❑ The software is supported by the developers Ⓑ
- ❑ The users have access to all the source code Ⓒ
- ❑ This software might not be fully tested Ⓓ

24 What is meant by 'the digital divide'?

- ❑ Those who have an iPhone and those who have an Android phone Ⓐ
- ❑ Those who have access to technology and those who do not Ⓑ
- ❑ Those who use the Linux operating system and those who use the Windows operating system Ⓒ
- ❑ Those who use a laptop and those who use a desktop PC Ⓓ

25 Which one of these could be considered a privacy issue?

- ❑ Tracking your location Ⓐ
- ❑ Face recognition Ⓑ
- ❑ Monitoring your browsing history Ⓒ
- ❑ All of these Ⓓ

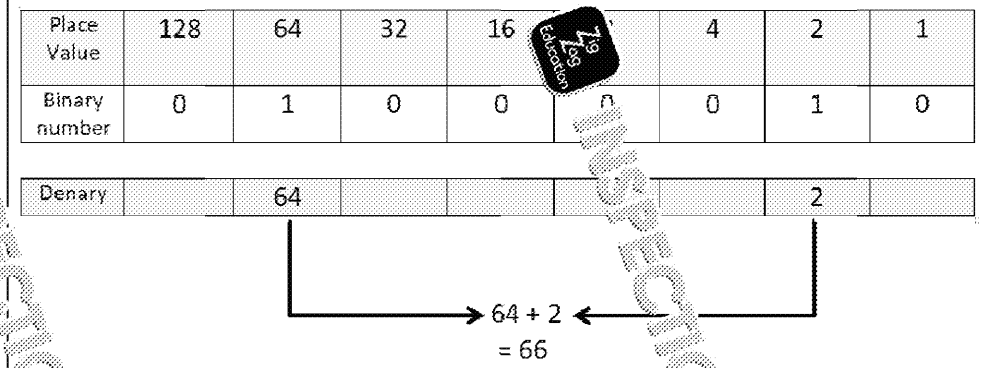
26 Select three attributes of proprietary software.

Component 1 Multiple Choice Questions – Answers

Question	Correct Answer(s)	Additional Comments / Explanation
1.1 Systems Architecture [1]		
1	B	Data and instructions are stored in the memory of the CPU itself. All the other options are external storage components.
2	B	ALU is the abbreviation for the Arithmetic Logic Unit.
3	A	MAR is the abbreviation for the Memory Address Register.
4	B	Every CPU has at least 1 core. More modern computers can have 2, 4 or 8 cores. The number of cores in a CPU increases over time.
5	B	The Memory Address Register stores the memory location (memory address) of the next bit of data to be fetched from the RAM memory.
6	C	The CPU is dedicated to processing all the data and instructions needed for the device to work correctly.
7	B	The higher the speed (GHz) and the greater the number of cores, the faster the CPU will run, assuming the software being used has been designed to take advantage of the greater number of cores.
8	D	The cache memory is part of the CPU. It processes data very quickly.
9	C	Instructions in the CPU have to be fetched, then decoded, and then they are executed.
10	A	The control unit controls the flow of data into and out of the CPU. It manages all of the instructions.
11	A	The way that CPUs are built (the architecture) is named after John von Neumann, a mathematician and early computer scientist.
12	D	A doubling of cores should result in a doubling of instructions carried out per second. This will result in the computer running programs faster if the software has been created to take advantage of the faster processing speed.
13	C	The accumulator in a CPU will keep check on the results of calculations until the full calculation is completed.
14	B	Multi-core is the technical term used for a CPU that uses more than one core.
15	D	The CPU is connected to RAM memory. The RAM memory holds the instructions and data needed by the CPU.

Question	Correct Answer(s)	Additional Comments / Explanation
22	B	Cache memory in the CPU is very fast and temporary because data needs to be processed by the CPU very quickly and the next instruction processed as quickly as possible. Cache memory is volatile memory; it is replaced and updated all the time by the CPU.
23		The washing machine is the only system that is fully dedicated to one task: washing clothes. All the other systems perform more than one task.
24	A	An embedded system is a system that only performs a single task. Sometimes an embedded system can be found in larger systems, e.g. robots that build cars will have many dedicated tasks and many embedded systems.
25	A, C	Once an embedded system has been manufactured thousands of times, e.g. one for a microwave oven, it becomes less expensive to make. Also, because it performs a single task, the software is easier to design than other software that performs many tasks. However, it is not always easy to replace embedded systems or update them because they may be soldered onto motherboards and not easily be replaceable or upgradable.
1.1 Systems Architecture [2]		
1	B	A register is a memory location in the CPU. It is a temporary data store.
2	C	Data is first *fetched* from RAM memory and is loaded into the CPU. This data is then *decoded* so the CPU knows what to do with it. Finally it is *executed* (carried out) by the CPU.
3	D	D is the correct answer. All the others are components or peripherals of a computer system.
4	C	-
5	B	-
6	A	The accumulator is the register that stores the results of calculations; the ALU is where calculations are carried out.
7	A	-
8	A	-
9	A	-

Question	Correct Answer(s)	Additional Comments / Explanation
18	C	-
19		-
20		-
21	B	-
22	C	Embedded systems contain both hardware and software that are integrated onto a dedicated circuit board. They will perform a specific task only.
23	A, C, D	The smartphone is not considered an embedded system because it is a multifunctional device and can be considered a general purpose computer system that can perform many tasks.
24	A, C, D	The three correct answers are all multifunctional devices that can perform many tasks. The central heating system performs one core task only.
25	B, C	-
26	C, D	-
27	B	-
28	C	-
1.2 Memory & Storage [1]		
1	D	-
2	D	-
3	B	-
4	C	-
5	B	-
6	B	-

Question	Correct Answer(s)	Additional Comments / Explanation
10	C	Convert the binary number 01000010 to denary = 66 
11	D	-
12	A	-
13	C	-
14	B	-
15	A	-
16	C	The number of bits in an image is calculated using: Width x Height x Bit depth 5 x 4 x 2 = 40 bits
17	A	The file size of an image is calculated by number of bits / 8 40 / 8 = 5 bytes
18	B	-

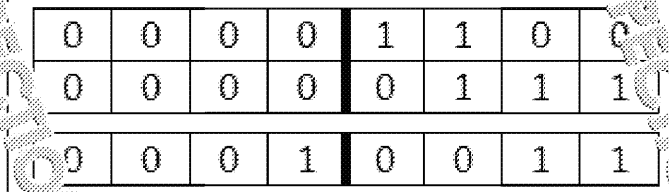
Question	Correct Answer(s)	Additional Comments / Explanation
27	C	-
28		-
1.2 Memory [illegible]ge [2]		
1	B	-
2	C	Volatile memory means the data is lost when the [illegible]wer is switched off. ROM is the non-volatile memory, the [illegible] are volatile memory.
3	C	Virtual memory is very slow because the hard disk [illegible]ed instead of RAM, and data is swapped between them [illegible]king the system slow.
4	A	Cache memory is the very fast memory that is part [illegible]e CPU.
5	C	ROM memory is used in embedded systems because th[illegible] software is burnt onto a microchip and cannot be chang[illegible]d.
6	A	Secondary storage devices are used to save data when [illegible] computer is switched off, e.g. hard disks, SSD drives, USB [illegible]rives.
7	A, D	Optical storage media includes CDs, CD-ROMs and DVD[illegible]
8	A, B	-
9	B	-
10	A	-
11	B	-
12	B	1,000 bits in a kilobyte. There are technically 1,024 bits in a kilobyte and the exam board will accept 1,024 in calculations.
13	A	-
14	B	-
15	B	Computers use bytes of information; a byte is eight bits. A 7-bit binary code adds a 0 to the 7 bits to make it into a byte, e.g. 1010101 becomes 01010101; the 0 is added to the leftmost place of the binary code.
16	C	Character sets change depending on the country or region. Computers in the same country or region will use the same character set.

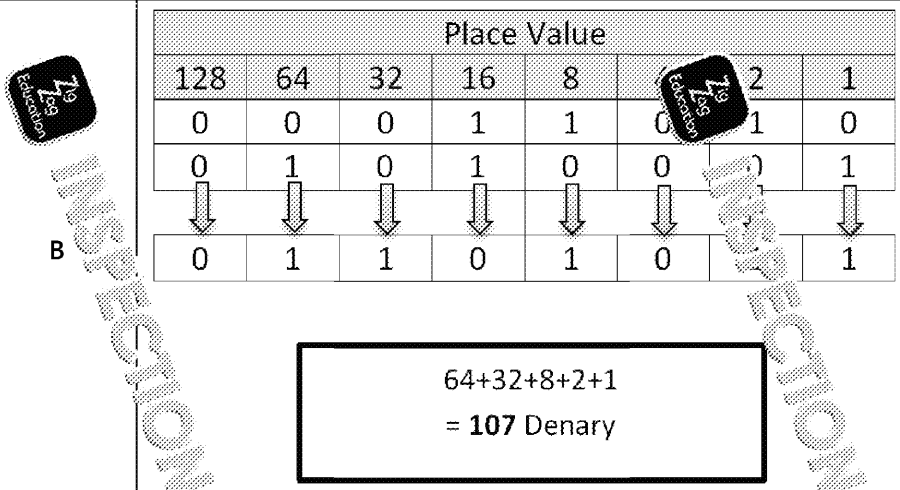
Question	Correct Answer(s)	Additional Comments / Explanation
19	D	Place Value 128 64 32 16 8 4 2 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 + 1 1 0 Binary 30 Denary
20	C	Binary Place Value Nibble | Nibble 4 2 1 8 4 2 1 0 0 0 1 0 0 0 1 (0+1+16) in denary 11 in hexadecimal
21	C	Place Value 128 64 32 16 8 4 2 1 0 0 0 1 1 1 1 1

Question	Correct Answer(s)	Additional Comments / Explanation
26	B	-
27		-
1.2 Memory [illegible]ge [3]		
1	B	When the computer is switched off, the CPU loses all of its instructions.
2	A, [illegible]	-
3	B	The operating system is loaded into RAM once the computer is running.
4	D	The start-up instructions are stored in the Read Only Memory (ROM). This is non-volatile memory.
5	A, B	The CPU and the RAM both lose the data when the power is switched off, so their memory is volatile.
6	A	
7	B	SSD memory has a limited life due to the number of times it can be written to.
8	A	Data is not lost when power is switched off so data is saved. This is non-volatile memory.
9	D	Although music and films can be streamed over the Internet, they are often still stored on CDs and DVDs.
10	A	Using an 8-bit (byte) representation, the number is represented as...

Place Value	128	64	32	16	8	4	2	1
Binary number	0	0	0	0	0	1	0	0

A 1 in this position is

Question	Correct Answer(s)	Additional Comments / Explanation
17	A	The letter D is missing from the word Disk. Letter D has the ASCII code 68.
18		The letter O is missing from the word BIOS. Letter O has the ASCII code 79.
19		-
20	C	The more pixels in an image, the more quality will increase. The image will have a higher resolution.
21	A	256 colours, 0–255. The 0 is counted as a number, so there are 256 colours that can be represented with 8 bits (one byte).
22	A	
23	D	Computers cannot use analogue signals; they must be converted to digital signals before the computer can do anything with them.
24	C	Hertz (Hz) is a measurement of frequency. One Hz means one cycle per second.
25	D	MP4 is a video file type.
26	D	-
1.2 Memory & Storage [4]		
1	C	ROM memory has the instructions and programs burned onto a microchip. They can only be read so this type of memory is called Read Only Memory.
2	A	Primary storage includes CPU cache, registers, RAM and ROM. They hold less data than secondary storage devices such as hard disk drives, optical media and SSD media.
3	D	The particular ROM microchip is called the BIOS (Basic Input Output System).

Question	Correct Answer(s)	Additional Comments / Explanation
5	B	
6	B	If a binary number is shifted to the right, all the digits move one place to the right. This has the effect of halving the number (dividing it by 2).
7	C	X will be 1 and a 0 is placed in the empty space at Y.
8	C	-
9	D	-
10	B	-
11	D	-
12	C	Binary is 1s and 0s. These are actual electrical currents that are either on or off, representing 1s and 0s. This is the only way a computer can work and do all the calculations required.
13	C	Bit comes from the two words Binary Digit

Question	Correct Answer(s)	Additional Comments / Explanation
18	A	<table><tr><th colspan="8">Place Value</th></tr><tr><td>128</td><td>64</td><td>32</td><td>16</td><td>8</td><td>4</td><td>2</td><td>1</td></tr><tr><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td></tr><tr><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td></tr></table>
19	D	First, convert 61 denary to a binary number <table><tr><th colspan="8">Binary Place Value</th></tr><tr><td>128</td><td>64</td><td>32</td><td>16</td><td>8</td><td>4</td><td>2</td><td>1</td></tr><tr><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td><td>1</td></tr></table> denary = 00111101 binary Split the byte into equal two nibbles: <table><tr><th colspan="8">Binary Place Value</th></tr><tr><th colspan="4">Nibble</th><th colspan="4">Nibble</th></tr><tr><td>8</td><td>4</td><td>2</td><td>1</td><td>8</td><td>4</td><td>2</td><td>1</td></tr><tr><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td><td>1</td></tr><tr><td colspan="4">This nibble has a 2 and a 1 = 3</td><td colspan="4">This nibble has an 8 and a 4 and a 1 = 13</td></tr></table>

Question	Correct Answer(s)	Additional Comments / Explanation
24	B	Compressed files will have a small file size. This allows the file to transfer faster over the Internet.
25		PNG and text files do not lose any quality when they are compressed and then uncompressed. If they did they would lose quality and information.
26	C	-
27	A	-
1.3 Computers, networks, connections and protocols [1]		
1	C	The topology of a network will probably not be the same as you actually see the network laid out in a room.
2	C	
3	A	
4	C	
5	B	A star topology has a central server computer. All client computers connect to this via a switch.
6	C	A full mesh topology is where every computer is connected to every other computer using a switch at each computer. This is rare and very expensive to set up.
7	B	-
8	C	-
9	D	-
10	B	-
11	A	-
12	C	-
13	B	-

Question	Correct Answer(s)	Additional Comments / Explanation
21	B	Layer 2, the Internet layer, connects different networks together using routers to connect between them.
22		The TCP protocol does the work of splitting the data into packets. It then controls these packets by sending and receiving them.
23		-
24	D	-
25	C	-
1.3 Computers, networks, connections and protocols [2]		
1	A	-
2	B	-
3	C	-
4	B	-
5	D	-
6	B	-
7	C	-
8	B	-
9	D	-
10	B	-
11	A	-
12	C	-
13	B	-

Question	Correct Answer(s)	Additional Comments / Explanation
23	D	-
24		-
25		A MAC address is given to every device that ts to the Internet. It is placed onto the device as it is nade by the manufacturer.
26	D	IPv4 addresses always have four different numbe separated by a dot. Each number can be up to 255.
27	B	-
28	B	-
29	C	Websites that use the HTTPS are secure websites. S websites have a padlock icon at the start of the web add s.
30	B	he POP protocol (Post Office Protocol) is used to re ive emails from a mail server.
1.3 Computers, netwo , connections and protocols [3]		
1	B	eer-to-peer network is a type of topology; there is n entral server computer.
2	D	A al Area Network can be any number of computers f two upwards that are connected together.
3	A	-
4	D	An IS the company that provides access to the Internet. A me, your ISP will provide you with a wireless hub and ro te (usually combined into o so that you can access the Internet and use wireless ices in your house.
5	B, D	Being a to share documents on a network is very convenien d efficient. Sharing hardware such as printers will reduce sts.
6	C	The largest Wide Area Network (WAN) in the Internet because it connects millions of different networks together.
7	C	-
8	B	The antenna transmits and receives the Wi-Fi signals and is the Wireless Access Point that devices can connect to.
9	C	Ethernet ports allow users to plug in Ethernet cables to the hub. They are rarely used these days, but if they are used to connect a PC or laptop they offer faster and more reliable connections to the Internet.

Question	Correct Answer(s)	Additional Comments / Explanation
17	A	The domain name is used to identify the IP address of a website.
18		This indicates what type of domain it is, e.g. .com is a company, .org is an organisation. There are other types as well.
19		-
20	C	A typical MAC address is 30-65-EC-6F-C4-58. A MAC address uses hexadecimal numbers to represent the address.
21	D	A MAC address is given to every device that connects to the Internet. It is placed onto the device as it is being made by the manufacturer.
22	C	The 4.3 billion IPv4 addresses have now been used and have run out. IPv6 is now used and the addresses should never run out.
23	C	-
24	D	-
25	D	-
1.4 Network security [		
1	C	-
2	C	-
3	B	-
4	A	-
5	A, C, D	-
6	C	-
7	A	Ransomware is a form of malware. Users are asked to pay a ransom to gain access to their data. Backups are essential in case your software needs to be reinstalled.
8	D	-
9	C	

Question	Correct Answer(s)	Additional Comments / Explanation
17	B	Stopping people getting in to a computer room can be an effective form of security.
18		Removable media can be taken to a different [illegible] of the building or offsite for added security.
19		-
20	B	Denial of Service attacks can stop users accessing a website because the web servers get bombarded with lots of useless data.
21	A	-
22	B	-
23	A	-
24	B	-
25	B	A DDoS attack effectively makes it impossible to stop the attack simply by blocking a single source because it is coming from many sources.
1.4 Network security [2]		
1	D	A type of malware that uses encryption to lock a user out of their files.
2	B	-
3	C	Hacking is also a term that can be used when people legally break into systems.
4	B	Malware is a general term given to malicious software created to damage or gain illegal access to computer systems.
5	D	A Trojan is a type of malware which is disguised as legitimate software.
6	B	-
7	C	-
8	B	X is the web address of Amazon UK. The other web addresses are all fake and would be part of a phishing scam.
9	D	-

Question	Correct Answer(s)	Additional Comments / Explanation
17	C	A DDoS attack effectively makes it impossible to stop the attack simply by blocking a single source because it is coming from many sources.
18		-
19		-
20	A	Flooding a server with worthless data to stop it working. This is a Denial of Service attack.
21	B	-
22	C	-
23	B	-
24	A	-
25	B	Penetration testing is often done by companies to test their own systems.
26	C	
1.4 System software [1]		
1	D	GUI is short for Graphical User Interface. It helps the user interact with the operating system.
2	D	-
3	B	-
4	D	-
5	B	In school, different students can use the same workstations at different times. The OS keeps the information for each user.
6	A	Linux is an operating system. It is not as common among everyday users as Windows, but is a popular choice for server installations by organisations. The Android OS is based on Linux.
7	C	-
8	B	

Question	Correct Answer(s)	Additional Comments / Explanation
16	D	The printer is a peripheral. The others are components inside the computer.
17		-
18		-
19	A	-
20	B	-
21	C	The CPU is a component of a computer system be[illegible]e it is inside of it, not outside of it.
22	C	-
23	A	Spell check is not a file management action. All the other[illegible]s are performed by the OS.
24	C	The command line interface is very efficient; instructions [illegible] commands will run faster, but you have to know what to type because there are no [illegible]e, menus, windows, etc. to help you.
25	B	Each file is spread out over the hard disk, meaning it is fra[illegible]mented. This will make saving and opening files slower.
1.5 System software [2]		
1	B	Device drivers are used to control hardware connected to a [illegible]puter system. The device drivers are managed by the op[illegible]ing system
2	D	-
3	A, C	-
4	B	A multi-user system will allow several accounts to be used on a single computer. Each user will have their own logon details.
5	B	X is the correct answer. The computer will send instructions to the printer using the device driver.
6	A	W is the correct answer. Files that are put into folders are part of the file management features of the operating system.
7	D	Z is the correct answer. The diagram show a fragmented disk. Defragmentation utility software would be used to defragment the files on the hard disk drive.

Question	Correct Answer(s)	Additional Comments / Explanation
16	C	-
17		Different users of a computer system will have different permission to do tasks. These are set up by the network manager and managed by the operating system.
18	D	-
19	C	-
20	B	There is no operating system called Linuz so the statement is false (Linux would have be correct).
21	D	-
22	A	-
23	D	The disk head has to do more searching over the disk surface to find all of the fragmented parts of a file. This slows down file access so slows down the computer.
24	C	-
25	C	-
26	A, C	-
27	A, D	-
28	B	-
1.6 Ethical, legal, cultural and environmental impacts of digital technology [1]		
1	C	-
2	A	-
3	C	C is the correct answer. Making sure that used technology equipment does not get put into landfill is an environmental issue.
4	A	A is the correct answer. Ethical issues arise about replacing humans with robots at work.

Question	Correct Answer(s)	Additional Comments / Explanation
13	B	B is correct. The others relate to the Data Protection Act.
14		C is the odd one out because it is proprietary software. The others are all open source software.
15		-
16	A, C	-
17	D	-
18	A	-
19	B	-
20	C	-
21	D	-
22	D	-
23	D	D is correct. Each organisation has to have a named data controller to ensure the DPA is upheld.
24	C	C is the correct answer. All others relate to the Computer Misuse Act.
25	A	-
26	C	-
1.6 Ethical, legal, cultural and environmental impacts of digital technology [2,		
1	D	-
2	D	The word 'legal' come from the word 'legislation'. Legislation refers to laws that people must follow.
3	B	The 'e' in e-waste stands for electronic. E-waste is a big problem for our planet as we create more and more devices and then need to dispose of them.
4	C	

Question	Correct Answer(s)	Additional Comments / Explanation
13	A, B, D	-
14		-
15	C	Proprietary' doesn't define its free or paid-fo[illegible]hore to do with the ownership/usability of the softwa[illegible]prietary software that is free is called 'freeware'. It can sometimes be available for free with certain limitations/restrictions, with a paid option allowing for removal of these limitations/restrictions and and/or for additional premium features or support.
16	B	-
17	B	-
18	B	[illegible]
19	C	[illegible]e Computer Misuse Act protects personal data held by organisations from unauthorised access and modificatio[illegible]
20	D	[illegible]
21	A	A[illegible]he answer. All the others relate to proprietary softwa[illegible]
22	B	Peo[illegible]e who are part of an organisation, or have some sort of interest in it, are called stakeholders. Different organisations will have different type[illegible]f stakeholders, e.g. stakeholders of a school will be different from stakeholders of a supermarket.
23	A, C, D	A, C [illegible] D are correct. B relates to proprietary software.
24	B	-
25	D	All of these collect data about you.
26	A, C, D	A, C and D are correct. B relates to open source software.