

## **6<sup>th</sup> Form Transition**

### **Cambridge Technicals Diploma in IT Level 3**

#### **Ethical, Legal, Cultural and Environmental Concerns**

Find a recent news story on one of the following topics:

1. A legal issue in computing, such as a breach of the Data Protection Act
2. An ethical issue in computing, such as the development of AI
3. An environmental issue in computing, such as the disposal of waste equipment
4. A technical development in computer science, such as the Internet of Things

Summarise the story, explaining any technical content for a student in year 10. Explain how the story affects you as a student of computer science.

#### **Memory**

1. Compare RAM and ROM
2. Explain the need for virtual memory in a computer system
3. Describe the characteristics of flash memory

#### **Storage**

1. Complete the following table comparing optical, magnetic and solid state storage media

Capacity	Speed	Portability	Durability	Reliability	Cost
Optical					
Magnetic					
Solid State					

#### **Networks**

Explain the similarities and differences between

- A LAN and a WAN
  - Client-server and peer-to-peer networks
2. Explain the difference between the Internet and the World Wide Web
  3. Describe the factors that affect network performance, and explain how network performance can be improved
  4. Draw three different network topologies
    1. Label all the components required to create each network
    2. Explain the purpose of each component in the network, including
      - Wireless Access Points
      - Routers
      - Switches
      - Network Interface Cards
      - Transmission media, such as Ethernet Cables
  5. There have been many recent high-profile cyber-attacks across the world, including the attack on the NHS in May 2017. Some commentators have said that “we now rely too much on technology”. Write an essay explaining how far you agree with this statement and including descriptions of threats to IT systems and ways to reduce vulnerabilities.

## Computational Thinking – Theory

**Convert the following into the units given**

- |              |         |
|--------------|---------|
| a. 4 bytes = | bits    |
| b. 1 TB =    | bytes   |
| c. 80 kB =   | GB      |
| d. 40 MB =   | nibbles |

**You should be able to convert between binary, hexadecimal and denary as required**

- Convert the decimal number 407 to:
  - BINARY
  - HEXIDECIMAL
- Convert the hexadecimal number 23F to:
  - Binary
  - Decimal
- Convert the binary number 1110011 to:
  - Hexidecimal
  - Binary

### Understand computer software

Describe the following giving 2 advantages and disadvantages of each

- Open source software
- Close sourced software
- Off the shelf software
- Bespoke software
- Shareware
- Freeware
- Embedded software

### Resources to help:

**Teach-ict login website:** <http://www.teach-ict.com/>

**Username:** ha52lx

**Password:** computing

<https://www.bbc.co.uk/bitesize/guides/zbgg4qt/revision/1>

<https://www.computerscience.gcse.guru/theory/memory-and-storage>

<https://study.com/academy/lesson/what-is-a-computer-network-types-definition-quiz.html>

<https://www.youtube.com/watch?v=rsxT4FfRBaM>

There is a lot more for you to do your own research online.

**Book for course:** Cambridge technical Level 3 in IT – Hodder Education ISBN:978-1-471-87491-8