



Cambridge Technicals Level 3 IT Extended Certificate Transition Work

This qualification is comprised of 5 units; 3 mandatory and 2 optional. The mandatory units are:

1. Fundamentals of IT
2. Global Information
3. Cyber Security

The qualifications aim is to develop your knowledge, understanding and skills of the essentials of IT and Cyber Security. You will gain an insight into the IT sector as you investigate the pace of technological change, IT infrastructure on a global scale, and the importance of legal and security considerations.

You will develop professional, personal and social skills through interaction with your peers, stakeholders and clients, as well as theoretical knowledge and understanding to underpin these skills. These support the transferable skills required by employers such as communication, problem solving, time management, research and analytical skills.

Working through the tasks will help you decide if this subject is for you. These work as a comprehensive introduction to the course and its content.

If you have any questions you can email them to JFindlay@holyfamilyschool.uk

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Learning Outcomes for Unit:1

1. *Understand computer hardware*
2. *Understand computer software*
3. *Understand business IT systems*
4. *Understand employability and communication skills used in an IT environment*
5. *Understand ethical and operational issues and threats to computer systems*

Computer hardware

Key terms (for each one add a definition including an example)

- Input device
- Output device
- Communication device

Q. What are the benefits of using a VDU? Does it have any limitations?

Q. Voice recognition is an input device, give two advantages of using one and discuss the limitations involved too

Q. Complete the table:

Device	Input	Output	Communication
Modem			
Braille terminal			
Sensors			
Graphics tablet			
Hub			
VDU			
Plotter			
Terminal adapter			
Barcode reader			
Network interface card			

Computer components

Key terms (for each one add a definition including an example/use)

- Memory
- Ports
- Storage

Q. What is the role of a CPU?

Q. What are the components of a CPU and their purpose?

Q. What is the role of a motherboard?

Q. Name three different types of port and what they are used for

Types of computer system

Key terms (for each one add a definition including an example)

- Embedded system
- Internet of Things
- Desktop
- Server
- Mainframe

Activity- Investigate types of computer systems which would meet the needs of an elderly person who enjoys completing crosswords and keeping up to date with current affairs.

List the benefits and limitations of each

Which system do you believe to be the most appropriate? Justify your choice.

Connectivity methods

Key terms (for each one add a definition including an example)

- Wireless technologies

Q. Describe at least two strengths and two weaknesses of optical fibre

Complete the table:

	Used for	Range
Bluetooth		
Wi-fi		
Laser networks		
Infrared technology		
Microwave communication		

Communications hardware

Key terms (for each one add a definition and use)

- Hub
- Switch
- Router
- Modem
- Wireless access point

Q. Discuss the advantages and disadvantages of the devices given above

Hardware troubleshooting

Key terms (for each one add a definition)

- Troubleshooting
- Fault management

Q. Why is it important to keep records of faults?

Q. What is an event viewer and how is it used?

Q. What is the different between self-test programs and diagnostic software?

Units of measurement

Q. Explain why computers use binary

Q. Convert the denary number 212 to a binary number with 8 bits

Q. Convert the denary number 212 to a hexadecimal

Q. Convert the hexadecimal number 2F to denary

Q. Convert the binary number 00111101 to hexadecimal

Q. Explain why hexadecimal numbers are often used to represent binary numbers.

Types of software

Key terms (for each one add a definition including an example)

- Open source
- Closed source
- Off the shelf
- Bespoke
- Shareware
- Freeware
- Embedded

Q. Complete the table:

Type	Use	Characteristics	Advantage	Disadvantage
Open source				
Closed source				
Off the shelf				
Bespoke				
Shareware				
Freeware				
Embedded				

Applications software

Key terms (for each one add a definition including an example)

- Applications software
- Productivity software
- Business software

Q. Explain what development tools are and the different types that can be used

Q. Complete the table, discussing the use of different types of business software:

Type of software	Use	Advantage	Disadvantage
MIS			
Multimedia			
Collaboration			
Project management			
Manufacturing			
CAD/CAM			
Publishing			
Expert systems			
Healthcare			

Utility software

Key terms (for each one add a definition including an example)

- Utility software

Q. Complete the table

Software type	Use	Advantages	Disadvantages
Back-up			
Anti-virus			
Compression			

Operating systems

Key terms (for each one add a definition including an example)

- Operating system

Q. Why is the operating system seen as the most important software in any computer system? Explain what it controls.

Q. What is the difference between a single user operating system and a multiuser operating system?

Q. What extra facilities are required by a multiuser operating system?

Communication methods

Q: Complete the table

Communication method	Characteristics	Advantages	Disadvantages
SMS			
Email			
Messaging software			
Social networking			
VoIP			
Personal assistants (e.g. Siri)			
Teleconference			
Video conference			
Instant messaging			

Software troubleshooting

Key terms (for each one add a definition including an example)

- Unexpected software behaviour
- Software freeze
- Unexpected rebooting
- Troubleshooting
- Documentation

Protocols

Key terms (for each one add a definition and discuss its purpose)

- TCP
- IP
- UDP
- SMTP
- POP3
- FTP
- HTTP
- ICMP
- SNMP

Q. Why is it important that we have protocols?

Types of servers

Key terms (for each one add a definition and discuss its purpose)

- File/print
- Application
- Database
- Web
- Mail
- Hypervisor

Q. What is meant by the term server?

Q. What is the function of a server?

Virtualisation

Key terms (for each one add a definition and discuss its purpose)

- Server
- Client
- Storage
- Cloud
- Hybrid

Q. What are the benefits of virtualisation?

Q. What are the limitations of virtualisation?

Networking characteristics

Key terms (for each one add a definition and discuss its purpose)

- Peer to peer
- Client server
- DNS
- Default gateway
- IP Address
- Subnet mask

Q. Draw a bus network and discuss advantages and disadvantages of using one

Q. Draw a star network and discuss advantages and disadvantages of using one

Q. Draw a ring network and discuss advantages and disadvantages of using one

Q. Draw a mesh network and discuss advantages and disadvantages of using one

Connectivity methods

Key terms (for each one add a definition and discuss its purpose)

- LAN
- WAN
- MAN
- ADSL
- Leased line
- ISDN

Q. Discuss the differences between Ethernet and Token Ring methodologies in a LAN

Q. When would a leased line be a good idea?

Q. Discuss the differences between PSTN and cellular communication

Q. Why is Satellite a good option for news agencies when reporting in remote locations? Discuss benefits and limitations in your answer

Business systems

Key terms (for each one add a definition and discuss its purpose)

- MIS
- CRM
- SOP

Q. What is a Helpdesk? Discuss three limitations of using a Help desk

Q. What type of organisation would use an MIS? Discuss benefits and limitations to the organisation

Q. What type of organisation would use a CRM? Discuss benefits and limitations to the organisation

Industry Certification

Key terms (Discuss the roles and the key skills required)

- Network manager
- IT Technician
- Programmer
- Web Designer
- Animator

Q. Discuss three communication devices that are used in the IT environment, give benefits and limitations for each device.

Q. Discuss three potential barriers to communication

Q. What is the difference between formal and informal communication? Give examples

Q. In your opinion what are the three most important personal attributes to have in the world place? Why?

Q. Why is it important that you are 'ready for work'? What impact does it have on you and the organisation?

Q. Discuss the benefits and limitations of a professional body

Q. What is it useful to gain industry certification? What are the benefits to the worker and the employer? Give examples

Ethical issues

Q. What is meant by the term whistle blowing? Discuss giving examples

Q. What is discrimination and what are the different ways in which people can discriminate against one another? How does the Equality Act 2010 ensure equality?

Q. How does the Data Protection Act 1998 ensure personal data is used responsibly?

Q. What is a code of practice and how are they used in a workplace?

Operational issues

Key terms (for each one add a definition and discuss its purpose)

- Change management
- Scale of change

Q. Discuss ways in which data can be kept secure, use physical and software as examples.

Q. What impact could poor Health and Safety practices have on an organisation?

Q. What is meant by disaster and recover planning? Discuss how creating backup data is fundamental in the process

Q. Why do companies have organisational policies?

Q. How is an acceptable use policy and a code of conduct policy used?

Q. How may operational issues change if:

- An organisation decides to change its business practice
- There is a change in legislation
- A new competitor appears

Q. Sometimes the needs of an organisation/employee can change. How may the following changes affect both?

- Improved networking
- Remote access for employees

Threats

Key terms (for each one add a definition and discuss its purpose)

- Phishing
- Hacking
- Virus
- Trojan
- Interception
- Eavesdropping
- Data theft
- Social engineering

Physical security

There are different methods of physical security, discuss how each one works and how they are used in different contexts. Can you just the use of each?

- Locks
- Biometrics
- RFID
- Tokens
- Privacy screens
- Shredding

Digital Security

Key terms (for each one add a definition and discuss how they are used)

- Anti-virus
- Firewalls
- Anti-spyware
- Username/passwords
- Permissions
- Encryption

Safe disposal of data & computer equipment

Q. What does the Waste Electronic and Electrical Equipment (WEEE) directive cover?

Q. What does the Hazardous Waste Regulations 2005 cover?

Q. Why is it important that data is destroyed correctly? Discuss the Freedom of Information Act 2000 and the Data Protection Act 1998 in your answer

Q. How does overwriting data and electromagnetic wipe work? What are the differences?