Unit 3

GCSE ICT

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Common topic areas

- Data logging and control
- Web software
- Digital Imaging
- Animation
- Hardware and software
- Networks
- Human Computer Interfaces
- Organisations
- Data Protection Act
- Health

1

Data and quality of data

2. Write **one** letter, A, B, C or D from the words given in the list below to complete the following sentences:

Use each letter only once.

A KNOWLEDGE
B DATA LOGGING
C INFORMATION
D DATA

(i) Sensors are used in school weather stations for [1] [1]

(ii) Raw readings collected from sensors are called [2] [1]

(iii) The readings are used to create a graph and this gives us [3] [1]

(iv) When we apply rules to the processed weather readings we get [4] [1]

Question 3

2. Write **one** letter, A, B, C or D from the words given in the list below to complete the following sentences:

Use each letter only once.

A KNOWLEDGE
B DATA LOGGING
C INFORMATION
D DATA

(i) Sensors are used in school weather stations for [1] B [1]

(ii) Raw readings collected from sensors are called [2] D [1]

(iii) The readings are used to create a graph and this gives us [3] C [1]

(iv) When we apply rules to the processed weather readings we get [4] A [1]

Answer 3

10. A company keeps its payroll data in a spreadsheet. Part of this spreadsheet is shown below.

	A	B	C
1	Employee Code	Rate of pay	Hours worked per week
2	001	£7.20	35
3	002	£7.50	27
4	003	£8.40	37
5	004	£8.20	1000
6	Validation		
7	10		
8	4		

(a) The company uses validation techniques to ensure no errors are made.

(i) What is meant by the term *validation*? [1]

.....

(ii) Using only words from the list below, state which validation technique has been used in cells **A7** and **A8**. [2]

HASH TOTAL **INPUT MASK** **LENGTH CHECK** **BATCH TOTAL**

(I) **A7** .....

(II) **A8** .....

(b) Suggest a validation technique which could have prevented the error in cell **C5**. [1]

.....

.....

.....

Question 1

10. A company keeps its payroll data in a spreadsheet. Part of this spreadsheet is shown below.

	A	B	C
1	Employee Code	Rate of pay	Hours worked per week
2	001	£7.20	35
3	002	£7.50	27
4	003	£8.40	37
5	004	£8.20	1000
6	Validation		
7	10		
8	4		

(a) The company uses validation techniques to ensure no errors are made.

(i) What is meant by the term *validation*? [1]

Checking data is sensible.

(ii) Using only words from the list below, state which validation technique has been used in cells **A7** and **A8**. [2]

HASH TOTAL INPUT MASK LENGTH CHECK BATCH TOTAL

(I) **A7** Hash total

(II) **A8** Batch total

(b) Suggest a validation technique which could have prevented the error in cell **C5**. [1]

Range check to ensure that data is between two values.

Answer 1

A school football club keeps details of its members in a computer database.

Part of this database is shown below.

Membership Number	Name	House No.	Gender	Date Joined	Membership Fees Paid
2355	D. Davies	14	M	01/12/2006	Yes
2378	P. Collins	57	M	05/11/2009	Yes
2456	G. Parry	92	F	02/14/2010	Yes
2356	D. Evans	12	M	01/12/2006	Yes
2388	P. Cull	56	M	05/11/2009	No
2656	T. Parry	93	F	12/12/2010	Yes
2959	F. Khan	25	F	24/07/2005	No

The Gender field is coded. State **two** advantages of encoding data this way. [2]

Advantage 1 .....

.....

Advantage 2 .....

.....

Question 1

A school football club keeps details of its members in a computer database.

Part of this database is shown below.

Membership Number	Name	House No.	Gender	Date Joined	Membership Fees Paid
2355	D. Davies	14	M	01/12/2006	Yes
2378	P. Collins	57	M	05/11/2009	Yes
2456	G. Parry	92	F	02/14/2010	Yes
2356	D. Evans	12	M	01/12/2006	Yes
2388	P. Cull	56	M	05/11/2009	No
2656	T. Parry	93	F	12/12/2010	Yes
2959	F. Khan	25	F	24/07/2005	No

The Gender field is coded. State **two** advantages of encoding data this way. [2]

Advantage 1 Faster to enter data

Advantage 2 Saves memory/storage space

Answer 1

6. Different *Verification* and *Validation* techniques are used to check data.

(a) Complete the following sentences about *Verification*, using only the words given below.

Range **Parity** **Double-keying**

Format **Type** **Visual** **Presence**

(i) A ..... check is when a user carefully reads what has been typed in and compares it with the original data source. [1]

(ii) A ..... check ensures that the data sent is the same as the data received when data is transmitted from one computer to another. [1]

(iii) ..... is used to check if you have entered your password correctly. [1]

(b) State the purpose of validation. [1]

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.....

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.....

(c) *Hash* and *Batch* totals are different types of validation techniques. Describe the difference between them. [2]

.....

.....

Questio

6. Different *Verification* and *Validation* techniques are used to check data.

(a) Complete the following sentences about *Verification*, using only the words given below.

Range **Parity** **Double-keying**

Format **Type** **Visual** **Presence**

(i) A visual check is when a user carefully reads what has been typed in and compares it with the original data source. [1]

(ii) A parity check ensures that the data sent is the same as the data received when data is transmitted from one computer to another. [1]

(iii) double-keying is used to check if you have entered your password correctly. [1]

(b) State the purpose of validation. [1]

Check data is sensible.

(c) *Hash* and *Batch* totals are different types of validation techniques. Describe the difference between them. [2]

Answer

Hash is meaningless - batch is meaningful.

2

Data logging and control

(a) A college has created an indoor 'rainforest'. The following sensors are being used to control the conditions in the rainforest. If a sensor detects a value that is too high it sends a value 1 to the computer.

Bit 1	Bit 2	Bit 3	Bit 4
temperature	light	humidity	moisture

The four bits are sent in the order shown above.

For each of the following describe the conditions in the rainforest when the following bit patterns are received. [3]

(i) 0000

.....

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(ii) 1100

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Question 1

(a) A college has created an indoor 'rainforest'. The following sensors are being used to control the conditions in the rainforest. If a sensor detects a value that is too high it sends a value 1 to the computer.

Bit 1	Bit 2	Bit 3	Bit 4
temperature	light	humidity	moisture

The four bits are sent in the order shown above.

For each of the following describe the conditions in the rainforest when the following bit patterns are received. [3]

(i) 0000

TEMPERATURE, LIGHT, HUMIDITY and MOISTURE the sensors are normal

(ii) 1100

TEMPERATURE and LIGHT are high

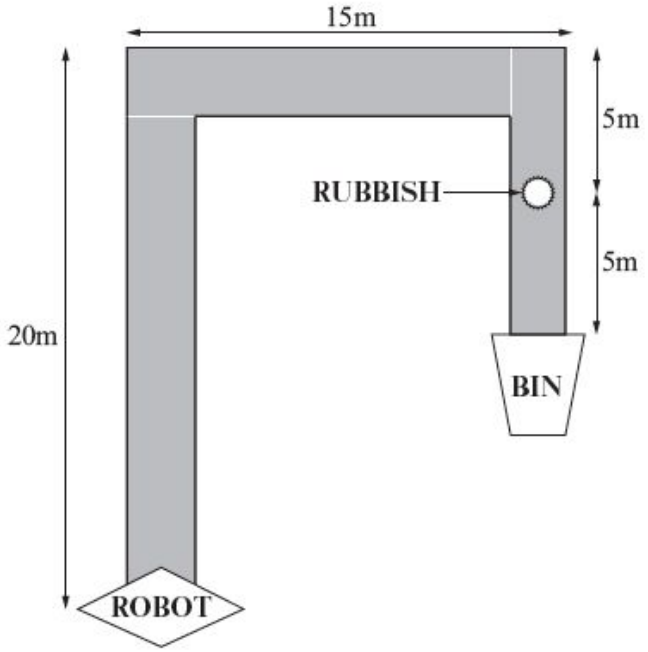
HUMIDITY and MOISTURE are normal

Answer 1

The college uses a robot to teach computer control using the following instructions.

FWD n	Move forward n metres
BACK n	Move backwards n metres
LEFT t	Turn left t degrees
RIGHT t	Turn right t degrees
GRAB	Collect rubbish
RELEASE	Drop rubbish

Write a set of instructions to make the robot travel the walkway shown in the plan below, pick up the rubbish and drop it in the bin. [3]

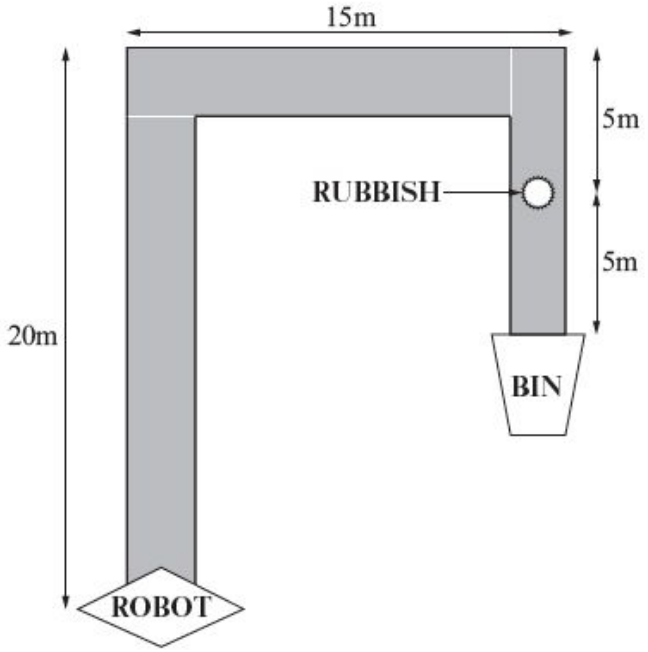


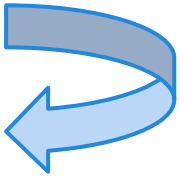
Question 2

The college uses a robot to teach computer control using the following instructions.

FWD n	Move forward n metres
BACK n	Move backwards n metres
LEFT t	Turn left t degrees
RIGHT t	Turn right t degrees
GRAB	Collect rubbish
RELEASE	Drop rubbish

Write a set of instructions to make the robot travel the walkway shown in the plan below, pick up the rubbish and drop it in the bin. [3]

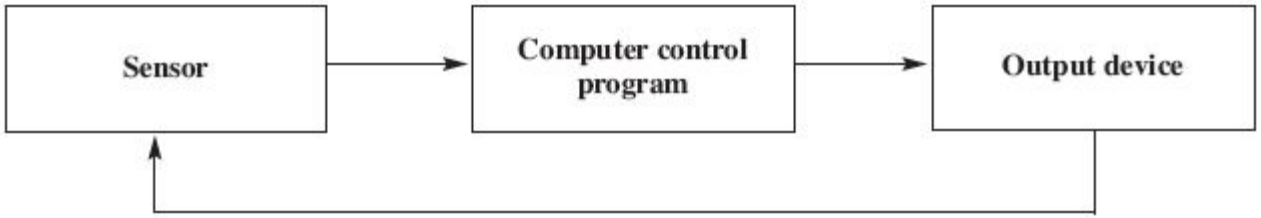




FWD 20
RIGHT 90
FWD 15
RIGHT 90
FWD 5
GRAB
FWD 5
RELEASE

Answer 2

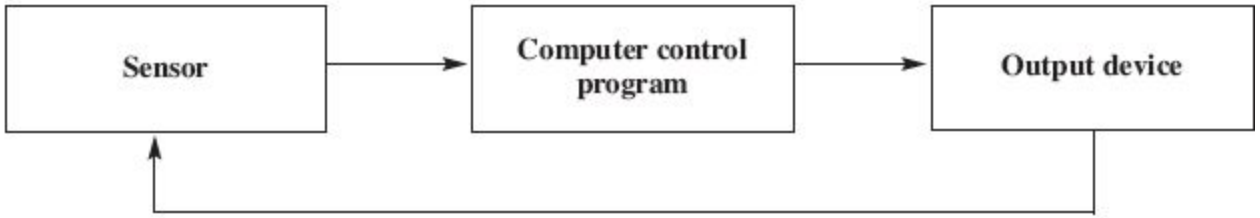
6. A computer controlled central heating system is used to *monitor* and *maintain* the temperature of a room at 20°C. A diagram of this system is shown below.



Describe *in detail* how this computer controlled system would *monitor* and *maintain* the temperature of a room at 20°C. In your answer you should refer to the type of sensor, output device and processes involved. [5]

Question 3

6. A computer controlled central heating system is used to *monitor* and *maintain* the temperature of a room at 20°C. A diagram of this system is shown below.



Describe *in detail* how this computer controlled system would *monitor* and *maintain* the temperature of a room at 20°C. In your answer you should refer to the type of sensor, output device and processes involved. [5]

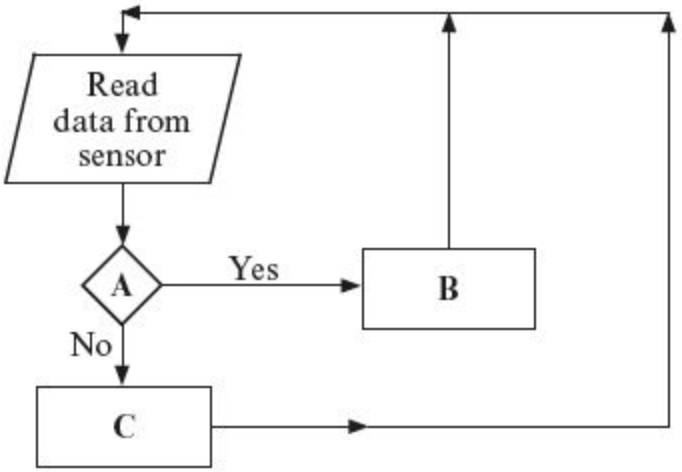
Temperature sensor can be used in conjunction with

heater and air conditioning unit.

If the temperature >20 then turn on Air Con.
If the temperature <20 then turn on Heater.

Answer 3

9. The diagram below describes a general control system. Name a control system you have studied and answer the following questions.



Name of control system you have studied. .....

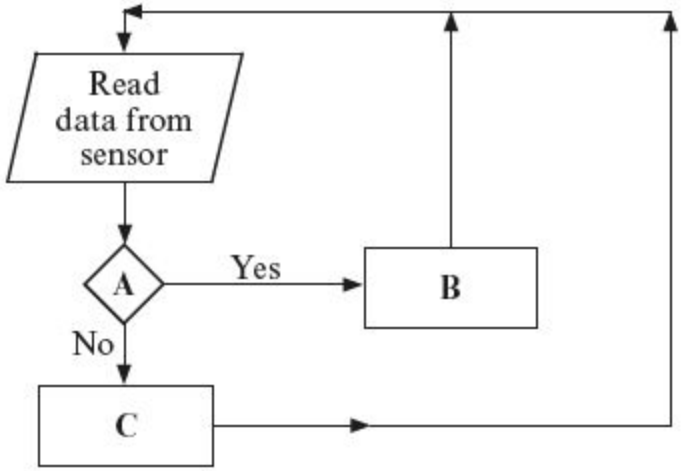
(a) Name a sensor and an output device used in the control system you have named above. [2]

Sensor .....

Output device .....

Question 3

9. The diagram below describes a general control system. Name a control system you have studied and answer the following questions.



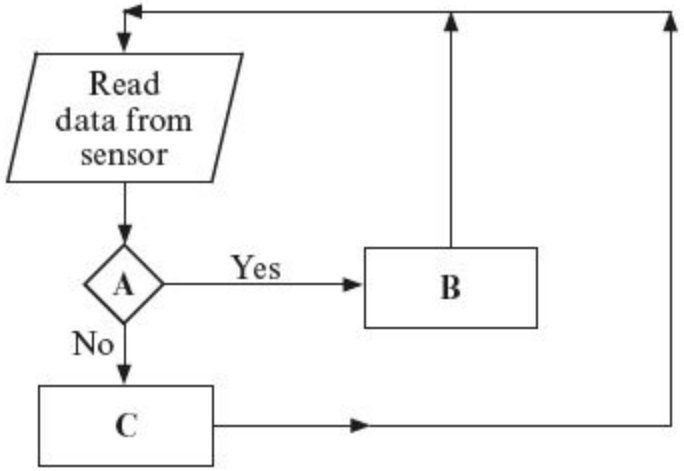
Name of control system you have studied. greenhouse

(a) Name a sensor and an output device used in the control system you have named above. [2]

Sensor Temperature sensor.

Output device Heater

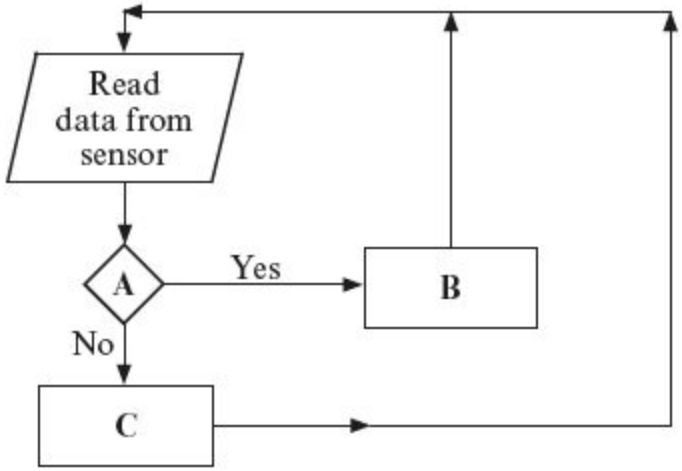
Answer 3



(b) Complete the table for the control system you have named above, giving suitable processes for the letters **A**, **B** and **C** indicated in the diagram. [3]

A	....
B	....
C	....

Question 4



(b) Complete the table for the control system you have named above, giving suitable processes for the letters **A**, **B** and **C** indicated in the diagram. [3]

A	is temperature too high?
B	turn on fan.
C	turn on heater.

Answer 3

(c) Give **one** *advantage* of using computers to control the system. [1]

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(d) Give **one** *disadvantage* of using computers to control the system. [1]

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Question 4

(c) Give **one** *advantage* of using computers to control the system. [1]

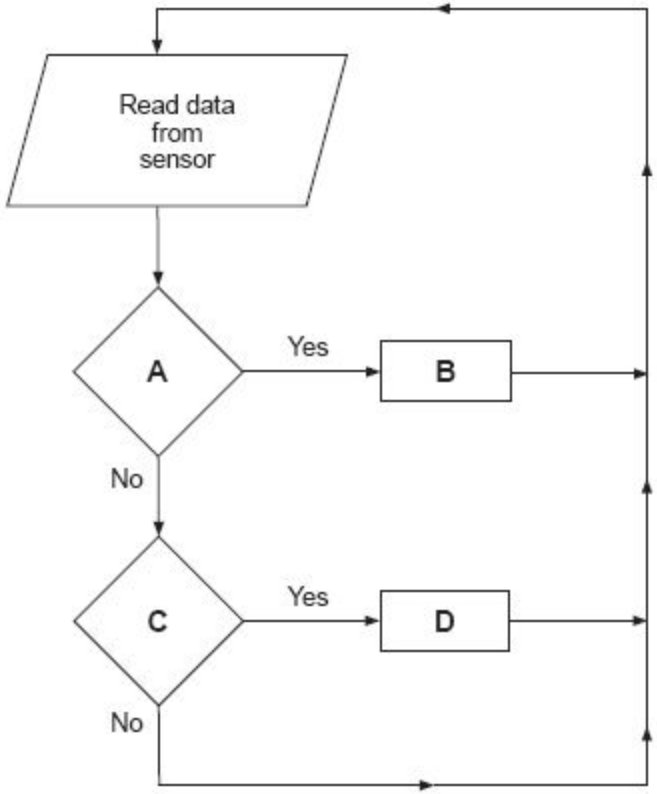
Readings are accurate - as there is no human error.

(d) Give **one** *disadvantage* of using computers to control the system. [1]

Can be expensive to set up.

Answer 4

7. The diagram below shows a computer control system in a greenhouse. The temperature is kept between 18°C and 22°C by two different output devices for optimum growing conditions.



(a) Name the *sensor* and **two** *output devices* used in this control system. [3]

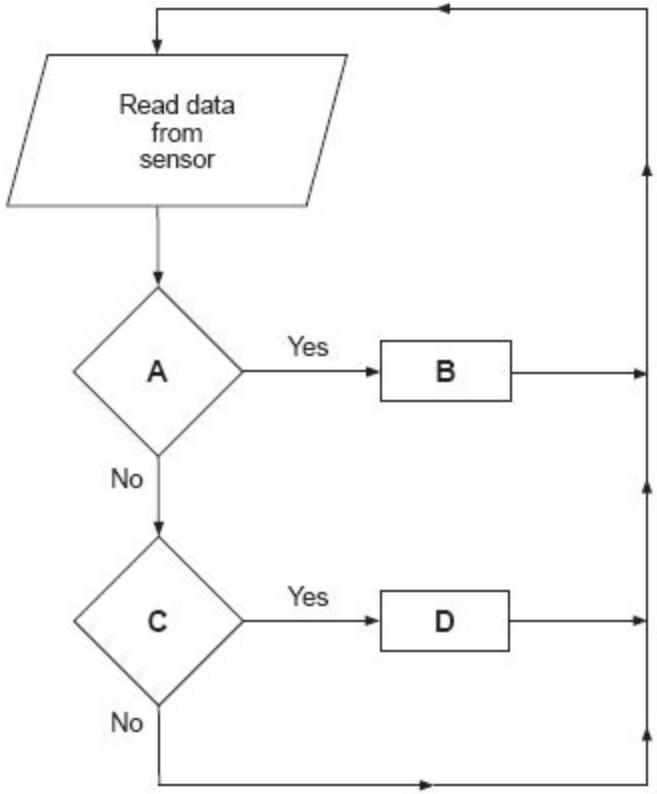
Sensor: .....

Output device 1: .....

Output device 2: .....

Question 7

7. The diagram below shows a computer control system in a greenhouse. The temperature is kept between 18°C and 22°C by two different output devices for optimum growing conditions.



(a) Name the *sensor* and **two** *output devices* used in this control system. [3]

Sensor: temperature

Output device 1: Air conditioning

Output device 2: Heater

Answer 7

(b) Complete the following table for this control system, giving a suitable process for the letters **B**, **C** and **D** labelled in the diagram opposite. Show how **both** output devices are used.

The process for the letter **A** *has been completed for you.* [3]

A	Is the temperature above 22°C?
B	
C	
D	

(c) State what is meant by *Feedback* in a computer control system. [1]

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Question 8

(b) Complete the following table for this control system, giving a suitable process for the letters **B**, **C** and **D** labelled in the diagram opposite. Show how **both** output devices are used.

The process for the letter **A** *has been completed for you.* [3]

A	Is the temperature above 22°C?
B	the Air conditioning on
C	Is the temperature below 18° Centigrade?
D	Turn the heater device on

(c) State what is meant by *Feedback* in a computer control system. [1]

The output affects the input.

Answer 8

4. *(a)* **Tick (✓)** the correct boxes to show which of the following are *advantages* or *disadvantages* of computerised data logging. [4]

	Advantage	**Disadvantage**
Accurate readings	1	2
Initial cost of the data logging equipment	3	4
Data can be collected automatically	5	6
Can be used in dangerous situations	7	8

Question 9

4. *(a)* **Tick (✓)** the correct boxes to show which of the following are *advantages* or *disadvantages* of computerised data logging. [4]

	Advantage	Disadvantage
Accurate readings	1 x	2
Initial cost of the data logging equipment	3	4 x
Data can be collected automatically	5 x	6
Can be used in dangerous situations	7 x	8

Answer 9

4

Web software

Images published on web pages should be *optimised*.

(a) Describe what is meant by optimisation of images for the web? [2]

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(b) Give one advantage of optimising images for publishing on a web page. [1]

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Question 1

Images published on web pages should be *optimised*.

(a) Describe what is meant by optimisation of images for the web? [2]

Optimisation is the reduction of the size of the image. Reducing the quality of the image.

(b) Give one advantage of optimising images for publishing on a web page. [1]

Faster downloads for users.

Answer 1

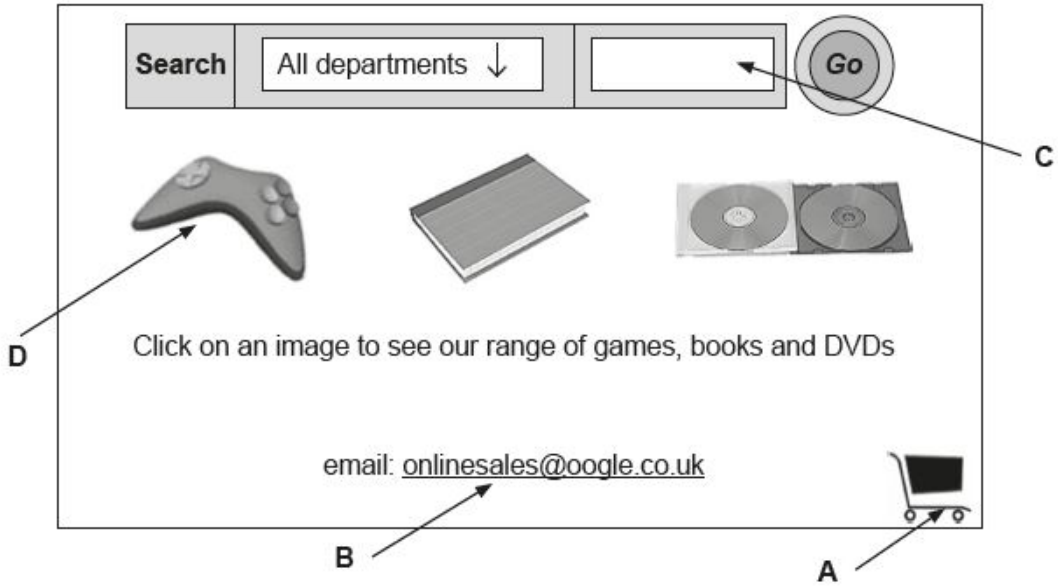
6. *(a)* A shop sells games, books and DVDs online. Part of its website is shown below.

Complete the table below by matching the labels **A**, **B**, **C** and **D** shown in the diagram to each of the website features listed. [4]

FEATURE	LABEL
SEARCH BOX	1
HOTSPOT	2
HYPERLINK	3
SHOPPING BASKET	4

Question 1

6. *(a)* A shop sells games, books and DVDs online. Part of its website is shown below.



Complete the table below by matching the labels **A**, **B**, **C** and **D** shown in the diagram to each of the website features listed. [4]

FEATURE	LABEL
SEARCH BOX	1 C
HOTSPOT	2 D
HYPERLINK	3 B
SHOPPING BASKET	4 A

Answer 1

(b) When creating an online account a customer must type their email address in twice. Give a reason why they need to type the address in twice. [1]

.....

(c) Customers can also download music from the website.

(i) Give **one** *advantage* of downloading music from the internet. [1]

.....

(ii) Give **one** *disadvantage* of downloading music from the internet. [1]

.....

Question 2

(b) When creating an online account a customer must type their email address in twice. Give a reason why they need to type the address in twice. [1]

Verification.

(c) Customers can also download music from the website.

(i) Give **one** *advantage* of downloading music from the internet. [1]

Wider variety than in the shops.

(ii) Give **one** *disadvantage* of downloading music from the internet. [1]

Possibility of online fraud.

Answer 2

7

Digital imaging

2. *(a)* Complete the sentences below to show the difference between vector and bitmap graphics. **Use each word or phrase only once.** [6]

PHOTOS	SMALLER	OBJECTS	KEEP QUALITY
LOSE QUALITY	PIXELS	GAIN QUALITY	LARGER

(i) Bitmap images are made up of ..... .

(ii) Vector graphics are scaleable ..... .

(iii) Bitmap files tend to be ..... in size.

(iv) Vector image files tend to be ..... in size.

(v) When a bitmap image is enlarged you ..... .

(vi) When a vector image is enlarged you ..... .

2. *(a)* Complete the sentences below to show the difference between vector and bitmap graphics. **Use each word or phrase only once.** [6]

PHOTOS	SMALLER	OBJECTS	KEEP QUALITY
LOSE QUALITY	PIXELS	GAIN QUALITY	LARGER

(i) Bitmap images are made up of Pixels / Objects .

(ii) Vector graphics are scaleable ..... .

(iii) Bitmap files tend to be Larger in size.

(iv) Vector image files tend to be Smaller in size.

(v) When a bitmap image is enlarged you Lose quality .

(vi) When a vector image is enlarged you Keep quality .

Answer 1

(b) Name **two** digital imaging tools used to edit photographs. [2]

(i) .....

(ii) .....

(c) Give **three** factors you should consider when preparing an image for a website. [3]

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Question 2

(b) Name **two** digital imaging tools used to edit photographs. [2]

(i) Cloning.

(ii) Layering.

(c) Give **three** factors you should consider when preparing an image for a website. [3]

Purpose - the images must be fit for purpose and suit the overall reason behind the website.

File size - the image must be fast enough to download over the internet but of decent quality.

Resolution - the size of the image (in pixels) must be suitable for the intended device. i.e. mobile or PC.

Answer 2

1. Many graphic designers use ICT to develop their designs and use many different types of images. Examine **Image A** and **Image B** below.

Image A is a bitmap graphic and Image B is a vector graphic.

Image A

Image B

(a) Give one input device that could be used to draw the image [1]

.....

(b) Describe what is meant by a *bitmap graphic*. [2]

.....

.....

.....

.....

Question 3

1. Many graphic designers use ICT to develop their designs and use many different types of images. Examine **Image A** and **Image B** below.

Image A is a bitmap graphic and Image B is a vector graphic.

Image A

Image B

(a) Give one input device that could be used to draw the image [1]

Mouse OR Graphics tablet.

(b) Describe what is meant by a *bitmap graphic*. [2]

Made up of thousands of pixels where the state of each individual pixel is stored.

Answer 3

(c) Describe what is meant by a *vector graphic*. [2]

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(d) Give two benefits of using vector graphics over bitmap graphics. [2]

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Question 4

(c) Describe what is meant by a *vector graphic*. [2]

Geometrical objects are drawn the instructions for drawing the shape are stored rather than the image itself.

(d) Give two benefits of using vector graphics over bitmap graphics. [2]

Vector graphics can be enlarged without changing the quality of the image.

Smaller file size.

Answer 4

2. **Image A** and **Image B** shown below have been enlarged.

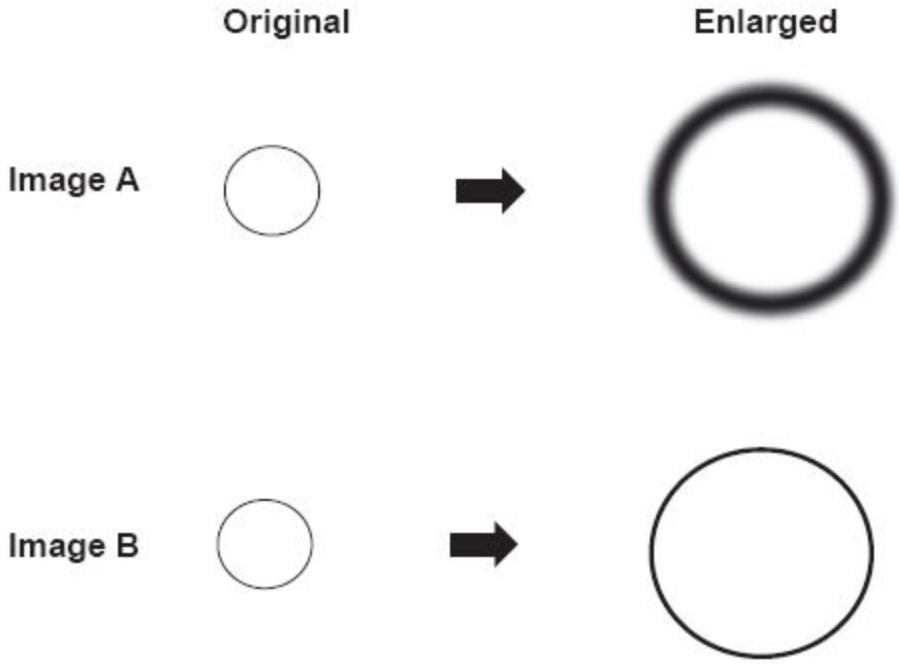

Image A has become blurred. The quality of **Image B** remains the same.

(a) **Circle** the name given to the *types of graphical images* shown above. [2]

Image A: Object Bitmap Vector GUI

Image B: Object Bitmap Vector GUI

Question 5

2. **Image A** and **Image B** shown below have been enlarged.

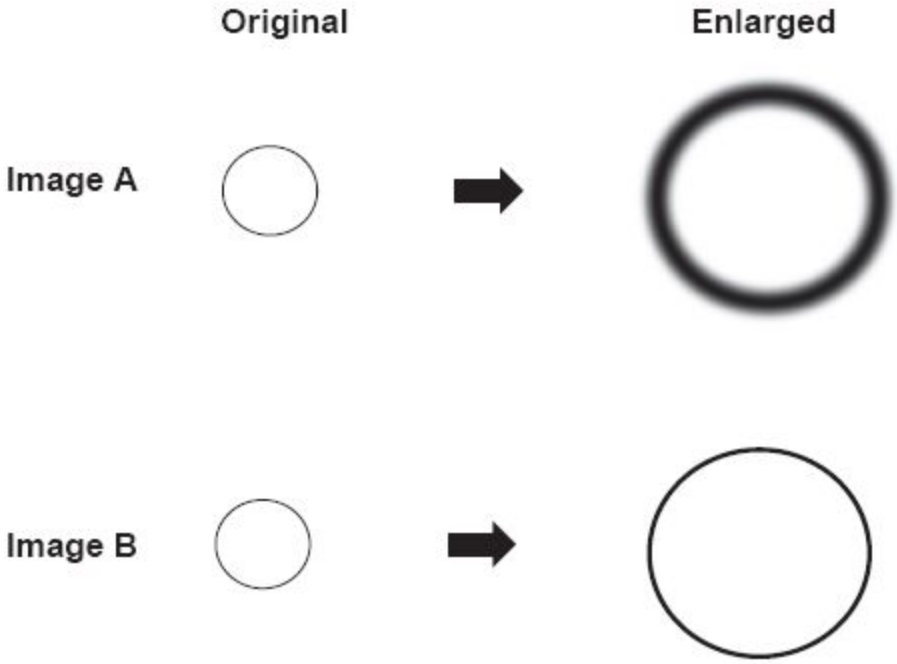

Image A has become blurred. The quality of **Image B** remains the same.

(a) **Circle** the name given to the *types of graphical images* shown above. [2]

Image A: Object Bitmap Vector GUI

Image B: Object Bitmap Vector GUI

Answer 5

(b) One effect of compressing images published on web pages is a reduced resolution.

Name **two** other *different* effects of compressing a graphical image. [2]

Effect 1: .....

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.....

Effect 2: .....

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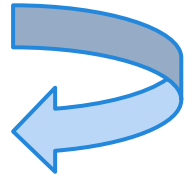

Question 6

(b) One effect of compressing images published on web pages is a reduced resolution.

Name **two** other *different* effects of compressing a graphical image. [2]

Effect 1: Reduced quality image

Effect 2: Smaller file size

Answer 6

8

Animation

5. Presentations can contain animations.

(a) State what is meant by an *animation*. [1]

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.....

(b) Animators use several techniques including *rotoscoping* and *stop motion*.

(i) Describe what is meant by *rotoscoping*. [2]

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(ii) Describe what is meant by *stop motion*. [2]

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Question 1

5. Presentations can contain animations.

(a) State what is meant by an *animation*. [1]

Moving text or Moving images or a combination of both.

(b) Animators use several techniques including *rotoscoping* and *stop motion*.

(i) Describe what is meant by *rotoscoping*. [2]

Photographing a real life object and tracing each frame to create life like movement. Gives a cartoon like appearance.

(ii) Describe what is meant by *stop motion*. [2]

Moving an object a small amount each time between frames giving the impression of movement.

Answer 1

(c) Explain the importance of *frame rates* in animation. [2]

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Question 2

(c) Explain the importance of *frame rates* in animation. [2]

A frame rate that is too slow will have a similar effect where it appears to stop and start.

A higher frame rate will make the animation to play smoothly.

Answer 2

5. *(a)* When producing an animation, animators often use key frame (flash) animation techniques such as *Tweening* and *Onion Skinning*.

(i) Describe, in detail, what is meant by *Tweening*. [3]

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(ii) Describe what is meant by *Onion Skinning*. [2]

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Question 3

5. *(a)* When producing an animation, animators often use key frame (flash) animation techniques such as *Tweening* and *Onion Skinning*.

(i) Describe, in detail, what is meant by *Tweening*. [3]

software generates the in-between frames between two key frames.

(ii) Describe what is meant by *Onion Skinning*. [2]

Previous frames are still visible to help plan the next frame

Answer 3

(b) Animators often experiment with different *frame rates* when creating an animation.

Describe the effects that the following may have on the *quality* of an animation. [2]

Increasing the frame rate too much: .....

.....

.....

Decreasing the frame rate too much: .....

.....

.....

(c) Describe what is meant by *Persistence of Vision*. [1]

.....

.....

.....

Question 4

(b) Animators often experiment with different *frame rates* when creating an animation.

Describe the effects that the following may have on the *quality* of an animation. [2]

Increasing the frame rate too much:

If the frame rate is too fast it will look blurry

Decreasing the frame rate too much:

It will look jumpy.

(c) Describe what is meant by *Persistence of Vision*. [1]

The human eye continues to see an image for a short period after the image has disappeared

Answer 4

(b) Animators produce a *Storyboard* before creating the computerised animation. Describe what is meant by a *Storyboard*. [2]

.....

.....

.....

.....

.....

Question 5

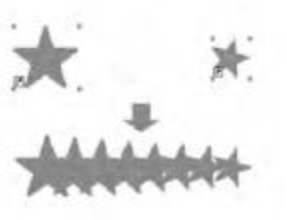
(b) Animators produce a *Storyboard* before creating the computerised animation. Describe what is meant by a *Storyboard*. [2]

Frame-by-frame plan detailing what will happen.

Answer 5

(a) *Animators* use many different techniques.

(i) Name the key frame (flash) animation technique used to get the computer to generate the *in-between frames*. [1]



.....

(ii) Name the animation technique used to allow an animator to *track the frame-by-frame motion* of an object. [1]

.....

Question 6

(a) *Animators* use many different techniques.

(i) Name the key frame (flash) animation technique used to get the computer to generate the *in-between frames*. [1]

tweening

(ii) Name the animation technique used to allow an animator to *track the frame-by-frame motion* of an object. [1]

onion skinning

Answer 6

9

Hardware and software

1. **Tick (✓)** to show if the devices listed below are used for input or output. [4]

DEVICE	NAME	INPUT	OUTPUT
	**Mouse**	1	2
	**Monitor**	3	4
	**Scanner**	5	6
	**Speaker**	7	8

Question 1

1. **Tick (✓) to show if the devices listed below are used for input or output.** [4]

DEVICE	NAME	INPUT	OUTPUT
	Mouse	✓	2
	Monitor	3	✓
	Scanner	✓	6
	Speaker	7	✓

Answer 1

1. Complete the following table by naming **four** *different* ICT devices used for input or output. For each device **tick** (✓) the correct box to show if the device is used for either *Input* or *Output*. *The first one has been completed for you.* [8]

Name of ICT Device	Input	Output
Keyboard	✓	
	1	2
	3	4
	5	6
	7	8

Question 2

1. Complete the following table by naming **four** *different* ICT devices used for input or output. For each device **tick** (✓) the correct box to show if the device is used for either *Input* or *Output*. *The first one has been completed for you.* [8]

Name of ICT Device	Input	Output
Keyboard	✓	
Monitor	1	2 x
scanner	3 x	4
Mouse	5 x	6
Speaker	7	8 x

Answer 2

4. Many musicians use ICT.

(a) Describe **three** *advantages* to musicians of using *music composition software*. [3]

.....

.....

.....

.....

.....

.....

(b) Some signals from a computer need to be converted so they can be output.
Complete the sentence below by crossing out the **incorrect** word in the boxes.

The | digital | analogue | signals from a computer are converted to | digital | analogue |

signals to produce sound from the speaker. [2]

Questio

4. Many musicians use ICT.

(a) Describe **three** *advantages* to musicians of using *music composition software.* [3]

Can investigate different effects.

Music can be compressed to save space.

Music can be edited

(b) Some signals from a computer need to be converted so they can be output.
Complete the sentence below by crossing out the **incorrect** word in the boxes.

The | digital | analogue | signals from a computer are converted to | digital | analogue |

signals to produce sound from the speaker. [2]

Answer

(b) Complete the sentences using only words from the list given below. [2]

Encrypted **Digital** **Analogue** **Wave**

(i) Computers can only store and process ..... signals.

(ii) Sound is an ..... signal which means it is constantly varying.

Question 4

(b) Complete the sentences using only words from the list given below. [2]

Encrypted **Digital** **Analogue** **Wave**

(i) Computers can only store and process .....Digital..... signals.

(ii) Sound is an .....analogue..... signal which means it is constantly varying.

Answer 4

(a) **Tick (✓)** the **three** correct boxes to show which file formats are used to store music files.

[3]

	Tick (✓)
bmp	1 ☐
wav	2 ☐
mp3	3 ☐
docx	4 ☐
wma	5 ☐
html	6 ☐

Question 5

(a) **Tick (✓)** the **three** correct boxes to show which file formats are used to store music files.

[3]

	Tick (✓)
bmp	[1]
wav	[2] x
mp3	[3] x
docx	[4]
wma	[5] x
html	[6]

Answer 5

(c) **Tick (✓)** the correct boxes to show which of the following statements about storing sound files in MP3 format are *True* or *False*. [3]

	True	False
Copyright laws do not apply to music stored in MP3 format.	1	2
MP3 files are compressed sound files.	3	4
MP3 files are quick to transfer.	5	6

(d) Musical devices often have a *MIDI interface*.
State the purpose of a MIDI interface. [2]

.....

.....

.....

Question 6

(c) **Tick** (✓) the correct boxes to show which of the following statements about storing sound files in MP3 format are *True* or *False*. [3]

	True	False
Copyright laws do not apply to music stored in MP3 format.	1	2 x
MP3 files are compressed sound files.	3 x	4
MP3 files are quick to transfer.	5 x	6

(d) Musical devices often have a *MIDI interface*.
State the purpose of a MIDI interface. [2]

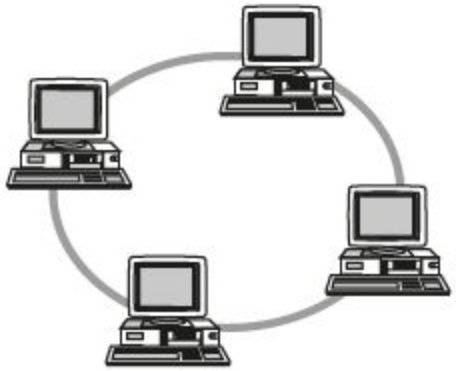
To connect electronic music devices to a computer to transfer music.

Answer 6

10

Networks

3. *(a)* Name the topology of the network shown below. [1]



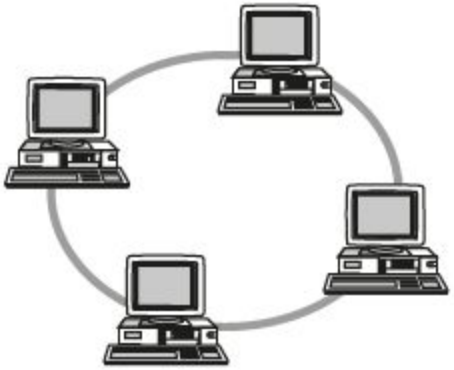
..... Network

(b) **Tick (✓)** to show if the following statements about networks are **True** or **False**. [4]

	True	False
A LAN is usually located in a single building.	1	2
A WAN covers a wide geographical area.	3	4
The Internet is a small group of computers joined together.	5	6
An Intranet is a closed, private network.	7	8

Question 1

3. *(a)* Name the topology of the network shown below. [1]



ring Network

(b) **Tick (✓)** to show if the following statements about networks are **True** or **False**. [4]

	True	False
A LAN is usually located in a single building.	✓	2
A WAN covers a wide geographical area.	✓	4
The Internet is a small group of computers joined together.	5	✓
An Intranet is a closed, private network.	✓	8

Answer 1

(c) **Tick (✓)** to show if the following devices are used in networks. [3]

ROUTERS	1
WALKWAYS	2
GATEWAYS	3
BRIDGES	4
ROUNDABOUTS	5

(d) Give **two** methods of protecting data on a network. [2]

.....

.....

Question 2

(c) **Tick (✓)** to show if the following devices are used in networks. [3]

ROUTERS	✓
WALKWAYS	2
GATEWAYS	✓
BRIDGES	✓
ROUNDABOUTS	5

(d) Give **two** methods of protecting data on a network. [2]

Passwords on accounts.

Biometric access restrictions.

Answer 2

3. *(a)* Two different types of computer network are a LAN and a WAN.

(i) Write down what LAN stands for. [1]

.....

(ii) Give an example of a use of a LAN. [1]

.....

(iii) Write down what WAN stands for. [1]

.....

(iv) Give an example of a use of a WAN. [1]

.....

(b) Give **three** advantages of networks over standalone computers. [3]

(i) .....

(ii) .....

(iii) .....

Question 3

3. *(a)* Two different types of computer network are a LAN and a WAN.

(i) Write down what LAN stands for. [1]

Local Area Network

(ii) Give an example of a use of a LAN. [1]

Network on one site, such as a school.

(iii) Write down what WAN stands for. [1]

Wide Area Network

(iv) Give an example of a use of a WAN. [1]

Large network on many sites, group of schools across a city.

(b) Give three advantages of networks over standalone computers. [3]

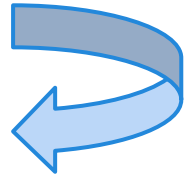
(i) You can share hardware.

(ii) You can share software.

(iii) Security can be centrally organised.

Answer 3

(c) In the space below, draw and label a diagram of a star network. Show the position of the **fileserver**, **workstations** and **printer** on your diagram. [4]



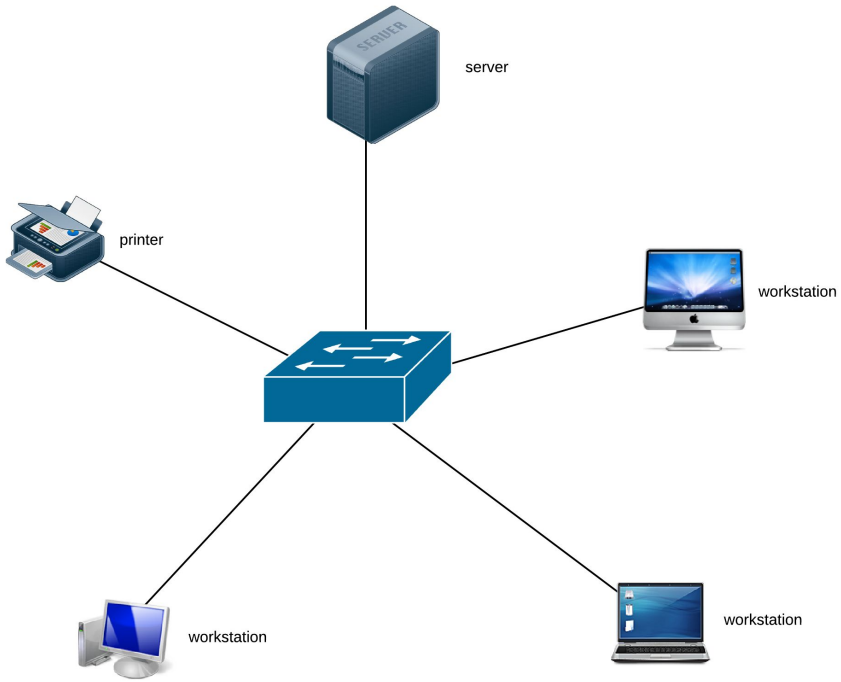
8. A school has a network

(a) What is a *network*? [1]

.....

Question 4

(c) In the space below, draw and label a diagram of a star network. Show the position of the **fileserver**, **workstations** and **printer** on your diagram. [4]



8. A school has a network

(a) What is a *network*? [1]

A group of computers joined together to share resources.

Answer 4

Shops use Point of Sale (POS) systems commonly called '*checkouts*'.

(a) Give **two** input devices used at the checkout. [2]

....

(b) Most of the goods have barcodes which contain items of data.

(i) Give the data validation technique used on a barcode. [1]

.....

(ii) Give **two** *other* items of data *encoded* in the barcode. [2]

....

(c) Describe **three** different ways shops use their POS systems to *retain* customers. [3]

1 .....

.....

2 .....

.....

3 .....

.....

Question 6

2. Shops use Point of Sale (POS) systems commonly called '*checkouts*'.

(a) Give **two** input devices used at the checkout. [2]

Barcode reader

Touch sensitive screen

(b) Most of the goods have barcodes which contain items of data.

(i) Give the data validation technique used on a barcode. [1]

Check digit

(ii) Give **two** *other* items of data *encoded* in the barcode. [2]

Manufacturers Code

Country of origin

(c) Describe **three** different ways shops use their POS systems to *retain* customers. [3]

1 Loyalty points can be awarded to give discounts to customers who shop regularly.

2 Direct targeting of customers by tracking shoppers buying patterns.

3 Pay using many different cards.

Answer 6

(e) Automatic stock control brings benefits and disadvantages for the supermarket.

(i) Describe in detail the *benefits* of using automatic stock control. [3]

.....

.....

.....

.....

.....

.....

.....

(ii) Other than power cuts and computer failures, give a *specific disadvantage* of using automatic stock control systems. [1]

.....

.....

Question 7

(e) Automatic stock control brings benefits and disadvantages for the supermarket.

(i) Describe in detail the *benefits* of using automatic stock control. [3]

Maintain adequate stock so savings in stock room space.
Don't buy too much stock so less wastage meaning the
company doesn't waste money on wasted stock.
Ensures do not run out of stock meaning the customer
will always be able to buy popular products.

(ii) Other than power cuts and computer failures, give a *specific disadvantage* of using automatic stock control systems. [1]

Can be expensive to maintain the database.

Answer 7

Data is entered into a computer using **MICR** and **OCR**.

(a) Tick (✓) **one** box to show which is a suitable example of the use of **MICR**. [1]

	Tick (✓) one box only
Scanning pictures	
Reading bank cheques	
Magnetic games	

(b) Tick (✓) **one** box to show which is a suitable example of the use of **OCR**. [1]

	Tick (✓) one box only
Scanning postcodes	
Scanning barcodes	
Opticians counter records	

Question 9

Data is entered into a computer using **MICR** and **OCR**.

(a) Tick (✓) **one** box to show which is a suitable example of the use of **MICR**. [1]

	Tick (✓) one box only
Scanning pictures	
Reading bank cheques	✓
Magnetic games	

(b) Tick (✓) **one** box to show which is a suitable example of the use of **OCR**. [1]

	Tick (✓) one box only
Scanning postcodes	✓
Scanning barcodes	
Opticians counter records	

Answer 9

3. *LAN* and *WAN* are two different types of computer network.

(a) (i) Write down what **LAN** stands for. [1]

.....

(ii) Write down what **WAN** stands for. [1]

.....

(b) (i) Give **two** *advantages* of networks over standalone computers. [2]

Advantage 1: .....

.....

.....

Advantage 2: .....

.....

.....

(ii) Give **one** *disadvantage* of networks over standalone computers. [1]

.....

.....

.....

Questio

(c) Complete the following sentence:

A closed private internet is called an ..... . [1]

3. *LAN* and *WAN* are two different types of computer network.

(a) (i) Write down what **LAN** stands for. [1]

Local Area Network

(ii) Write down what **WAN** stands for. [1]

Wide Area Network

(b) (i) Give **two** *advantages* of networks over standalone computers. [2]

Advantage 1: Share files

Advantage 2: Share hardware

(ii) Give **one** *disadvantage* of networks over standalone computers. [1]

Initial cost of switches can be expensive

Answer :

(c) Complete the following sentence:

A closed private internet is called an Intranet . [1]

(d) State the purpose of **each** of the network devices listed below. [2]

Gateway: .....

.....

.....

Bridge: .....

.....

.....

(e) Describe how a *switch* works in a computer network. [2]

.....

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.....

.....

Question 12

(d) State the purpose of **each** of the network devices listed below. [2]

Gateway: Connects a LAN to a WAN

Bridge: Connects two LANs together

(e) Describe how a *switch* works in a computer network. [2]

A switch looks at each packet of data and sends it to the right computer.

Answer 12

11

Human Computer Interfaces

4. *(a)* Name the following types of Human Computer Interfaces. [4]

(i)

Interface .....

(ii)

Interface .....

(iii)

Interface .....

(iv)

Interface .....

(b) Name **one** *other* type of Human Computer Interface, other than those shown above. [1]

.....

Question 1

4. *(a)* Name the following types of Human Computer Interfaces. [4]

(i)

Interface GUI

(ii)

Interface Menu

(iii)

Interface Command line

(iv)

Interface Touch screen

(b) Name **one** *other* type of Human Computer Interface, other than those shown above. [1]

Voice

Answer 1

9. *(a)* List **three** of the main functions of an operating system. [3]

.....

.....

.....

(b) Different types of operating systems are used for various applications. Complete the table below by suggesting a suitable application for **each** of the operating systems. [3]

Operating System	Application
Batch processing	
Real Time (process control)	
Real Time (transaction processing)	

Question 2

9. *(a)* List **three** of the main functions of an operating system. [3]

Enables software to run.

Manage system resources.

Organises the hard drive.

(b) Different types of operating systems are used for various applications. Complete the table below by suggesting a suitable application for **each** of the operating systems. [3]

Operating System	Application
Batch processing	payroll
Real Time (process control)	intensive care of patients
Real Time (transaction processing)	cash withdrawals from atm

Answer 2

7. All computers have an *operating system*.

Explain the term '*operating system*' and describe **three** of its functions. [5]

.....

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Question 3

7. All computers have an *operating system*.

Explain the term '*operating system*' and describe **three** of its functions. [5]

Software which controls the computer system.

The OS can manage system resources.

The OS can assist with organising the hard drive.

The OS provides an interface to the user.

Question 3

Many educational programs used in schools have a Graphical User Interface (GUI).

(i) Give **two** features of a Graphical User Interface. [2]

.....

.....

(ii) Give **one** advantage of a Graphical User Interface for eductional programs. [1]

.....

.....

Computers can be used to support users with disabilities.

(a) Other than a standard keyboard and mouse, state **two** input devices which would be suitable for disabled users. [2]

INPUT DEVICE 1 .....

INPUT DEVICE 2 .....

(b) Users can customise their desktops. Give **two** ways that people with poor eyesight can customise their desktops. [2]

(i) .....

(ii) .....

Question 4

Many educational programs used in schools have a Graphical User Interface (GUI).

(i) Give **two** features of a Graphical User Interface. [2]

Windows ..... Icons .....

(ii) Give **one** advantage of a Graphical User Interface for eductional programs. [1]

It is easy to learn.

.....

Computers can be used to support users with disabilities.

(a) Other than a standard keyboard and mouse, state **two** input devices which would be suitable for disabled users. [2]

INPUT DEVICE 1 Braille keyboard .....

INPUT DEVICE 2 Microphone .....

(b) Users can customise their desktops. Give **two** ways that people with poor eyesight can customise their desktops. [2]

(i) larger icons .....

(ii) large fonts .....

Answer 4

8. *(a)* Name an application that uses *realtime processing*, and give a reason why this type of processing is used. [2]

Application .....

Reason .....

.....

(b) Name an application that uses *batch processing* and give a reason why this type of processing is used. [2]

Application .....

Reason .....

.....

Two types of software are application software and operating system software.

(a) Name **two** different types of application software. [2]

(i) .....

(ii) .....

(b) Linux is an operating system, name **two** other operating systems. [2]

(i) .....

(ii) .....

Question 5

8. *(a)* Name an application that uses *realtime processing*, and give a reason why this type of processing is used. [2]

Application Flying aircraft.

Reason Immediate changes required.

(b) Name an application that uses *batch processing* and give a reason why this type of processing is used. [2]

Application Payroll.

Reason All data is processed in one run/go.

Two types of software are application software and operating system software.

(a) Name **two** different types of application software. [2]

(i) Word processing.

(ii) Spreadsheet.

(b) Linux is an operating system, name **two** other operating systems. [2]

(i) Windows.

(ii) Mac OS.

Answer 5

Command line is another type of Human Computer Interface.

(i) Describe how a command line interface works. [2]

.....

.....

.....

.....

(ii) Describe one disadvantage of a command line interface. [2]

.....

.....

.....

.....

Question 7

Command line is another type of Human Computer Interface.

(i) Describe how a command line interface works. [2]

Users type a set of instructions using a set of words.

(ii) Describe one disadvantage of a command line interface. [2]

Only suitable for skilled users as commands have to be known.

Answer 7

12. ICT systems use different types of *Human-Computer Interface (HCI)*.

Name **three** different types of HCI. Give **one** *different* **advantage** and **one** *different* **disadvantage** for each. [9]

Remember that the quality of written communication will be assessed in this question.

.....

.....

Questio

.....

.....

Name **three** different types of HCI. Give **one** *different* **advantage** and **one** *different* **disadvantage** for each. [9]

Remember that the quality of written communication will be assessed in this question.

Graphical User Interface:

Intuitive.

Easy to navigate.

Easy to learn.

Takes up lots of memory.

Touch sensitive:

A touch screen is very intuitive.

Save space as no keyboard is needed.

Easy to use.

Screen can be scratched.

Biometric:

Every user is unique.

Difficult to fake.

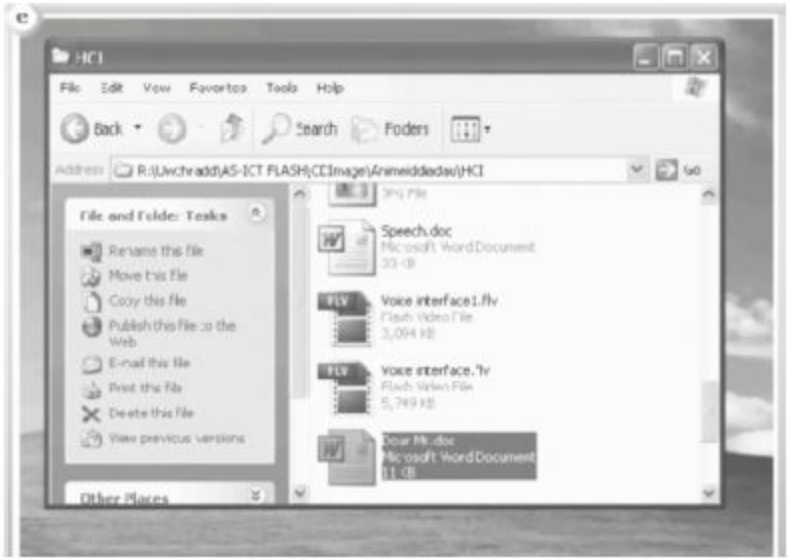
Can't lose 'fingerprint' for example.

Expensive.

Answer 8

2. ICT systems use different *Human-Computer Interfaces* (HCI).

(a) (i) State the type of *HCI* shown below. [1]



HCI: .....

.....

(ii) Give **four** features of this type of *HCI*. [4]

Feature 1: .....

.....

Feature 2: .....

.....

Feature 3: .....

.....

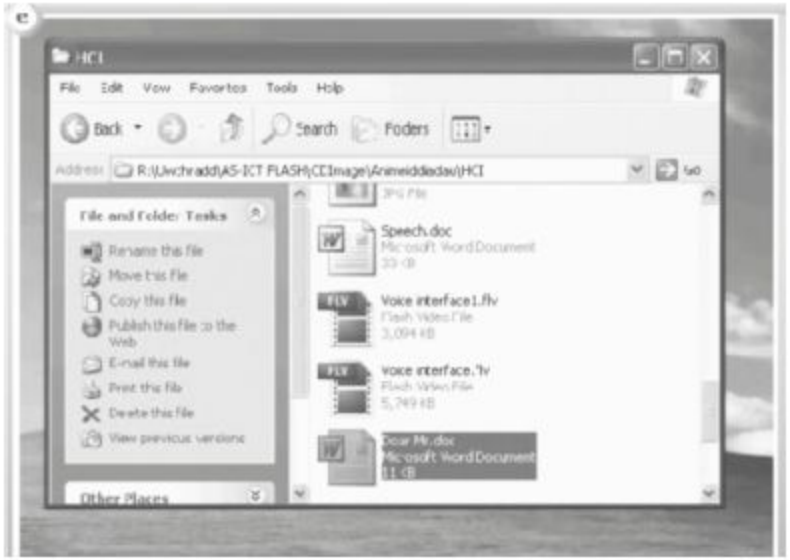
Feature 4: .....

Questio

.....

2. ICT systems use different *Human-Computer Interfaces* (HCI).

(a) (i) State the type of *HCI* shown below. [1]



HCI: GUI .....

.....

(ii) Give **four** features of this type of *HCI*. [4]

Feature 1: Windows .....

.....

Feature 2: Icons .....

.....

Feature 3: Menus .....

.....

Feature 4: Pointers .....

Answer

.....

8. Modern computers normally use a *Graphical User Interface(GUI)*.

(a) *Other than* Windows, Icons, Menus and Pointers give **two** different features of a GUI. [2]

.....

.....

.....

.....

.....

.....

(b) Different *Human Computer Interfaces (HCI)* are used with different applications. Name an application for each of the following types of HCI. [2]

HCI	Application
Touch sensitive	
Voice driven	

(c) State the name given to the *HCI* that only uses typed instructions. [1]

.....

(d) Another type of HCI uses *Biometrics*. Give **two** advantages of using Biometrics. [2]

Advantage 1: .....

.....

.....

Advantage 2: .....

.....

Question 10

8. Modern computers normally use a *Graphical User Interface(GUI)*.

(a) *Other than* Windows, Icons, Menus and Pointers give **two** different features of a GUI. [2]

help files.

tutorials.

(b) Different *Human Computer Interfaces (HCI)* are used with different applications. Name an application for each of the following types of HCI. [2]

HCI	Application
Touch sensitive	mobile phone
Voice driven	Issue commands

(c) State the name given to the *HCI* that only uses typed instructions. [1]

Command line

(d) Another type of HCI uses *Biometrics*. Give **two** advantages of using Biometrics. [2]

Advantage 1: Each individual has unique biometric characteristics

Advantage 2: A biometric property of an individual cannot be lost

Answer 10

Give **two** advantages of using *voice recognition*. [2]

Advantage 1: .....

.....

.....

Advantage 2: .....

.....

.....

(e) **Tick (✓)** the correct box to show if the task is carried out by an *Operating System* or *Applications Software*. [4]

Task	Operating System	Applications Software
Controlling input and output devices	1	2
Create a webpage	3	4
Ensure that data is written to the backing store	5	6
Boots up the computer	7	8

Question 11

Give **two** advantages of using *voice recognition*. [2]

Advantage 1: Speech input is much faster than keyboard

Advantage 2: Less danger of RSI

(e) **Tick (✓)** the correct box to show if the task is carried out by an *Operating System* or *Applications Software*. [4]

Task	Operating System	Applications Software
Controlling input and output devices	1 x	2
Create a webpage	3	4 x
Ensure that data is written to the backing store	5 x	6
Boots up the computer	7 x	8

Answer 11

12

Organisations

8. Answer the following questions using **one** application chosen from the list.

- banking
- payroll
- expert systems
- e-commerce systems

Name your chosen application.

Application .....

Name your chosen application.

Application .....

(a) Give **two** specific uses of ICT in your chosen application. [2]

Use 1 .....

.....

Use 2 .....

.....

(b) State **one** method of data capture used in your chosen application. [1]

.....

(c) Give **two** *advantages* of using ICT for your chosen application. [2]

Advantage 1 .....

.....

.....

Advantage 2 .....

.....

.....

(d) Give **two** *disadvantages* of using ICT for your chosen application. [2]

Disadvantage 1 .....

.....

.....

Disadvantage 2 .....

.....

.....

Question 1 - Ecommerce systems

Name your chosen application.

Application e-commerce systems

(a) Give **two** specific uses of ICT in your chosen application. [2]

Use 1 Selling / buying goods online.

Use 2 Advertising/selling goods internationally.

(b) State **one** method of data capture used in your chosen application. [1]

Keyboard and mouse with online shopping basket.

(c) Give **two** *advantages* of using ICT for your chosen application. [2]

Advantage 1 Can sell 24/7,365 - where shops often close at certain times and dates.

Advantage 2 Potential worldwide audience.

(d) Give **two** *disadvantages* of using ICT for your chosen application. [2]

Disadvantage 1 Potentially, online fraud could take place resulting in loss of business/reputation.

Disadvantage 2 Reliance on delivery companies, if something takes a while to get delivered - company could lose reputation.

Answer 1 - Ecommerce systems

Name your chosen application.

Application banking

(a) Give **two** specific uses of ICT in your chosen application. [2]

Use 1 ATM machines for customers to obtain cash.

Use 2 Cheque processing.

(b) State **one** method of data capture used in your chosen application. [1]

MICR reader for cheques.

(c) Give **two** *advantages* of using ICT for your chosen application. [2]

Advantage 1 Cheque processing is more accurate than by humans.

Advantage 2 MICR speeds up data entry.

(d) Give **two** *disadvantages* of using ICT for your chosen application. [2]

Disadvantage 1 Cost of MICR readers can be expensive.

Disadvantage 2 Crumpled/damaged cheques are rejected resulting in delays to customers.

Answer 2 - banking

Name your chosen application.

Application payroll

(a) Give **two** specific uses of ICT in your chosen application. [2]

Use 1 Can produce financial reports.

Use 2 To work out pay.

(b) State **one** method of data capture used in your chosen application. [1]

Smart cards to check in and out of work.

(c) Give **two** *advantages* of using ICT for your chosen application. [2]

Advantage 1 Accurate calculations are made by the computer system - no human error.

Advantage 2 More secure than handing out cash to employees as this could lead to theft.

(d) Give **two** *disadvantages* of using ICT for your chosen application. [2]

Disadvantage 1 Cost of hardware and software can be expensive.

Disadvantage 2 Training will be required for staff.

Answer 3 - payroll

Name your chosen application.

Application Expert Systems

(a) Give **two** specific uses of ICT in your chosen application. [2]

Use 1 A medical diagnosis expert system.

Use 2 Matching people to jobs.

(b) State **one** method of data capture used in your chosen application. [1]

Keyboard and mouse.

(c) Give **two** *advantages* of using ICT for your chosen application. [2]

Advantage 1 The computer can store far more information than a human. It can draw on a wide variety of sources such as stored knowledge from books case studies to help in diagnosis and advice.

Advantage 2 Some people prefer the privacy of talking to a computer.

(d) Give **two** *disadvantages* of using ICT for your chosen application. [2]

Disadvantage 1 Fewer medical staff could be needed.

Disadvantage 2 lack of personal contact for patients.

Answer 4 - Expert systems

4. *Expert systems* are widely used in medicine.

(a) List **two** parts of an *expert system*. [2]

(i) .....

(ii) .....

(b) (i) Give the use of an *expert system* in medicine. [1]

.....

(ii) Give **two** benefits *to the patient* of using the *expert system*. [2]

Benefit 1 .....

Benefit 2 .....

(iii) Describe **one** possible drawback of using such a system. [1]

.....

.....

Question 2

4. *Expert systems* are widely used in medicine.

(a) List **two** parts of an *expert system*. [2]

(i) Knowledge base.

(ii) User interface.

(b) (i) Give the use of an *expert system* in medicine. [1]

To diagnose illness.

(ii) Give **two** benefits *to the patient* of using the *expert system*. [2]

Benefit 1 Store more information than a human can know.

Benefit 2 Available 24/7.

(iii) Describe **one** possible drawback of using such a system. [1]

GIGO resulting in wrong diagnosis.
Initial cost can be expensive.

Answer 2

3. A network manager wants to keep the network working well.

(a) The network manager is worried about the computers being stolen.
Give **one** way to prevent *access to the computer room*. [1]

.....

(b) The network manager is also worried about deliberate destruction of data.

(i) Give **two** ways to protect *the backup files*. [2]

.....

.....

(ii) Other than backing up files, give **two** ways to prevent *the deliberate destruction of data*. [2]

.....

.....

Question 3

3. A network manager wants to keep the network working well.

(a) The network manager is worried about the computers being stolen.
Give **one** way to prevent *access to the computer room*. [1]

Biometric scanner - such as thumbprint

(b) The network manager is also worried about deliberate destruction of data.

(i) Give **two** ways to protect *the backup files*. [2]

Keep copy offsite

Keep in fireproof safe

(ii) Other than backing up files, give **two** ways to prevent *the deliberate destruction of data*. [2]

Passwords

Virus protection

Answer 3

(b) Give **three** other advantages of using robots instead of humans. [3]

Advantage 1

.....

.....

Advantage 2

.....

.....

Advantage 3

.....

.....

Question 4

(b) Give **three** other advantages of using robots instead of humans. [3]

Advantage 1

Can work 24/7 without need for breaks.

Advantage 2

Can carry out work unsafe for humans.

Advantage 3

Robot will not get bored with repetitive jobs.

Answer 4

There are many factories where *robots* are used instead of humans.

(a) Describe what is meant by the term robot. [2]

.....

.....

.....

(b) One advantage of using robots is that they can be re-trained to do other jobs. Explain **two** different ways of re-training robots. [4]

(i) .....

.....

(ii) .....

.....

(c) Name **three** different types of jobs done by robots in a car factory. [3]

1 .....

2 .....

3 .....

Question 6

There are many factories where *robots* are used instead of humans.

(a) Describe what is meant by the term robot. [2]

A machine that can be programmed
to perform a sequence of actions.

(b) One advantage of using robots is that they can be re-trained to do other jobs.
Explain **two** different ways of re-training robots. [4]

(i) The robot can be re-programmed
with a new set of instructions.

(ii) The robot can be manually guided through the actions
and will be able to repeat the instructions.

(c) Name **three** different types of jobs done by robots in a car factory. [3]

1 Welding.

2 Spray painting.

3 Carrying parts.

Answer 6

9. **Tick (✓)** to show your chosen business application from the list below.

	Tick (✓)
Banking	☐
Expert system	☐
E-commerce system	☐

(a) Give **two** specific uses of ICT in your chosen application. [2]

Use 1: .....

.....

Use 2: .....

.....

Question 7

9. **Tick (✓)** to show your chosen business application from the list below.

	Tick (✓)
Banking	
Expert system	
E-commerce system	x

(a) Give **two** specific uses of ICT in your chosen application. [2]

Use 1: Selling / buying goods online

Use 2: Advertising/selling goods internationally

Answer 9

(b) Give **two** *advantages* of using ICT for your chosen application. [2]

Advantage 1: Can sell 24/7

Advantage 2: Global marketplace

(c) Give **two** *disadvantages* of using ICT for your chosen application. [2]

Disadvantage 1: Initial cost of purchasing system

Disadvantage 2: Network downtime can be expensive

Question 9 cont

10. A large organisation processes hundreds of timesheets in one go at the end of each week.

Weekly Employee Timesheet

Employee ID: *11590* Name: *John Smith* Hourly Rate: *£7.50*

Date	Day	Start	Finish	Breaks	Total Hours
30 December 2013	Monday	*9.00*	*17.00*	*1*	*7*
31 December 2013	Tuesday	*8.30*	*16.00*	*1*	*6.5*
1 January 2014	Wednesday	*8.00*	*17.00*	*1*	*8*
2 January 2014	Thursday	*9.30*	*17.30*	*1*	*7*
3 January 2014	Friday	*9.00*	*18.00*	*2*	*7*
4 January 2014	Saturday	*10.00*	*12.30*	*0*	*2.5*
5 January 2014	Sunday	*10.00*	*11.30*	*0*	*1.5*
			Total Hours Worked:		*59.5*
			Gross Pay:		*£296.25*

(a) State the **name** given to this application. [1]

.....

(b) **Tick** (✓) the correct box to show which method of *data capture* could be used to input data from a timesheet into a computer. [1]

	Tick (✓)
OMR	1 ☐
OCR	2 ☐
MICR	3 ☐

Question 10

Weekly Employee Timesheet

Employee ID: 11590 Name: John Smith Hourly Rate: £7.50

Date	Day	Start	Finish	Breaks	Total Hours
30 December 2013	Monday	9.00	17.00	1	7
31 December 2013	Tuesday	8.30	16.00	1	6.5
1 January 2014	Wednesday	8.00	17.00	1	8
2 January 2014	Thursday	9.30	17.30	1	7
3 January 2014	Friday	9.00	18.00	2	7
4 January 2014	Saturday	10.00	12.30	0	2.5
5 January 2014	Sunday	10.00	11.30	0	1.5
			Total Hours Worked:		59.5
			Gross Pay:		£296.25

(a) State the **name** given to this application. [1]

payroll

(b) **Tick** (✓) the correct box to show which method of *data capture* could be used to input data from a timesheet into a computer. [1]

	Tick (✓)
OMR	1
OCR	2 x
MICR	3

Answer 10

(c) (i) **Tick (✓)** the correct box to show which processing method is normally used for this application. [1]

	Tick (✓)
Real time transaction	1 ☐
Real time control	2 ☐
Batch	3 ☐

(ii) Give **one** reason why this processing method is used. [1]

.....

.....

.....

(d) This application uses a *master file* and a *transaction file*.

Give **one** item of data that would appear in **both** the *master file* and the *transaction file*. [1]

.....

(e) Other than the fields shown in the timesheet and contact details, list **three** fields which could be included in an employee's record for this application. [3]

Field 1: .....

Field 2: .....

Field 3: .....

Question

(c) (i) **Tick (✓)** the correct box to show which processing method is normally used for this application. [1]

	Tick (✓)
Real time transaction	1
Real time control	2
Batch	3 x

(ii) Give **one** reason why this processing method is used. [1]

No humans are needed.

(d) This application uses a *master file* and a *transaction file*.

Give **one** item of data that would appear in **both** the *master file* and the *transaction file*. [1]

Employee ID

(e) Other than the fields shown in the timesheet and contact details, list **three** fields which could be included in an employee's record for this application. [3]

Field 1: NI Number

Field 2: Date of birth

Field 3: Tax code

Answer 10 (

(ii) Give **three** advantages and **one** disadvantage of using life support systems to monitor patients. [4]

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Question 12

(ii) Give **three** advantages and **one** disadvantage of using life support systems to monitor patients. [4]

Reduced chance of human error due to tiredness.

Frees nursing staff to perform other duties.

Monitoring of patients is 24/7.

Initial costs can be expensive.

Answer 12

2. Data is captured using many different methods.

(a) Name an application for each of the following methods of automatic data capture. [4]

(i) OMR .....

(ii) OCR .....

(iii) MICR .....

(iv) Bar Code .....

(b) *'Life support systems make use of sensors to monitor patients in hospitals.'*

(i) One reading which can be measured by sensors is the *breathing rate*. Describe **three** *other* types of readings which could be measured by sensors. [3]

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Question 5

2. Data is captured using many different methods.

(a) Name an application for each of the following methods of automatic data capture. [4]

(i) OMR School registration systems

Reading post codes.

(ii) OCR .....

(iii) MICR Reading bank cheques.

Checkouts at supermarkets.

(iv) Bar Code .....

(b) *'Life support systems make use of sensors to monitor patients in hospitals.'*

(i) One reading which can be measured by sensors is the *breathing rate.* Describe **three** *other* types of readings which could be measured by sensors. [3]

Heart rate measures the patients heart beat.

Temperature measures the patients temperature.

Brain waves measuring neurological activity.

Oxygen measures the amount of O2 in the body.

Answer 5

5. *Expert systems* are widely used in medicine.

(a) State **one** purpose of an expert system in medicine. [1]

.....

.....

(b) Give **two** *advantages* of using an expert system in medicine. [2]

Advantage 1: .....

.....

.....

Advantage 2: .....

.....

.....

(c) Give **one** *disadvantage* of using an expert system in medicine. [1]

.....

.....

.....

Question 6

5. *Expert systems* are widely used in medicine.

(a) State **one** purpose of an expert system in medicine. [1]

give medical advice

(b) Give **two** *advantages* of using an expert system in medicine. [2]

Advantage 1: Available 24/7

Advantage 2: Can store more knowledge than one person

(c) Give **one** *disadvantage* of using an expert system in medicine. [1]

Initial costs are high.

Answer 6

6. *Robots* are widely used by organisations.

(a) Name **three** tasks that could be carried out by robots. [3]

Task 1: .....

.....

Task 2: .....

.....

Task 3: .....

.....

(b) Give **two** *advantages* of using robots instead of humans. [2]

Advantage 1: .....

.....

.....

Advantage 2: .....

.....

.....

(c) Give **one** *disadvantage* of using robots instead of humans. [1]

.....

.....

Questio

6. *Robots* are widely used by organisations.

(a) Name **three** tasks that could be carried out by robots. [3]

Task 1: Use in dangerous environments e.g. bomb disposal

Task 2: Spray painting

Task 3: Spot welding

(b) Give **two** *advantages* of using robots instead of humans. [2]

Advantage 1: Carrying out dangerous work

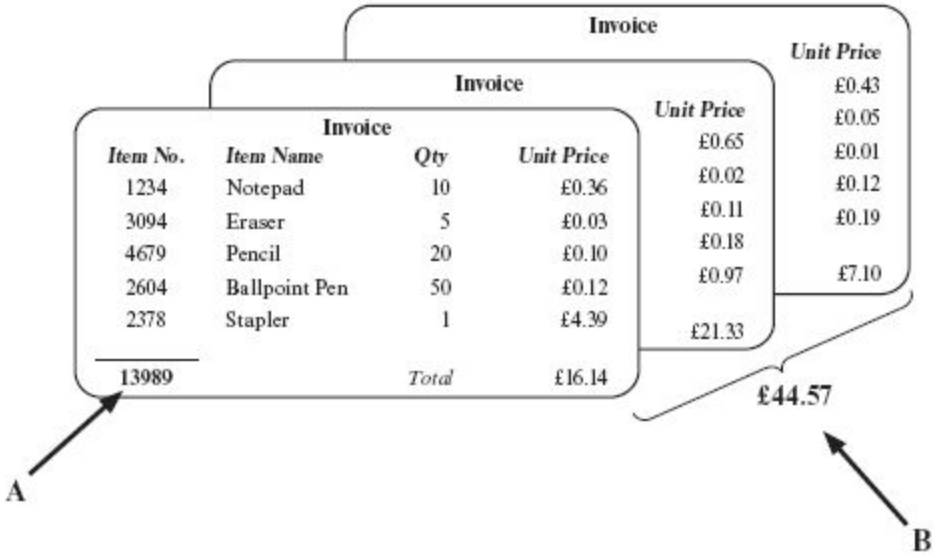
Advantage 2: work 24/

(c) Give **one** *disadvantage* of using robots instead of humans. [1]

Loss of human jobs

Answer

6. A shop uses different validation techniques when processing invoices.



(a) State the purpose of *Validation*. [1]

.....

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(b) The totals produced from **two** validation techniques have been labelled **A** and **B** above.

Name and describe the validation techniques used. [4]

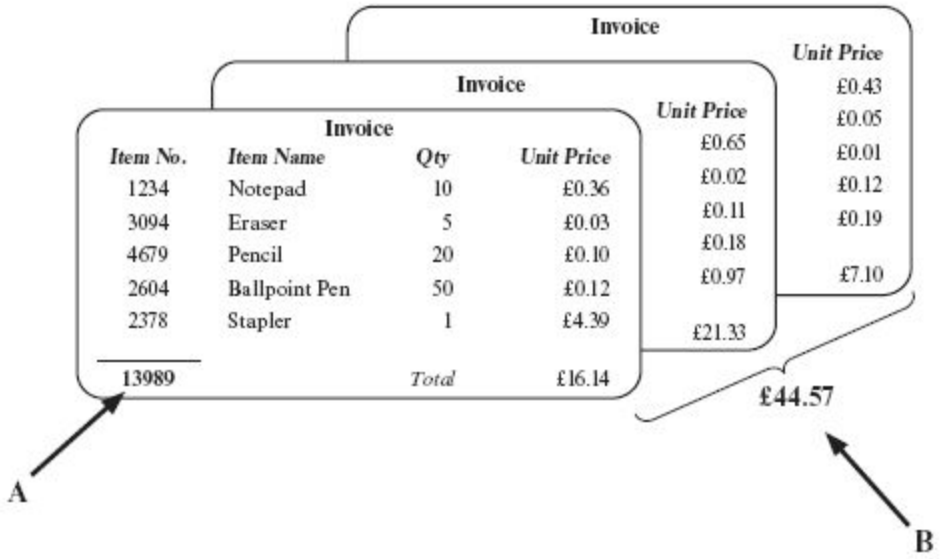
Validation Technique A: .....

.....

.....

Question 8

6. A shop uses different validation techniques when processing invoices.



(a) State the purpose of *Validation*. [1]

Check data is sensible

(b) The totals produced from **two** validation techniques have been labelled **A** and **B** above.

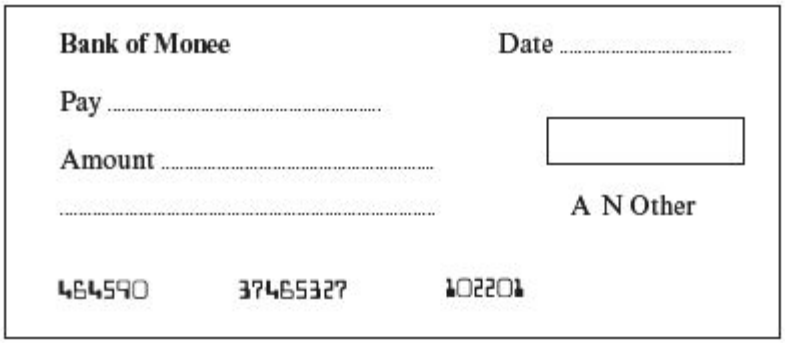
Name and describe the validation techniques used. [4]

Validation Technique A:

Batch total to add up meaningful data

Answer 8

(a) **Tick (✓)** the correct boxes to show which of the following items are encoded on a bank cheque. [2]



ITEM	TICK (✓)
Account Number	1
Date	2
Sort Code	3
Name	4

(b) Give **three** services available at an *Automatic Teller Machine* (ATM). [3]

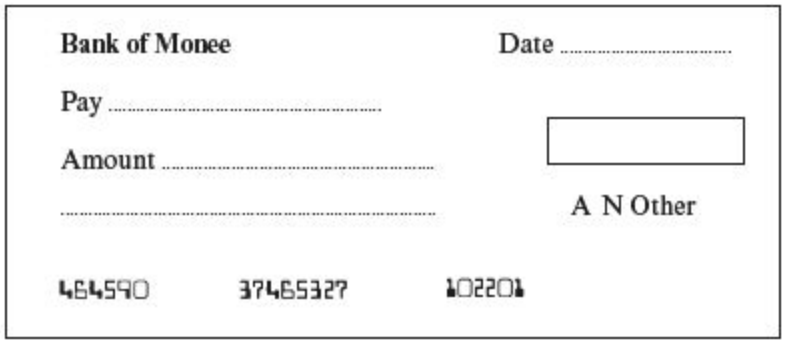
Service 1 .....

Service 2 .....

Service 3

Question 9

(a) **Tick (✓)** the correct boxes to show which of the following items are encoded on a bank cheque. [2]



ITEM	TICK (✓)
Account Number	1 x
Date	2
Sort Code	3 x
Name	4

(b) Give **three** services available at an *Automatic Teller Machine* (ATM). [3]

Service 1 Withdraw cash.

Service 2 Change PIN Number.

Service 3 Top up phone.

Answer 9

(c) Give **two** advantages of ATMs for the *customer*. [2]

Advantage 1 .....

.....

Advantage 2 .....

.....

(d) Give **two** advantages of ATMs for the *bank*. [2]

Advantage 1 .....

.....

Advantage 2 .....

.....

Question 10

(c) Give **two** advantages of ATMs for the *customer*. [2]

Advantage 1 Provide 24-hour services

Advantage 2 Cuts down on queues in banks

(d) Give **two** advantages of ATMs for the *bank*. [2]

Advantage 1 Save on staff costs

Advantage 2 Save overheads costs

Answer 10

13

Social and environmental impact

8. The introduction of computers has changed the way people work.

(a) Describe **one** advantage and **one** disadvantage of 'teleworking' *for employees*. [2]

Advantage .....

.....

Disadvantage .....

.....

(b) Describe **two** *other* different effects the use of computers has had on working practices. Illustrate your answers with suitable examples. [4]

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Question 9

8. The introduction of computers has changed the way people work.

(a) Describe **one** advantage and **one** disadvantage of 'teleworking' *for employees*. [2]

Advantage Savings on travel time.

Disadvantage Distractions due to family requirements.

(b) Describe **two** *other* different effects the use of computers has had on working practices. Illustrate your answers with suitable examples. [4]

Use of email. Staff email orders or contracts etc.

without having to use the printer or send in the post.
This saves money on postage etc. and is faster than

waiting for the post as it is almost instant.
Websites. Websites can be used to sell goods online.

This gives companies a worldwide audience and the
opportunity to sell 24/7.

Question 9

11. *Teleworking* and *videoconferencing* have changed working practices.
Describe the benefits and drawbacks these methods of working have brought to people. [10]

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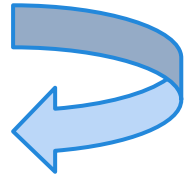

Question 10

11. *Teleworking* and *videoconferencing* have changed working practices.
Describe the benefits and drawbacks these methods of working have brought to people. [10]

benefits:

Teleworking has increased since the introduction of video conferencing as it has brought many benefits.

It can allow people to work around family commitments as it can allow flexible working hours. People can essentially live where they choose as they can use the internet to gain access to remote files and be part of the workplace. It is ideal for people with disabilities (who have difficulty with travel). No time is spent travelling to work.

drawbacks:

The equipment can be expensive to set up. Some people may also not be noticed at home and be overlooked for promotion. Teleworkers could also miss the social aspect from face to face contact with other workers. Teleworkers could also be disturbed at home. Sometimes there can be poor sound and image quality and lead to frustration and lack of productivity.

Answer 10

13. 'Developments in Information and Communication systems continue to have an impact on the way people live and work.'

Discuss the above statement. Include in your answer recent developments in ICT that have had an impact on working practices and the way people live. List the advantages **and** disadvantages they offer the workforce and employers. Also comment on the social and economic effects. [10]

Question 11

13. 'Developments in Information and Communication systems continue to have an impact on the way people live and work.'

Discuss the above statement. Include in your answer recent developments in ICT that have had an impact on working practices and the way people live. List the advantages **and** disadvantages they offer the workforce and employers. Also comment on the social and economic effects. [10]

Broadband - allowing video conferences. This allows staff to work from home, or from remote offices. This can allow staff to work from various locations and fit in with their home life. It can reduce travel time and costs of travelling. It could however, lead to distractions at home or being unnoticed and overlooked for promotion.

Other possible areas could include:Internet provider deals, Call centres, e-commerce, mobile phones, wi-fi, on-line TV programmes, miniturisation, palm tops, robotic surgery, tablet computers, touch screens etc.

Answer 11

8. *Smash Hits* is a brand new online store that sells DVDs, Blu-ray, games and music downloads.

The company has just launched its new website. The *home page* can be seen below.

(c) Match the labels **B**, **C** and **D** shown in the webpage above with the website features listed below. [3]

Website feature	Letter
Hyperlink	
Web Icons	
Search Box	

(a) State what is meant by a *Home Page*. [1]

.....

.....

(b) The size of the banner labelled **A** above is 728 × 90 pixels and it is placed in a premium location at the top of the webpage.

State the name given to this type of banner. [1]

.....

8. *Smash Hits* is a brand new online store that sells DVDs, Blu-ray, games and music downloads.

The company has just launched its new website. The *home page* can be seen below.

(c) Match the labels **B**, **C** and **D** shown in the webpage above with the website features listed below. [3]

Website feature	Letter
Hyperlink	c
Web Icons	b
Search Box	d

(a) State what is meant by a *Home Page*. [1]

main page of a website

(b) The size of the banner labelled **A** above is 728 × 90 pixels and it is placed in a premium location at the top of the webpage.

State the name given to this type of banner. [1]

leaderboard

(d) *Smash Hits* have paid to have a sponsored link to their website appear in the *Golden Triangle*.

(i) Describe what is meant by the term *Golden Triangle*. [2]

.....

.....

.....

(ii) Give **one** reason why *Smash Hits* want to ensure that a link to their website appears within the *Golden Triangle*. [1]

.....

.....

Question 13

(d) *Smash Hits* have paid to have a sponsored link to their website appear in the *Golden Triangle*.

(i) Describe what is meant by the term *Golden Triangle*. [2]

Area of a webpage that a user focuses on when search engine results are displayed

(ii) Give **one** reason why *Smash Hits* want to ensure that a link to their website appears within the *Golden Triangle*. [1]

To ensure their website get as much traffic as possible

Answer 13

(a) Complete the following sentences about websites, using only the words given below.

HTML	**Searched**	**URL**	**LAN**
Web Server	**Hosted**	**Name**	**Website**

(i) ..... is a language used to create a webpage. [1]

(ii) The unique address for every website on the internet is called a

..... . [1]

(iii) In order to allow people to view a website over the internet it must be

..... on a ..... . [2]

State what is meant by the following **four** website terms. [4]

(i) *Hotspot* .....

.....

.....

(ii) *Home Page* .....

.....

.....

(iii) *Hyperlink* .....

.....

.....

(iv) *Leader Board* .....

.....

.....

Answer 13

(a) Complete the following sentences about websites, using only the words given below.

HTML	**Searched**	**URL**	**LAN**
Web Server	**Hosted**	**Name**	**Website**

(i) HTML is a language used to create a webpage. [1]

(ii) The unique address for every website on the internet is called a URL . [1]

(iii) In order to allow people to view a website over the internet it must be hosted on a web server . [2]

(b) State what is meant by the following **four** website terms. [4]

(i) *Hotspot* An image/area of an image used as a link on a webpage

(ii) *Home Page* The main webpage that the user will see on a website

(iii) *Hyperlink* A link that takes the user from one part of a website to another

(iv) *Leader Board* A banner (used for advertising)

Answer 13

(c) When you use a search engine a list of results is produced similar to that shown below.

(i) State the name given to the shaded area. [1]

.....

(ii) Give the reason why organisations try to make sure that the link to their website appears within this shaded area. [1]

.....

Question 14

When you use a search engine a list of results is produced similar to that shown below.

(i) State the name given to the shaded area. [1]

Golden triangle

(ii) Give the reason why organisations try to make sure that the link to their website appears within this shaded area. [1]

So that more people go to their site

Answer 14

14

Acts

7. Many laws have been introduced to deal with issues arising from the use of computers.

(a) Place the appropriate letter in the table below to show which Act deals with each issue. [3]

A Computer Misuse Act
B Electronic Communications Act
C Regulation of Investigatory Powers Act

ISSUES	LETTER
Allows legal interception of emails	
Makes use of digital signatures legal	
Makes hacking illegal	

(b) (i) Give **three** principles of the Data Protection Act (DPA). [3]

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Question 1

7. Many laws have been introduced to deal with issues arising from the use of computers.

(a) Place the appropriate letter in the table below to show which Act deals with each issue. [3]

A Computer Misuse Act
B Electronic Communications Act
C Regulation of Investigatory Powers Act

ISSUES	LETTER
Allows legal interception of emails	C
Makes use of digital signatures legal	B
Makes hacking illegal	A

(b) (i) Give **three** principles of the Data Protection Act (DPA). [3]

Data should not be kept longer than necessary.

Data should kept secure against loss.

Data should not be transferred to countries outside EU or without adequate provision.

Answer 1

4. The Data Protection Act (DPA) deals with personal data held on computer.

(a) State **three** principles of the DPA. [3]

(i) .....

(ii) .....

(iii) .....

(b) State **two** types of organisation who are **not** required to register with the DPA. [2]

(i) .....

(ii) .....

(c) Give **two** rights individuals have regarding data held about them on computer. [2]

(i) .....

(ii) .....

Question 3

4. The Data Protection Act (DPA) deals with personal data held on computer.

(a) State **three** principles of the DPA. [3]

(i) Data should not be kept longer than necessary.

(ii) Data is kept secure.

(iii) Data not to be transferred outside or EU.

(b) State **two** types of organisation who are **not** required to register with the DPA. [2]

(i) Tax fraud investigators.

(ii) Government.

(c) Give **two** rights individuals have regarding data held about them on computer. [2]

(i) To see their own data.

(ii) Right of correction - insist that wrong data is deleted.

Answer 3

13. 'Crime and socially related offences are on the increase because of the misuse of computer systems.'

Discuss the above statement. Identify **THREE** such crimes or offences and outline the different consequences on individuals, organisations or society and describe in detail how they can be prevented or minimised. [11]

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Question 4

13. 'Crime and socially related offences are on the increase because of the misuse of computer systems.'

Discuss the above statement. Identify **THREE** such crimes or offences and outline the different consequences on individuals, organisations or society and describe in detail how they can be prevented or minimised. [11]

Hacking - where an individual gains unauthorised access to computer systems. This could lead to leaked information or identity theft. Users can install a Firewall.
Planting viruses - where an individual installs rogue software aimed to destroy data. Users can install antivirus software.
Creation of false website - where a company poses as a reputable firm to steal business. Companies can report this offense and look to purchase the domain, also use strong passwords and encryption methods.

Answer 4

11. (a) **Tick** (✓) the correct box to show which of the following statements apply to the *Acts* listed below. [3]

Statement	Computer Misuse Act	Electronic Communications Act	Copyright Act
Digital signatures are legally binding	1 ☐	2 ☐	3 ☐
Deliberately introducing harmful viruses is illegal	4 ☐	5 ☐	6 ☐
Downloading some music files is illegal	7 ☐	8 ☐	9 ☐

(b) The *Data Protection Act (DPA)* has eight different principles. Two of them can be seen below:

- Data must not be transferred outside the EU to countries without adequate provision
- Data must be adequate, relevant, not excessive

State **two** *other* principles of the DPA. [2]

Principle 1: .....

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Principle 2: .....

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Question 5

11. *(a)* **Tick** (✓) the correct box to show which of the following statements apply to the *Acts* listed below. [3]

Statement	Computer Misuse Act	Electronic Communications Act	Copyright Act
Digital signatures are legally binding	1	2 x	3
Deliberately introducing harmful viruses is illegal	4 x	5	6
Downloading some music files is illegal	7	8	9 x

(b) The *Data Protection Act (DPA)* has eight different principles. Two of them can be seen below:

- Data must not be transferred outside the EU to countries without adequate provision
- Data must be adequate, relevant, not excessive

State **two** *other* principles of the DPA. [2]

Principle 1: Data holders should protect the data against loss, theft or corruption

Principle 2: Data must be deleted when no longer needed

Answer 5

(c) State the main purpose of the *Regulation of Investigatory Powers Act 2000*. [1]

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(b) State a *crime* covered by the ***Computer Misuse Act 1990***, describe a *consequence* and a method of *prevention*. [3]

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Question 6

(c) State the main purpose of the *Regulation of Investigatory Powers Act 2000*. [1]

Prevent crime

(b) State a *crime* covered by the ***Computer Misuse Act 1990***, describe a *consequence* and a method of *prevention*. [3]

Crime	Consequence	Prevention
Hacking	Identity theft Financial loss Prison sentence Fine Data tampering Financial gain Companies going out of business Human distress Hardware loss Job loss	Encryption Anti-spyware software Anti-phishing software Use of id's & passwords Antivirus software Firewalls Physical security, e.g. locked doors, CCTV, etc
Fraud/Blackmail/ Phishing		
Introducing viruses		
Use an organisations computer to carry out unauthorised work		

Answer 6

9. *(a)* The *Data Protection Act 1998 (DPA)* deals with personal data held on a computer.

(i) State **three** principles of the DPA. [3]

Principle 1: .....

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Principle 2: .....

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Principle 3: .....

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(ii) State **two** exemptions from the DPA. [2]

Exemption 1: .....

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Exemption 2: .....

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(b) The *Computer Misuse Act 1990 (CMA)* was created to secure computer material against unauthorised access or modification.

Tick (✓) the **two** correct boxes to show which of the following are **NOT** covered by the CMA. [2]

	Tick (✓)
Cyber bullying	1 ☐
Introducing viruses	2 ☐
Blackmailing	3 ☐
Hot desking	4 ☐

Question 7

9. *(a)* The *Data Protection Act 1998 (DPA)* deals with personal data held on a computer.

(i) State **three** principles of the DPA. [3]

Principle 1: Data holders should protect the data against loss, theft or corruption

Principle 2: Data must be accurate and where relevant kept up to date

Principle 3: Not to be transferred outside EU to countries without adequate provision

(ii) State **two** exemptions from the DPA. [2]

Exemption 1: The prevention or detection of crime

Exemption 2: the capture or prosecution of offenders

(b) The *Computer Misuse Act 1990 (CMA)* was created to secure computer material against unauthorised access or modification.

Tick (✓) the **two** correct boxes to show which of the following are **NOT** covered by the CMA. [2]

	Tick (✓)
Cyber bullying	1 x
Introducing viruses	2
Blackmailing	3
Hot desking	4 x

Question 7

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Health

Random possible questions

(b) Describe the advice parents could be given about *potential problems* and how to *keep children safe online.* [2 × 2]

Question 1

(b) Describe the advice parents could be given about *potential problems* and how to *keep children safe online.* [2 × 2]

Cyber bullying.

Parents can monitor emails, monitor web activities,

monitor mobile phone calls. Reporting it to CEOP (child exploitation and online protection) or to other

responsible adults.

Identity theft.

Be careful about giving out personal details, e.g. date of birth. Do not use the same password on the site.

Make profile personal.

Answer 1

8. A variety of methods are used to prevent loss of data from a computer system.

(a) Give **one** physical method of securing data. [1]

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(b) The use of a *firewall* is one non-physical method of securing data. Give **two** other non-physical methods of securing data. [2]

Method 1: .....

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Method 2: .....

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Question 2

8. A variety of methods are used to prevent loss of data from a computer system.

(a) Give **one** physical method of securing data. [1]

Alarms

(b) The use of a *firewall* is one non-physical method of securing data. Give **two** other non-physical methods of securing data. [2]

Method 1: Encryption

Method 2: Passwords

Question 2