Chhetri Academy

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GCSE COMPUTER SCIENCE

5.3

Edexcel 1CP2 | Specification point 5.3.1

The threat to digital systems posed by malware (viruses, worms, Trojans, ransomware, key loggers) and...

Untiered

Answers and examiner comments

2	2023-2025	Untiered
question groups	available papers	tier

Using this booklet

1. Answer numbers match the companion question booklet.
2. Follow the original question number on marking tables.
3. Examiner comments are included where available.

Name _____ **Date** _____

Some entries use full source marking material in an appendix. Any unavailable mark schemes are identified beside the relevant answer.

Question Number	Answer	Additional Guidance	Mark
3(a)	Award up to two marks for a linked explanation, such as: • Worms make copies of themselves (1) and send them to everyone in the computer's email contacts list / send them via previous connections used by the computer (1) • Worms can spread (themselves) through emails (1) and do not need a user to unknowingly distribute/execute them (1) • Worms self-replicate (1) and spread without the need for a host file (1)	For both marks, the expansion must associate with the statement. Do not accept: Worms spread through links in emails.	(2)

Question Number	Answer	Additional Guidance	Mark
3(b)	Award one mark for: • Licensing (1)		(1)

Question Number	Answer	Additional Guidance	Mark
3(c)	Award up to two marks for a linked explanation, such as: • The landing program may crash / display incorrect data / not deal with extreme scenarios (weather / wind / animal / visual / emergency) (1) because: • the system could be out of date / have errors / bugs / not been tested enough • the scenario is beyond the range of what it has been programmed to respond to (1) • A computer's input may be wrong/compromised (1) because of a sensor/hardware/mechanical error (1) • A computer cannot make moral/ethical judgements (1) because it is only capable of following instructions (1)	For both marks, the expansion must associate with the statement.	(2)

Question Number	Answer	Additional Guidance	Mark
3(d)	Award up to two marks for a linked description, such as: • The land/rivers/seas will be polluted (1) if contaminated/uncleaned waste water is released (1) • Homes/businesses/agriculture/wildlife/people may not have enough water (1) if too much is taken from the rivers/reservoirs (1) • Water is polluted/contaminated (during the manufacturing process) (1) and could pose a health risk (1) • Large amounts of energy is required (to extract/clean water) (1) resulting in more use of CO2 / CO2 contributes to global warming (1)	For both marks, the expansion must associate with the statement. Do not accept responses that refer to global warming due to the use of water without implying associated energy use.	(2)

<table>
<tr><th>Question Number</th><th>Answer</th><th>Additional Guidance</th><th>Mark</th></tr>
<tr><td>3(e)</td><td>Award one mark for each correct cell:
<table>
<tr><th>Situation</th><th>Ethical or legal concern</th></tr>
<tr><td>A teacher uses another teacher's login to change student grades</td><td>Misuse (1)
Hacking (1)
Unauthorised access/changing/ editing/modification (1)</td></tr>
<tr><td>A school displays closed-circuit television (CCTV) screens in a public area</td><td>Privacy (1)
Consent/Permission (1)
Data Protection / GDPR / General Data Protection Regulations (1)</td></tr>
</table></td><td></td><td>(2)</td></tr>
</table>

Question Number	Answer	Additional Guidance	Mark
3(a)(i)	**The only correct answer is A** *B is not correct because gaining consent is an issue with collecting and storing data* *C is not correct because copyright is an issue with ownership of digital assets* *D is not correct as no intellectual property law is broken*	The correct answer is computer misuse	**(1)**

Question Number	Answer	Additional Guidance	Mark
3(a)(ii)	Award **one** mark for any of the following up to a maximum of **three** marks: • Consent must be obtained/given to collect data (1) • Individuals have a right to have data removed/withdraw consent (1) • Individuals have a right to see data held on them (1) • Data can only be collected for a specified purpose (1) • Only necessary data may be collected (1) • Data must be accurate (1) • Data must be kept up to date (1) • Data may not be kept for longer than necessary (1) • Data must be kept securely (1) • Data cannot be shared with third parties without consent (1) • Data controllers must be able to prove data protection measures are sufficient. (1)		**(3)**

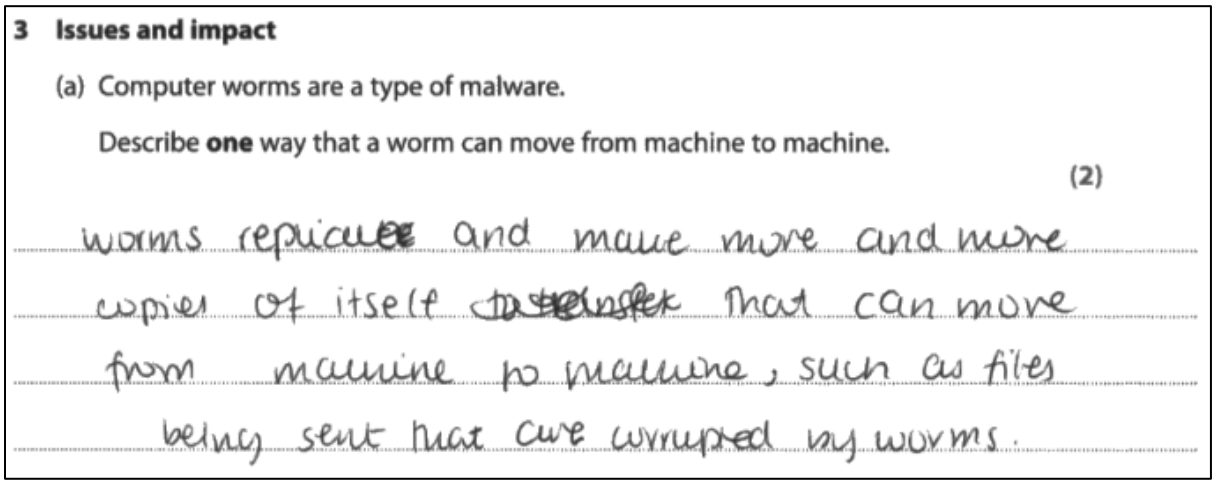
Question Number	Answer	Additional Guidance	Mark
3(b)	Award **one** mark for any of the following: • Source code is accessible (1) • Source code can be edited (1) • Source code can be amended/redistributed (1) • Support may not be provided (1)	Do not award free/costs no money	**(1)**

3(c)(i)	Award **two** marks for a linked explanation such as: • Users are deterred from unsafe practices (1) because consequences are clarified (1). • People follow safe/good practices (1) because permitted activities are defined/set out (1). • Users will follow the rules of the policy (1) because they want to keep their files safe (1)	For both marks, the expansion must follow/associate with the statement. Accept responses that use examples. e.g. AUPs contain guidance such as to not open links from unknown sources (1) to prevent malware infection (1)	**(2)**

Question Number	Answer	Additional Guidance	Mark
3(c)(ii)	**The only correct answer is C** *A is not correct because a keylogger only records key strokes* *B is not correct because a trojan masquerades as another file type* *D is not correct because a worm runs by itself*	The correct answer is Virus	**(1)**

Question 3a

The idea of worms self-replicating was the main correct response provided by students. Lots of incorrect responses were mostly confusing worms with a virus.



3 **Issues and impact**

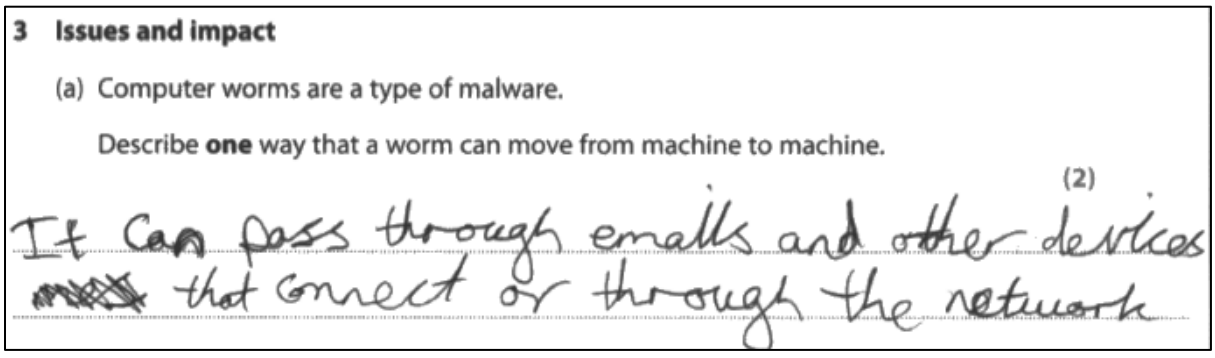
(a) Computer worms are a type of malware.

Describe **one** way that a worm can move from machine to machine.

(2)

worms replicate and make more and more copies of itself ~~to transfer~~ that can move from machine to machine, such as files being sent that are corrupted by worms.

'Worms replicate and make more and more copies of itself', scored 1 mark. A second mark was not awarded as there is no correct reference to how worms move (worms do not require a host file in the same way a 'trojan' virus does).



3 **Issues and impact**

(a) Computer worms are a type of malware.

Describe **one** way that a worm can move from machine to machine.

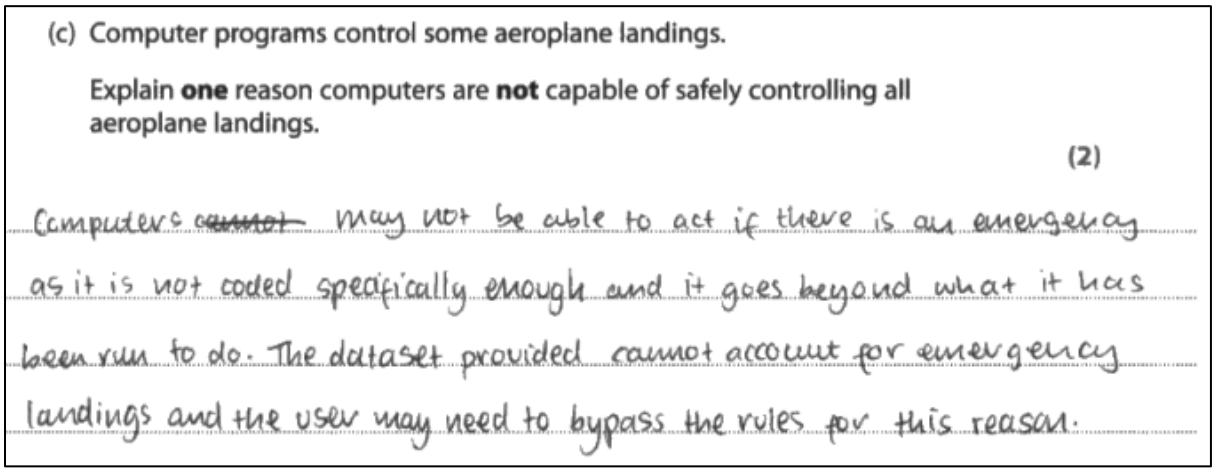
(2)

It can pass through emails and other devices ~~which~~ that connect or through the network

This response also scored 1 mark.

Question 3c

Many responses were related to weather, but only few made references to extreme weather events. This meant that marks could not be awarded for this alone.



(c) Computer programs control some aeroplane landings.

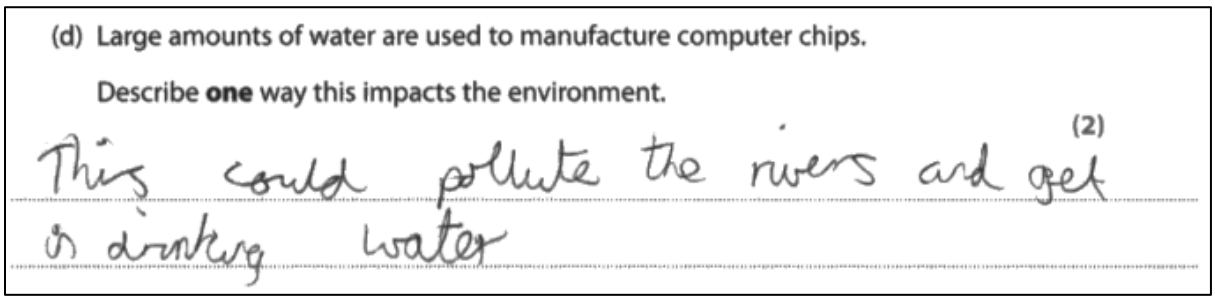
Explain **one** reason computers are **not** capable of safely controlling all aeroplane landings.

(2)

Computers ~~cannot~~ may not be able to act if there is an emergency as it is not coded specifically enough and it goes beyond what it has been run to do. The dataset provided cannot account for emergency landings and the user may need to bypass the rules for this reason.

This response score 2 marks; 1 mark for 'may not be able to act if there is an

Many responses correctly identified that the rivers would be polluted or showed understanding that the scarcity of water due to use in chip manufacturing would impact the environment. However, responses on how this would affect the environment was rather mixed. For example, there were lots of responses mentioning drought as a major impact of using large amounts of water to manufacture chips.


(d) Large amounts of water are used to manufacture computer chips.

Describe **one** way this impacts the environment.

(2)

This could pollute the rivers and get in drinking water

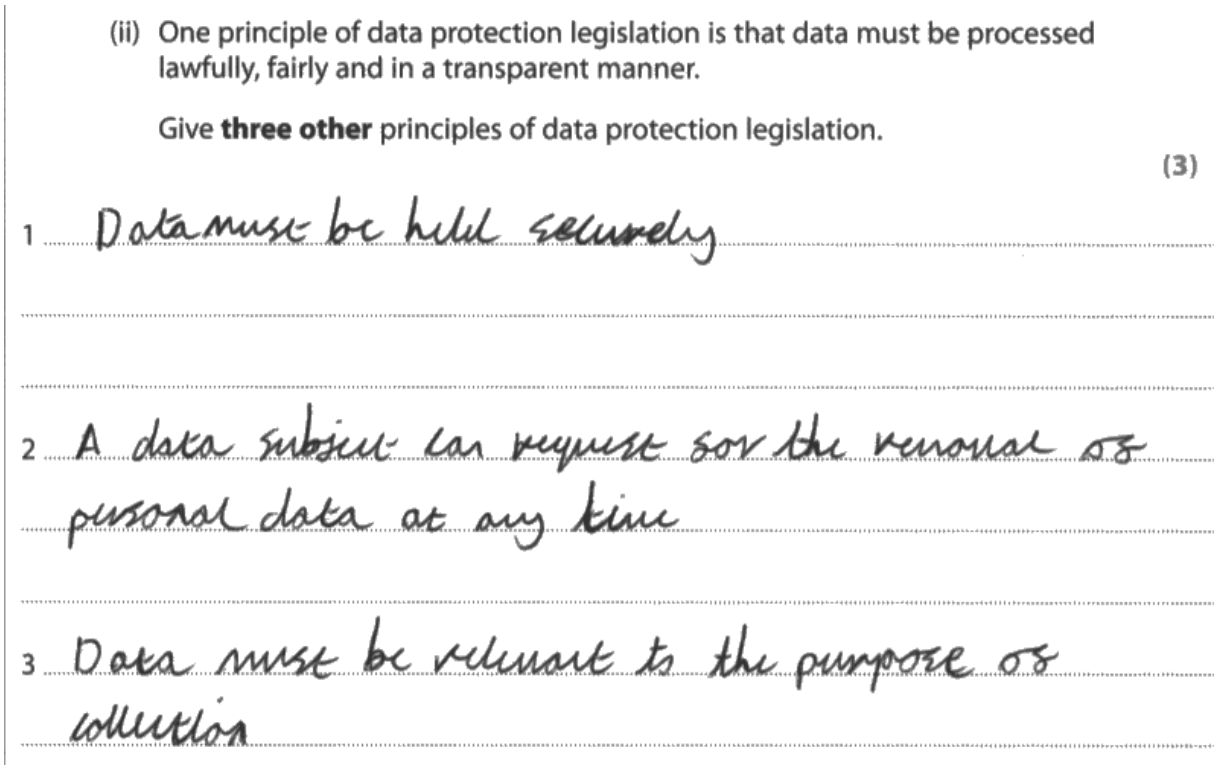
This response scored 2 marks. 1 mark for 'this could pollute the rivers' and 1 mark for 'get in drinking water', as this implies posing a risk to people.

Question 3e

The most common response from box 1 was misuse / unauthorised access. Many responses mentioned consent and privacy for box 2.

Question 3(a)ii

Most candidates demonstrated at least some knowledge of the principles of data protection, either giving the responsibilities of companies holding and processing data or the rights of individuals. The most commonly cited data protection principle was the need to gain consent to collect data.



(ii) One principle of data protection legislation is that data must be processed lawfully, fairly and in a transparent manner.

Give **three other** principles of data protection legislation.

(3)

1 Data must be held securely

2 A data subject can request for the removal of personal data at any time

3 Data must be relevant to the purpose of collection

ResultsPlus
Examiner Comments

This response gained all 3 marks, covering both the rights of individuals and the responsibilities of companies.

Question 3(b)

A number of responses were too general to be awarded credit. Statements such as 'anyone can use it' or 'anyone can access it' could equally apply to free software where the source code is not made available. Good responses made it clear that it was the source code that could be accessed/edited.

(b) Software licensed as open-source can be used free of charge.

Give **one other** characteristic of open-source software licensing.



ResultsPlus
Examiner Comments

This response gained 0 marks because it was too vague. Anyone can use any software if they pay for it. Anyone can use 'free' software. It was not clear that the source code was freely available to anyone.

Question 3(c)i

Many candidates gave clear explanations using examples of recommended or banned actions that could appear in an AUP alongside resultant consequences and reasons. Some candidates confused acceptable usage policies with cyber security and the need for malware protection or confused it with access controls or monitoring programs. This showed a misunderstanding between policy to influence behaviour and automated technological systems to stop unwanted actions.

(c) Cyber security protects computer systems from harm.

(i) Explain **one** reason why an acceptable use policy keeps computer systems secure.

(2)

It prevents people with unauthorised access to misuse the systems to access data for personal use.

ResultsPlus
Examiner Comments

This response scored 0 marks because it confused access controls with acceptable usage policies.