OCR GCSE (J277)

Module I: Impacts and the law

Workbooklet mark scheme · 7 parts · 144 marks

Contents

Part	Topic	Marks
I1	Ethical and privacy impacts of digital technology: mark scheme	22
I2	Cultural impacts of digital technology: mark scheme	20
I3	Environmental impacts and e-waste: mark scheme	21
I4	The Data Protection Act 2018: mark scheme	20
I5	The Computer Misuse Act 1990: mark scheme	21
I6	The Copyright, Designs and Patents Act 1988: mark scheme	20
I7	Software licences: mark scheme	20
	Total	**144**

MODULE I IMPACTS AND THE LAW · I1

Ethical and privacy impacts of digital technology: mark scheme

22 marks · OCR J277 spec 1.6.1 (impacts of digital technology on wider society: ethical issues, privacy issues)

How to use. One mark per bullet up to the maximum shown. **/** separates alternative words; **//** separates alternative answers for the same mark. Words in (brackets) are not needed for the mark. "..." means the point depends on the one before it. **NE** = not enough on its own. Question 5* is marked with levels of response (below the table). Legislation (Data Protection Act 2018 and others) is taught in I4 to I6 and is not required here; credit an accurate reference to it where it supports a point.

QUESTION	ANSWER	MARKS	GUIDANCE
1(a) J277 1.6.1	Whether a use of technology is (morally) right or wrong // fair or unfair // good or bad for people Who benefits and who could be harmed (by a use of technology)	**1**	1 mark for either bullet. Do not accept "against the law" / "illegal" alone (that is a legal issue). Do not accept an example alone (e.g. "cyberbullying") with no meaning given. "How technology affects people" alone = NE.
1(b) J277 1.6.1	Location // GPS position // places visited Name Date of birth Email address Phone number Contacts (list) Photos / videos / voice recordings Messages Call history Browsing / search history // websites visited Which apps are used / for how long Health / fitness data (e.g. steps, heart rate) Payment / bank card details Purchases made	**2**	1 mark each to max 2. Credit any other valid type of personal data. Mark the first two answers only. Do not accept "data" / "information" / "personal details" alone (NE).
2(a) J277 1.6.1	Legal but still unethical: True Cookies used to build a profile of interests: True Agreeing to terms means no privacy issues: False Deleting a shared photo deletes every copy: False	**4**	1 mark per correct row. A row with both boxes ticked scores 0.

QUESTION	ANSWER	MARKS	GUIDANCE
3(a) J277 1.6.1	Wearers lose control of who has / sees their (personal / health) data ... ... because it is sold / passed on to other organisations (they may not know about / have not chosen) Health data (heart rate / sleep) is sensitive / private ... ... and their name is attached so it can be linked to them // they can be identified The GPS routes show where each run starts / finishes ... ... which could reveal the wearer's home address / daily routine / when they are out The data is stored on the company's servers / by several organisations ... ... so it could be leaked / stolen / accessed without permission (and seen by others)	**2**	Mark in pairs: 1 mark for the issue, 1 mark for the linked explanation (...). Max 2. Credit any other valid privacy issue with an explanation. "Their data is shared" alone = 1 mark at most. Do not accept "it is not private" / "invasion of privacy" alone (NE).
3(b) J277 1.6.1	Insurance companies could charge some wearers more // refuse them cover ... ... because the data suggests poor health / poor sleep // this is unfair / discrimination (based on data they did not agree to share) Knowing a wearer's running route / times could put them at risk ... ... of being followed / stalked // of their home being burgled while they are out Organisations could use the data to target wearers with adverts / offers ... ... which may pressure them / play on health worries If the data is leaked by a buyer ... ... the wearer could be a victim of fraud / identity theft / blackmail Wearers may feel their trust has been broken // feel stressed / worried ... ... because their data was used in a way they did not expect	**2**	Mark in pairs: 1 mark for the harm, 1 mark for the linked explanation (...). Max 2. Credit any other valid harm with an explanation. Do not award a pure privacy point that repeats 3(a) (e.g. "other people can see their data"). Do not accept "they could be hacked" alone (NE).
4(a) J277 1.6.1	The program may be biased // may treat some groups of applicants unfairly ... ... because it learned from past decisions that may have been unfair / biased // it repeats past mistakes Suitable applicants could be rejected wrongly ... ... and no person checks, so the mistake is not spotted // they lose the chance of a job It is unclear who is responsible / to blame for a wrong decision ... ... the agency, the program's developer or no one // the decision is hard to challenge Applicants may not know that a program (not a person) made the decision ... ... so they cannot ask for it to be explained / checked // it is not transparent Staff who used to sort applications may lose their jobs ... ... because the program now does their work	**2**	Mark in pairs: 1 mark for the issue, 1 mark for the linked explanation (...). Max 2. Credit any other valid ethical issue with an explanation. Do not accept "AI makes mistakes" alone (NE) unless linked to an effect on the applicants.

QUESTION	ANSWER	MARKS	GUIDANCE

4(b)
J277 1.6.1
	Applications are sorted in less time (than by staff) // more applications can be dealt with
	Saves money on staff (wages) // fewer staff needed to sort applications
	Can work at any time / 24 hours a day
	Applies the same rules to every application // (more) consistent decisions
		1	1 mark for any bullet. Credit any other valid benefit to the agency. Accept "faster" only when linked to sorting / processing the applications; "faster" alone = NE. Do not accept "it is fairer" (the scenario points to possible bias) or "it is cheaper" alone (NE) unless linked to staff / wages.

5* J277 1.6.1	Mark using the levels of response and indicative content below.	**8**	Read the whole answer, decide the level, then the mark within it. A one-sided answer (only benefits, or only drawbacks) cannot reach Level 3.

Question 5*: levels of response

LEVEL	DESCRIPTOR
Level 3 **6 to 8 marks**	Accurate, detailed knowledge of both ethical and privacy issues. Points are applied to this company and its drivers throughout, not just listed. Benefits are weighed against drawbacks, with impacts on more than one stakeholder. A clear line of reasoning reaches a supported conclusion (e.g. go ahead, do not, or go ahead with changes).
Level 2 **3 to 5 marks**	Reasonable knowledge, mostly accurate. Some points are applied to the scenario. Covers both ethical and privacy issues, but one may be thin; or the answer is mainly one-sided. Some structure; any conclusion is weak or not fully supported.
Level 1 **1 to 2 marks**	Basic knowledge, with some inaccuracy. Mostly general points with little link to the company or drivers. Points are listed rather than discussed; little or no structure.
0 marks	Nothing worthy of credit.

Question 5*: indicative content (not a checklist; credit any other valid point)

BENEFITS	DRAWBACKS
Company • Knows where every van and parcel is; can give customers accurate delivery times • Can plan better routes, saving time and fuel / money • Can find a stolen van and its parcels quickly • Camera gives evidence after an accident, complaint or damaged / missing parcel • Can spot unsafe or tired driving and act on it • Can check that work time is used for work **Drivers** • Safety: help can be sent quickly after an accident or breakdown; the van can be found • Camera evidence can protect a driver from a false complaint • Safer driving protects drivers and other road users (wider society) **Customers** • Live tracking; fewer lost parcels	**Ethical** • Constant watching suggests the company does not trust its drivers; lower morale, stress • Time-at-address data may create pressure to rush, skip breaks or drive unsafely • Data could be used unfairly to discipline or dismiss drivers, without context (e.g. a long stop to help an elderly customer) • Drivers may feel they cannot refuse the monitoring if they want to keep their job • Is it right to film people during breaks, when they are not working? **Privacy** • Drivers lose control over what is recorded about them, including private moments and phone calls on breaks • GPS on breaks can reveal personal places visited (e.g. a doctor's surgery) • Unclear who can watch, how long data is kept, whether it is shared • Stored videos and locations could be leaked or accessed without permission • Customers / members of the public near the van may also be recorded

Weighing up / conclusion (examples): the surveillance improves safety and security but reduces drivers' privacy; a supported middle position is acceptable, e.g. keep GPS for work hours only, switch the camera off during breaks or record only when an incident happens, tell drivers what is collected and why, limit who can view it, keep it secure and delete it after a set time. Any conclusion is credited if it follows from the points made.

Total: 22 marks

MODULE I IMPACTS AND THE LAW · I2

Cultural impacts of digital technology: mark scheme

20 marks · OCR J277 spec 1.6.1: impacts of digital technology on wider society, including cultural issues; knowledge of a variety of examples of digital technology and how this impacts on society; an ability to discuss the impact of technology based around the issues listed

How to use. Questions 1 to 4: 1 mark per bullet up to the maximum shown. **/** separates alternative words; **//** separates alternative answers for the same mark. Words in (brackets) are not needed for the mark. Credit any other valid answer that shows the same understanding. Question 5* is marked with the levels of response below the table.

QUESTION	ANSWER	MARKS	GUIDANCE
1(a) J277 1.6.1	Video calls with relatives in other countries: Positive False stories shared with millions: Negative Online shopping delivered to people who find it hard to leave home: Positive Answering work messages late in the evening: Negative	**4**	1 mark per correct row. 2 ticks in a row = 0 for that row.
2(a) J277 1.6.1	A gap / inequality / divide between groups of people // between countries / areas ... ... in access to digital technology / computers / the internet // between those who have access and those who do not / have limited access The group without access is disadvantaged / misses out (e.g. on jobs / education / services / information) An example of the groups, e.g. rich and poor // urban and rural // younger and older people // richer and poorer countries	**2**	1 mark per bullet, max 2. "The gap between people who have access to the internet and people who do not" = 2. Allow "use" for "access" and "skills to use" technology. MP4 only if the answer refers to technology / the internet. Do not accept "people who don't like technology" alone, or an answer about technology being divided into parts.
3(a) J277 1.6.1	Cannot afford a device / a computer // cannot afford the (monthly) cost of a connection Lives where there is poor / slow / no broadband or mobile signal, e.g. a rural / remote area Lacks the skills / confidence / training to use computers or the internet Age, e.g. an older adult who never learned to use the internet A disability makes devices hard to use without (costly) accessible equipment Does not have a fixed home / moves often Chooses not to // does not trust it / worried about scams or privacy	**2**	1 mark per reason, max 2. Credit any other valid reason. Mark the first answer on each line. "Age" alone = BOD for 1 mark. Do not accept "they have no internet" (repeats the question) or "money" alone; "cannot afford it" = 1 mark.

QUESTION	ANSWER	MARKS	GUIDANCE
3(b) J277 1.6.1	Harder to find / apply for jobs (1) ... because many jobs are advertised / applied for online (1) Harder to learn / study / gain qualifications (1) ... because courses and learning materials are often online (1) Harder to use services such as banking / booking appointments / paying bills / claiming benefits (1) ... as these are often online or cheaper / quicker online, so they must travel, queue or phone (1) May pay more for goods / services (1) ... as they cannot compare prices or use online-only deals (1) May become isolated / lonely (1) ... as they cannot message / video call friends and family or use social media (1) Less access to news / information (1) ... so they may be less informed (e.g. about local services or events) (1)	**2**	Mark in pairs: 1 for the disadvantage, 1 for the explanation. The second mark depends on the first. Credit any other valid disadvantage with an explanation. Do not accept "they cannot go online" alone (repeats the question).
4(a) J277 1.6.1	More people buy goods / book holidays / travel online (on websites or apps) (1) People stream / download music / films / e-books instead of buying physical copies (1) Online shopping is convenient: open 24/7 / home delivery / easy to compare prices (1) ... so fewer customers visit (high-street) shops (1) ... so the shops' sales / income fall, so they cannot cover their costs (e.g. rent / staff) and close (1)	**2**	1 mark for a change in what people do using technology (MP1 to MP3) and 1 mark for linking it to fewer customers / lower sales (MP4 or MP5). Max 2. A second change in behaviour with no link to the shops = 1 mark only. Do not accept "the internet" or "technology" alone.

QUESTION	ANSWER	MARKS	GUIDANCE
5* J277 1.6.1	Indicative content (not exhaustive; credit any relevant, accurate point applied to the company). **How staff work and communicate** + Video calls / instant messaging / cloud software let staff work together and share files from home + Fewer interruptions; staff can choose when to do some tasks / more flexible hours + The company could employ people who live far away or who find travelling hard (e.g. a disability) − Less face-to-face contact: weaker team relationships, harder to build trust or ask quick questions − New staff may find it harder to learn the job / be trained − Messages and video calls can be misunderstood; tiredness from many video calls − Staff without fast broadband, a quiet space or good IT skills are disadvantaged (digital divide) **Staff's lives outside work** + No commute on four days: more free time / time with family, money saved on travel + Easier to fit work around caring for others or appointments + Staff could move to cheaper or more rural areas − "Always on": messages on phones and laptops in the evening, blurred line between home and work − Loneliness / isolation; less social life from work; less physical activity − Home costs rise (heating, electricity, broadband) **The city centre and the people who work there** − Fewer office workers visit cafés, shops and sandwich bars, so they lose income; some may close and their staff lose jobs − Less demand for buses / trains; the city centre may feel quieter / emptier + Less crowded transport and streets; spending may move to local shops near where staff live + Empty office space could be turned into homes / other uses	**8**	Mark with the levels of response below. Read the whole answer, choose the level, then the mark within it. For Level 3, the answer must cover positive and negative cultural impacts, applied to the company, its staff and the city centre, with a conclusion or weighing up. Other relevant issues (e.g. less pollution from commuting, the company monitoring staff at home) can support the discussion but the focus must be cultural impacts. Generic points not linked to the scenario (e.g. "technology changes how people live") cannot go above Level 1.

Question 5*: levels of response

LEVEL	DESCRIPTOR
Level 3 6 to 8 marks	Shows thorough, accurate knowledge of the cultural impacts of digital technology. Applies it consistently to the company, its staff and the city centre, with examples that clearly fit the scenario. Weighs up positive and negative impacts across all three areas and reaches a supported conclusion. The answer is clear, well organised and follows a logical line of reasoning.
Level 2 3 to 5 marks	Shows reasonable knowledge that is mostly accurate but sometimes underdeveloped. Applies it to the scenario, though some chances are missed. Discusses most of the areas, with some balance between positive and negative impacts. There is some structure and a line of reasoning, with points mostly supported.
Level 1 1 to 2 marks	Shows basic knowledge, which may contain inaccuracies. Little attempt to apply it to the scenario; impacts may be listed without explanation or only one side is given. Points are unsupported and not clearly organised.
0 marks	No attempt, or nothing worthy of credit.

Total: 20 marks

MODULE I IMPACTS AND THE LAW · I3

Environmental impacts and e-waste: mark scheme

21 marks · OCR J277 spec 1.6.1 (impacts of digital technology on wider society: environmental issues; examples of digital technology and how it impacts on society; discuss the impact of technology)

How to use. Questions 1 to 3: one mark per bullet up to the maximum shown. **/** separates alternatives; **//** separates alternative answers for the same mark. Words in (brackets) are not needed for the mark. **...** at the start of a bullet means it expands the bullet before it. Question 4 is marked with levels of response: decide the band first, then the mark within it. Answers that only say "pollution", "bad for the environment" or "better for the planet" with no detail are not enough (NE). Names of particular toxic substances are not required anywhere.

QUESTION	ANSWER	MARKS	GUIDANCE
1(a) J277 1.6.1	Mining rare metals: Making the device Servers running day and night with air conditioning: Using the device Harmful substances leaking from printers in landfill: Disposing of the device Factory energy and water for microchips: Making the device Computers shipped abroad and burned to recover metal: Disposing of the device	**5**	1 mark per correct row. A row with two or more ticks scores 0.
2(a) J277 1.6.1	Electronic / electrical devices / equipment that have been thrown away / discarded / are no longer wanted // unwanted / old / broken computers / phones / digital devices that are disposed of	**1**	Must show it is electronic / electrical equipment and that it is being got rid of. Do not accept "electronic waste" alone (repeats the term). Accept a correct example linked to being thrown away (e.g. "old phones people throw away").
2(b) J277 1.6.1	Devices contain toxic / harmful / hazardous substances / chemicals / heavy metals (e.g. lead, mercury, cadmium) ... ... which can leak / seep into the soil / ground / water (supply) / rivers // pollute land / water ... harming / poisoning plants / wildlife / animals / people (who live nearby) Valuable / rare / precious metals / materials are not recovered / are wasted ... ... so more have to be mined (to make new devices), which damages the environment Devices do not break down / are not biodegradable // landfill sites fill up / more land is used for landfill	**2**	1 mark per bullet to max 2. Two separate valid points can score 2. Do not accept "it causes pollution" alone (NE): the answer must say what pollutes or what is polluted. Credit any other valid reason.

QUESTION	ANSWER	MARKS	GUIDANCE
3(a) J277 1.6.1	Recycle them (so materials / metals can be recovered and reused) // send them to an (approved / specialist) e-waste recycler Refurbish / repair them and reuse / resell them Donate / give / sell them to people / charities / community groups / other organisations who can still use them Remove / reuse working parts (e.g. as spare parts / to repair other computers) Return them to the manufacturer / supplier (through a take-back scheme)	**2**	1 mark each to max 2. The two ways must be different (e.g. "donate" and "give away" = 1 mark). Credit any other valid way. Do not accept "throw them away", "put them in the bin" or "send them to landfill". Do not accept "wipe the data" (not an environmental action).
3(b) J277 1.6.1	Fewer new computers need to be bought / made ... ... so less mining of (rare / precious) metals / raw materials // less energy / water used in manufacturing // fewer carbon emissions / greenhouse gases (from factories / transport) Fewer computers are thrown away // less e-waste is produced ... ... so less goes to landfill // fewer toxic substances leak into the soil / water // less e-waste is shipped abroad / burned	**2**	1 mark for a benefit, 1 mark for a linked expansion (...), max 2. If two benefits are given, mark the first. Accept "less waste" for the benefit mark; the expansion must say what harm is avoided. Do not accept "saves money" (not environmental).
3(c) J277 1.6.1	Older computers may use more electricity / energy (than newer, more energy-efficient models) // more (carbon) emissions from generating the extra electricity Older computers may break down more often // need more repairs / replacement parts (which have to be made) Slower computers may take longer to do tasks, so they are switched on for longer and use more electricity	**1**	1 mark for any valid environmental drawback. Credit any other valid environmental drawback. Do not accept drawbacks that are not environmental (e.g. "slower", "security risk", "staff unhappy") unless linked to energy use or the environment.
4* J277 1.6.1	Levels of response: use the band descriptors and indicative content below.	**8**	Mark the response as a whole. A response does not need every point in the indicative content to reach the top band.

Question 4* band descriptors

Band	Descriptor
Band 3 (High) 6 to 8 marks	Accurate, detailed knowledge of a wide range of environmental impacts. Applied clearly and consistently to the bus company's plan, with explicit examples (e.g. the ticket machines, the sensors, the data centre, the paper). Weighs up positive and negative impacts, and covers more than one stage (making, using, disposing). Points are expanded with a reason or consequence. A clear, logically structured line of reasoning that leads to a supported conclusion.
Band 2 (Mid) 3 to 5 marks	Reasonable knowledge of a range of environmental impacts, mostly accurate but sometimes underdeveloped. Applied to the plan, but one or two chances are missed. Covers positive or negative impacts; the top of the band needs at least one of each. Some points are expanded. A line of reasoning with some structure; any conclusion is only partly supported.
Band 1 (Low) 1 to 2 marks	Basic knowledge, with some inaccuracies. Little application to the plan: points could apply to any technology. Mostly unsupported assertions (e.g. "it is better for the environment"). Unstructured.
0 marks	No attempt, or nothing worthy of credit.

Question 4* indicative content (not prescriptive or exhaustive; credit any other valid point)

Positive environmental impacts	Negative environmental impacts
• No paper tickets or printed timetables: less paper and ink used, fewer trees cut down, less paper waste. • Fuel-use data lets the company spot wasteful driving, idling or routes, so it can use less fuel and cut exhaust emissions. • Location data can be used to plan more efficient routes and timetables (e.g. fewer near-empty buses). • Air-quality sensors monitor pollution along the routes, so the company or the city can act on polluted areas (e.g. send cleaner buses there). • Live bus times in the app may encourage more people to take the bus instead of driving, reducing traffic and emissions. • Most passengers already own a phone, so no new device is needed for them. • Old ticket machines can be recycled, refurbished or used for spare parts instead of going to landfill.	• Making the sensors and servers needs rare or precious metals to be mined, and uses energy and water, with carbon emissions. • Servers in the data centre run all the time and need cooling, so they use a lot of electricity (more emissions if it is not from renewable sources). • Sensors on every bus also use power and will eventually fail and need replacing. • The removed ticket machines become e-waste; if sent to landfill, toxic substances can leak into soil and water, or the machines may be exported and burned. • Sensors, servers and phones all become e-waste at the end of their life. • Some passengers may buy a new phone to use the app, increasing manufacturing and e-waste. • Phones must be charged to use the app (small extra electricity use).
Possible conclusions (any supported conclusion is acceptable): the benefits are likely to outweigh the costs if the old machines are recycled and the data centre uses renewable energy; or the plan is only better for the environment if the sensor data is actually used to cut fuel use; or the extra hardware and the always-on data centre may cancel out the paper saved.	

Total: 21 marks

MODULE I IMPACTS AND THE LAW · I4

The Data Protection Act 2018: mark scheme

20 marks · OCR J277 spec 1.6.1

How to use. 1 mark per bullet up to the maximum shown. **/** separates alternative words; **//** separates alternative statements for the same mark. Words in (brackets) are not needed for the mark. "..." means the point depends on the one before it. **NE** = not enough on its own. Spec point covered (J277 1.6.1): legislation relevant to Computer Science, the Data Protection Act 2018: its purpose and the specific actions it allows or prohibits. Law as at November 2026: the Act works alongside the UK GDPR, so accept "GDPR" / "UK GDPR" wording throughout. Accept "data subject" for the customer and "data controller" for the company, but these terms are not required. The Data Protection Act is not on Cambridge 0478, so there is no IGCSE version of this worksheet.

QUESTION	ANSWER	MARKS	GUIDANCE
1 J277 1.6.1	Controls / regulates how personal data is collected / stored / used / processed (by organisations) Protects people's personal data // protects people's privacy Gives people rights over their personal data // e.g. to see / correct / delete it Sets rules/principles that organisations holding personal data must follow // makes organisations keep personal data secure / accurate Applies to data about living, identifiable people	**2**	Max 2. "Protects data" alone = NE: must say personal data or privacy. Do not accept "stops hacking" / "makes hacking illegal" (Computer Misuse Act) or anything about copying work (Copyright, Designs and Patents Act). Credit any other valid answer.
2 J277 1.6.1	Asks for religion to hire a bike: Breaks Explains on the form what details are used for: Follows Laptop with no password taken home: Breaks Changes the address when told: Follows Keeps every customer's details for ever: Breaks Sends a copy of the data when asked: Follows	**6**	1 mark per correct row. 2 ticks in a row = 0 for that row. Reasons (not required): row 1 more data than needed; row 2 used fairly and transparently; row 3 not kept secure; row 4 kept accurate and up to date; row 5 kept longer than necessary; row 6 right of access.

QUESTION	ANSWER	MARKS	GUIDANCE
3 J277 1.6.1	Right to be informed (1) ... to be told what data is collected / why / how it will be used (1) Right of access (1) ... can ask for / see a copy of the data held about them // can make a subject access request (1) Right to rectification / to have data corrected (1) ... can have wrong / out-of-date data (e.g. an old address) corrected / updated (1) Right to erasure / to be forgotten (1) ... can ask for their data to be deleted (e.g. when it is no longer needed) (1) Right to restrict processing (1) ... can ask the company to limit / pause how their data is used (1) Right to object (1) ... can object to / stop their data being used for some purposes, e.g. marketing (1) Right to data portability (1) ... can get their data in a form they can take / move to another organisation (1) Rights about automated decisions / profiling (1) ... can ask for a person to review a decision made only by a computer // can object to being profiled (1)	**4**	Mark in pairs: 1 for identifying the right, 1 for describing it. Max 2 per right, max 2 rights. A clear description earns both marks without the formal name (e.g. "they can ask to see all the data the company holds about them" = 2). Do not award two marks for the same right described twice. "Right to privacy" / "right to data" alone = NE. Credit any other valid right in the Act.
4(a) J277 1.6.1	Personal data must be kept secure // must be protected against loss / theft / unauthorised access	**1**	Accept "integrity and confidentiality". Accept "only the data needed should be used" (all 400 customers' details were copied for home working). Do not accept "data must be accurate" or "data must be kept no longer than necessary" on their own.
4(b) J277 1.6.1	Fine the company Investigate the company / the data breach Order the company to change how it handles personal data // issue an enforcement notice Give the company a warning / reprimand	**1**	Max 1. The regulator need not be named. Accept the ICO / Information Commissioner('s Office) / Information Commission named with a valid action. Do not accept "send the owner to prison" or "arrest the employee". "Punish the company" alone = NE. Credit any other valid action.
4(c) J277 1.6.1	Encrypt the data / the memory stick Password-protect the memory stick / the file Keep the data on a secure server / system and give staff remote access to it instead Do not allow personal data to be copied onto USB sticks / removable storage (policy) // block USB ports Use access levels so only staff who need the customer data can copy / open it Copy only the data needed for the task Train staff in handling personal data	**2**	1 mark each, max 2. Mark the first two answers. "Keep it safe" / "be more careful" alone = NE. "Back up the data" = NE (it does not protect the lost copy). Credit any other valid way.

QUESTION	ANSWER	MARKS	GUIDANCE
5 J277 1.6.1	The email addresses were collected for a specified purpose (sending receipts) // can only be used for the purpose they were collected for Giving them to a holiday company for adverts is a different / new purpose (so the plan would break the Act as it stands) The owner must tell customers / be open (transparent) about the new use The owner must get customers' permission / consent before sharing their data with the holiday company // customers must opt in Sharing the data without telling customers would not be fair / lawful Customers have the right to object to marketing // can ask for their data not to be used for adverts, and the company must stop Customers who agree can later withdraw their consent If the owner goes ahead without this, the company could be investigated / fined (by the regulator)	**4**	1 mark per bullet, max 4. Answers must be about this plan. "It is illegal" / "it breaks the law" alone = NE: must say why or what the owner must do. Do not accept "the Act bans all marketing emails" or "the owner can never share the data". Do not accept "the Computer Misuse Act" as the reason. Credit any other valid point.

Total: 20 marks

MODULE I IMPACTS AND THE LAW · I5

The Computer Misuse Act 1990: mark scheme

21 marks · OCR J277 spec 1.6.1

How to use. 1 mark per bullet up to the maximum shown. **/** separates alternative answers; **//** separates alternative statements for the same mark. Words in (brackets) are not needed for the mark. **NE** = not enough. Spec point covered: J277 1.6.1 legislation relevant to Computer Science: the Computer Misuse Act 1990, its purpose and the specific actions it allows or prohibits. The law is as at November 2026. Offence numbers, section numbers and maximum sentences are credited but never required. For the third offence, accept the original wording (unauthorised *modification* of computer material) and the amended wording (unauthorised acts with intent to *impair* the operation of a computer / access to data).

QUESTION	ANSWER	MARKS	GUIDANCE
1 J277 1.6.1	To make it illegal to access computer systems / data without permission // to make unauthorised access / hacking illegal To make it illegal to change / delete / damage data or harm a computer's operation without permission (e.g. spreading malware) To allow people who hack / misuse computers to be prosecuted / punished // to deter hacking	**1**	1 mark per bullet, max 1. "To stop misuse of computers" / "to protect computers" alone = NE (repeats the name of the Act). Do not accept answers about storing personal data (Data Protection Act) or copying work (Copyright Designs and Patents Act). Credit any other valid answer.
2 J277 1.6.1	Looking at files without permission is an offence, even if nothing is changed: True Security tester with written permission breaks the Act: False Making a virus so another person can use it in an attack can be an offence: True The Act sets out how organisations store and use personal data: False	**4**	1 mark per correct row. 2+ ticks in a row = 0 for that row.
3(a) J277 1.6.1	Offence: unauthorised access to computer material // accessing a computer system / data without permission // (offence 1 / section 1) Why: he no longer works there / is using someone else's login, so he has no permission to access the system // he only looks at the data, without changing it or intending to commit a further crime	**2**	1 mark for the offence, 1 mark for the reason. Accept "hacking" for the offence in (a) only. A number alone (e.g. "offence 1") with no description = NE. The reason mark can be given even if the offence is wrong or missing. Credit any other valid answer.

QUESTION	ANSWER	MARKS	GUIDANCE
3(b) J277 1.6.1	Offence: unauthorised access with intent to commit / facilitate a further offence // (offence 2 / section 2) Why: he plans to use the card details to commit another crime, e.g. fraud / theft / buying goods with other people's cards	**2**	1 mark for the offence, 1 mark for the reason. "Unauthorised access" alone for the offence = NE (does not best match). The reason must refer to the plan / intent to use the details for a further crime; "he copied data" alone = NE. The reason mark can be given even if the offence is wrong or missing. Credit any other valid answer.
3(c) J277 1.6.1	Offence: unauthorised modification of computer material // unauthorised act (with intent) to impair the operation of a computer / access to data // (offence 3 / section 3) Why: he deletes / changes / destroys data without permission // he stops the system working properly / stops the garden centres taking orders	**2**	1 mark for the offence, 1 mark for the reason. Accept "damaging / deleting data without permission" as the offence. "Unauthorised access" alone = NE. The reason mark can be given even if the offence is wrong or missing. Credit any other valid answer.
4(a) J277 1.6.1	Unauthorised act (with intent) to impair the operation of a computer // stopping a computer / website / server working (properly) without permission // unauthorised modification of computer material // (offence 3 / section 3)	**1**	Accept "carrying out a denial of service attack (is illegal under the Act)". "Unauthorised access" alone = NE (the attack does not need access to the system). A number alone = NE.
4(b) J277 1.6.1	The Act (as amended) makes it illegal to make / supply / sell / obtain tools / software / malware for use in computer misuse offences The seller supplied software made to carry out attacks // advertised it for knocking websites offline ... so the seller knew / believed it was likely to be used to commit an offence (e.g. a denial of service attack) Helping / assisting someone else to commit an offence under the Act can be prosecuted	**2**	1 mark per bullet, max 2. "Selling the software is illegal" alone = 1 mark (first bullet, BOD). "Because the seller is a hacker" = 0. Credit any other valid answer.
5 J277 1.6.1	She accessed the booking system / other guests' data without permission / authorisation ... which is unauthorised access to computer material // (offence 1 / section 1) // hacking The offence happens when she gets in without permission // it does not matter that she changed nothing Reporting the weakness afterwards / having good intentions does not make it legal // permission must be given before access (e.g. as in authorised penetration testing)	**3**	1 mark per bullet, max 3. The answer must conclude (or clearly imply) that she **has** broken the Act; an answer that concludes she has not broken it scores 0. "Yes" alone = 0. Do not accept offence 2 or offence 3 as the offence. Credit any other valid answer.

QUESTION	ANSWER	MARKS	GUIDANCE
6 J277 1.6.1	Makes hacking / unauthorised access to the shop's systems illegal (1) ... so attackers can be prosecuted / punished (e.g. fined / sent to prison) // so people are deterred from trying (1) Makes spreading malware / deleting or changing data without permission illegal (1) ... deters attacks that could damage the shop's systems / data // the attacker can be punished (1) Makes it illegal to stop a computer working, e.g. denial of service attacks (1) ... deters attacks that would take the website offline / lose the shop sales (1) Makes accessing a system to commit further crimes (e.g. fraud) illegal (1) ... deters criminals from stealing customers' card / payment details to use them // allows heavier punishment (1) Makes making / supplying hacking tools or malware illegal (1) ... so it is harder for attackers to get the tools // sellers of tools can be prosecuted (1)	4	Mark in pairs: 1 for what the Act makes illegal, 1 for how this protects the shop / customers. The second mark depends on the first. Two different ways needed. "It stops hackers" / "it keeps the shop safe" alone = NE: must say what is made illegal or punishable. Do not accept "it prevents all attacks" (the law deters and punishes; it does not physically block attacks). Do not credit Data Protection Act points (e.g. how the shop must store customer data). Credit any other valid answer.

Total: 21 marks

MODULE I IMPACTS AND THE LAW · I6

The Copyright, Designs and Patents Act 1988: mark scheme

20 marks · OCR J277 spec 1.6.1 (legislation: the purpose of the Copyright, Designs and Patents Act 1988 and the actions it allows or prohibits; legal impacts of digital technology) · UK law as at November 2026

How to use. One mark per bullet up to the maximum shown. **/** separates alternatives; **//** separates alternative statements for the same mark. Words in (brackets) are not needed for the mark. "..." at the start of a bullet means it builds on the bullet before. NE = not enough. BOD = benefit of the doubt. For "give / identify two" items, mark the first two answers only. Credit any other valid answer that shows the same understanding.

QUESTION	ANSWER	MARKS	GUIDANCE
1 J277 1.6.1	To protect intellectual property // to protect original / creative work (e.g. software, music, images, films, text) // to protect inventions / designs It makes it illegal to copy / share / distribute / sell / use someone's work without the owner's permission // without a licence It gives the creator / owner (legal) rights over / control of how their work is used So creators can earn money from / be rewarded for their work // to prevent software piracy / illegal downloading	**2**	Max 2. Do not accept "to protect copyright" alone (repeats the question). "To stop copying" alone is NE: the answer must show the work belongs to someone else or that permission is needed. Do not credit points about personal data (Data Protection Act) or hacking (Computer Misuse Act).
2 J277 1.6.1	Making copies of a paid-for design program for friends: Prohibited Photo used after buying a licence that allows this use: Allowed Music the designer wrote and recorded herself: Allowed Copying another company's website text without permission: Prohibited Selling copies of a film downloaded from a file-sharing website: Prohibited	**5**	One mark per correct row. A row with both boxes ticked scores 0.
3(a) J277 1.6.1	The photographs are (likely to be) protected by copyright // belong to the photographer / someone else // are someone else's intellectual property ... she would be copying / using them without the owner's permission / without a licence Finding a photograph on the internet does not mean it is free to use // being online does not remove copyright	**2**	Max 2. Do not accept "it is stealing" or "it is illegal" alone (NE). Do not credit answers about personal data or privacy.
3(b) J277 1.6.1	Take her own photographs // create her own images Ask the photographer / copyright owner for permission (and get it) Buy / get a licence to use the photographs // use a (stock) photo website and pay for / follow the licence Use photographs whose owner / licence allows anyone to reuse them // use photographs that are out of copyright Pay / hire a photographer to take photographs for her (and agree she can use them)	**2**	1 mark each, max 2. Do not accept "credit / name the photographer" alone (NE: naming the owner is not permission). Do not accept "change / edit the photographs" (still a copy). Two answers that are the same idea (e.g. "ask permission" and "get the owner to agree") = 1 mark.

QUESTION	ANSWER	MARKS	GUIDANCE
4(a) J277 1.6.1	(The website) copying the game // making copies of the game (without permission) (The website) sharing / distributing / uploading copies of the game // making copies available to the public (People) downloading copies of the game (without paying / permission) (People) installing / playing / using a copy without a licence // without buying it	**2**	1 mark each, max 2. The two actions must be different. Accept "software piracy" for one mark only. "Hacking" is not credited (Computer Misuse Act).
4(b) J277 1.6.1	Fewer people buy the game (because they can get it free) ... ... so the studio loses sales / income / profit // does not earn money for its two years of work The studio has less money ... ... so it may not afford updates / bug fixes / new games // may have to stop trading / close // cannot pay its two staff The studio may have to spend time / money on legal action / getting the copies removed ... ... which takes time / money away from developing games Copies may be changed / contain malware / be faulty ... ... so players may blame the studio // the studio's reputation is harmed // fewer future sales	**4**	Mark in pairs: 1 mark for an effect, 1 mark for its expansion, max 2 per effect, max 4. An expansion can only score if it follows its own effect. Do not accept "the studio loses money" twice. "It is bad for the studio" alone = NE.
5 J277 1.6.1	The program is protected by copyright // belongs to / is the intellectual property of the developer The licence gives permission to install / use it on 10 computers (only) Installing it on the 5 extra computers is copying / using it without permission // without a licence ... this is (software) piracy // the firm has not paid for the extra 5 copies // the developer loses income	**3**	Max 3. Do not accept "they did not pay" alone (NE) without the link to permission or extra copies.

Total: 20 marks

MODULE I IMPACTS AND THE LAW · I7

Software licences: mark scheme

20 marks · OCR J277 spec 1.6.1: software licences (open source and proprietary): the need to license software and the purpose of a software licence; features of open source and of proprietary; recommend a type of licence for a given scenario including benefits and drawbacks

How to use. 1 mark per bullet up to the maximum shown. **/** separates alternative words; **//** separates alternative answers for the same mark. Words in (brackets) are not needed for the mark. **...** at the start of a bullet means it builds on the bullet before. Credit any other valid answer that shows the same understanding.

QUESTION	ANSWER	MARKS	GUIDANCE
1(a) J277 1.6.1	Source code is provided: Open source Bought off-the-shelf, licence fee paid: Proprietary Users allowed to change the software: Open source Users cannot see the source code: Proprietary	**4**	1 mark per correct row. 2 ticks in a row = 0 for that row.
2(a) J277 1.6.1	A legal agreement / contract (between the owner / developer and the user) It states how the software may / may not be used / copied / shared / distributed / changed // sets out what the user is (and is not) allowed to do with it It gives the user permission to use software that is protected by copyright (which they do not own) e.g. it sets the number of users / devices / computers that may use it // how long it may be used for	**2**	1 mark per bullet, max 2. Do not accept "it lets you use the software" alone without the idea of permission / rules (NE). Do not accept "it stops hacking / viruses" or "it proves you bought it" alone. Credit any other valid answer.
2(b) J277 1.6.1	To protect its copyright / intellectual property / its program code ... ... so the shops cannot legally copy / share / resell / give away the software // so that copying it without permission is illegal / pirating can be acted on So that it gets paid for each copy / user / shop // to protect its income / so it earns money from its work To control / limit how the software is used, e.g. the number of computers / users in each shop So it can take legal action if a shop breaks the terms of the licence	**2**	1 mark per bullet, max 2. "Explain": at least one reason must be given (protect copyright / income / control use). Do not accept "so people buy it" or "to make money" alone without the link to copies / users being paid for (NE). Do not accept "to stop the software being hacked". Credit any other valid answer.

QUESTION	ANSWER	MARKS	GUIDANCE
3(a) J277 1.6.1	**Cost:** it is usually free / no licence fee to pay (1) ... so the charity's small budget can be spent on other things // it can be installed on all six laptops without paying for each one (1) **Customise:** the source code is provided / can be accessed (1) ... so the volunteer who can program can change / adapt it, e.g. to make the booking program fit how the hall's rooms are booked / add features the hall needs (1) **Copies:** the licence (usually) allows it to be copied / shared / redistributed (1) ... so it can be put on more laptops if more are donated // given to other volunteers without breaking the law (1) **Community:** a community of users / developers can find and fix bugs (1) ... so problems may be fixed without the charity paying // the volunteers can get help from online forums (1) **Not tied to one company:** the charity does not depend on one company (1) ... so it can keep using / changing the software even if a group stops working on it (1)	**4**	Mark in pairs: 1 mark for the benefit, 1 mark for the expansion applied to the charity. Max 2 per benefit; two different benefits for 4 marks. Mark the first two benefits. Accept "free" for the first mark of the cost pair. Do not accept "better", "faster" or "more secure" alone (NE). Do not accept "comes with official support". Credit any other valid benefit of open source applied to the charity.
3(b) J277 1.6.1	There is limited / no official support / help desk (1) ... so if a laptop or the booking program goes wrong the volunteers must rely on forums / their own skills // problems may take a long time to fix (1) It may be less (thoroughly) tested // may contain bugs / errors (1) ... so the booking program could fail / lose bookings (1) Updates / patches are not guaranteed / may be irregular (1) ... so security holes / bugs may not be fixed quickly, putting the laptops / booking data at risk (1) Anyone can see the source code (1) ... so people with bad intentions could find weaknesses to attack (1) Changes depend on the one volunteer who can program (1) ... so if they leave, the changed software may be hard to fix / maintain (1) It may not be compatible with / open files from proprietary software that others use (1) ... so documents sent to / from the hall may not open or display correctly (1)	**2**	Mark in pairs: 1 mark for the drawback, 1 mark for the expansion / consequence for the charity. Mark the first drawback only. Do not accept "it costs money" or "you cannot change it" (these are not drawbacks of open source). Do not accept "it is illegal" or "it has viruses" alone. Credit any other valid drawback of open source applied to the charity.

QUESTION	ANSWER	MARKS	GUIDANCE
4(a) J277 1.6.1	No mark for the choice of licence alone. Either choice can score full marks if justified. **If proprietary (Option B) is recommended:** Benefit: telephone help desk / official support ... so problems are fixed quickly and reports still reach clients by the deadline Benefit: it has been tested (before release) // is likely to be reliable ... which matters because the software must work every day Benefit: regular updates / patches from the company ... fix bugs / security holes, protecting clients' reports Benefit: staff cannot program, so they do not need the source code // the open source benefit of changing the code is of no use to this firm Benefit: the company is responsible for the software / the firm has a legal agreement with the company it can rely on Drawback: it costs money // a licence fee must be paid every year for each of the 40 staff ... so it is expensive for the firm (and costs rise if more staff join) Drawback: the source code is not provided, so the firm cannot change / customise the software // must wait for the company to add features Drawback: restricted use, e.g. it may only be installed / used by the number of staff paid for // copies cannot be shared Drawback: the firm depends on the company // if the company stops supporting it, the firm has no updates **If open source (Option A) is recommended:** Benefit: free / no licence fee for 40 staff ... saving the firm money every year Benefit: can be installed on as many computers as needed // no limit on the number of staff who use it Benefit: the source code is provided, so the firm could pay a programmer to customise it (e.g. report layouts) Benefit: a community of users may find / fix bugs Drawback: support only from volunteers on a forum, when they have time ... so a fault might not be fixed before a client deadline Drawback: may be less tested / less reliable // updates are not guaranteed Drawback: staff cannot program, so they cannot fix or change it themselves Drawback: the source code can be seen by anyone, so weaknesses could be found by attackers, putting client reports at risk	**6**	1 mark per valid point that supports the recommendation, max 6. Credit benefits and drawbacks of the recommended licence, and drawbacks of the other licence used as a reason against it. Max 4 if the answer gives no drawback of the recommended licence. Max 3 if no points are applied to the firm (e.g. its 40 staff, no programmers, deadlines, need for reliability). If no licence is identified, mark the points but max 4. Do not credit points that contradict the recommendation (e.g. recommends open source because "it has a help desk"). Do not accept "cheaper", "better" or "more secure" alone (NE). Credit any other valid point that supports the recommendation.

Total: 20 marks