

01	<p><b>6 marks for AO2 (apply)</b></p> <table border="1"> <thead> <tr> <th>Level</th><th>Description</th><th>Mark Range</th></tr> </thead> <tbody> <tr> <td>3</td><td> <b>Explanation</b> of at least <b>three</b> issues that are clearly related to an organisation rather than the end user.   <b>or</b>  <b>Explanation</b> of <b>two</b> issues that are clearly related to an organisation and <b>described</b> at least <b>one</b> other. </td><td>5-6</td></tr> <tr> <td>2</td><td> <b>Explanation</b> of <b>two</b> issues that are clearly related to an organisation rather than the end user.   <b>or</b>  <b>Explanation</b> of <b>one</b> issue and <b>description</b> of at least <b>one other</b> issue clearly related to an organisation.   <b>or</b>  <b>Description</b> of <b>three</b> issues that may not be related to an organisation. </td><td>3-4</td></tr> <tr> <td>1</td><td> <b>Explanation</b> of <b>one</b> issue which does clearly relate to an organisation.   <b>or</b>  <b>Description</b> of <b>one</b> or <b>two</b> issues that may not be related to an organisation. </td><td>1-2</td></tr> <tr> <td colspan="2"><b>No creditworthy material</b></td><td>0</td></tr> </tbody> </table> <p><b>Guidance:</b></p> <ul style="list-style-type: none"> <li>• Websites – any inappropriate websites ie pornography, drugs, guns, terrorism etc. e.g. is it acceptable for the organisation to allow access to this sort of material when you can't control who is accessing the service?</li> <li>• Time – limit amount of time, they may not want to provide indefinite access or may want to charge for access after the time limit has expired.</li> <li>• Preventing file sharing and illegal sharing\use of copyrighted materials.</li> <li>• Accountability – identification of users and actions on a network by preventing anonymous access.</li> <li>• Prevention of illegal activities such as terrorism and fraud.</li> <li>• The responsibility to keep children safe and protected.</li> <li>• Responsibility to keep users (customers) data safe and secure.</li> <li>• Spoofing of websites, phishing. Responsibility of organisation to put some kind of protection in place, eg filtering of known fraudulent sites.</li> <li>• Recording of private messages or details if not encrypted.</li> <li>• Recording of usernames and passwords that the user may also use to access other systems.</li> <li>• Responsibility of organisation to secure their systems from possible attack.</li> <li>• Sales and marketing – providing sales leads to market products.</li> </ul>	Level	Description	Mark Range	3	<b>Explanation</b> of at least <b>three</b> issues that are clearly related to an organisation rather than the end user.  <b>or</b> <b>Explanation</b> of <b>two</b> issues that are clearly related to an organisation and <b>described</b> at least <b>one</b> other.	5-6	2	<b>Explanation</b> of <b>two</b> issues that are clearly related to an organisation rather than the end user.  <b>or</b> <b>Explanation</b> of <b>one</b> issue and <b>description</b> of at least <b>one other</b> issue clearly related to an organisation.  <b>or</b> <b>Description</b> of <b>three</b> issues that may not be related to an organisation.	3-4	1	<b>Explanation</b> of <b>one</b> issue which does clearly relate to an organisation.  <b>or</b> <b>Description</b> of <b>one</b> or <b>two</b> issues that may not be related to an organisation.	1-2	<b>No creditworthy material</b>		0	6
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02	<p><b>4 marks for AO2 (apply)</b></p> <p>1 mark for stating each reason to a maximum of 2. Maximum 1 mark for justifying/explaining each reason to a maximum of 2.</p> <ul style="list-style-type: none"><li>• Algorithms cannot be copyrighted; and therefore need to be protected to preserve commercial advantage;</li><li>• Copyright of code; the company has paid for development of the code and therefore own the code. They may not want others to have access to what they have developed;</li><li>• Hacking/cyber security; hackers could identify vulnerabilities in the source code and use them to create targeted attacks;</li><li>• So third parties cannot insert/modify code and pass it off as original; as it affects profitability;</li></ul> <p><b>R. Cracking.</b></p>	4
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Qu	Part	Marking guidance	Total marks
03		<p><b>2 marks for AO1 (understanding) and 2 marks for AO2 (apply)</b></p> <p>A <b>maximum of 4 marks</b> can be awarded.</p> <p><b>One mark</b> for each point and <b>one mark</b> for an expansion.</p> <p>Where creditworthy points are too similar to each other they must only be credited once.</p> <p>Example responses include:</p> <ul style="list-style-type: none"> <li>• if the microchip was going to be implanted in a person they would need to give consent; If they are suffering from an illness like Alzheimer's disease, they may not be able to give consent;</li> <li>• a doctor/hospital might be able to apply to the courts; for permission to implant a microchip against the patient's will;</li> <li>• guarantees might not exist that only the correct hospital/doctor; can read the information on the chip;</li> <li>• if a hacker gains access; they could use the information for blackmail or identity theft;</li> <li>• if the patient decides they want the implant removed; it may not be ethical to implant something that cannot be easily removed;</li> </ul>	4

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04		<p><b>6 marks for AO2 (apply)</b></p> <table><tr><th>Level</th><th>Description</th><th>Mark range</th></tr><tr><td>3</td><td>There is a structured discussion of <b>both</b> the legal and ethical impacts of the increased use of autonomous vehicles.</td><td>5–6</td></tr><tr><td>2</td><td>There is an explanation of the legal <b>and/or</b> ethical impacts of the increased use of autonomous vehicles. Answers may focus on <b>only one</b> aspect (legal or ethical) but clear and relevant points are made.</td><td>3–4</td></tr><tr><td>1</td><td>There is some reference to the legal <b>and/or</b> ethical impacts of the increased use of autonomous vehicles but the points made may not always be clear or well-explained.</td><td>1–2</td></tr><tr><td colspan="2">No creditworthy material</td><td>0</td></tr></table> <p><b>Guidance:</b></p> <p><b>Ethical impacts</b></p> <ul style="list-style-type: none"><li>• Trust. The driver is trusting the algorithms in the car to make the correct decisions whilst driving eg slowing down when pedestrians are in the road.</li><li>• Decision making. The car must make human-like decisions when confronted with unusual circumstances eg the 'trolley problem'.</li><li>• Safer driving. Autonomous vehicles could be safer drivers than human drivers eg by keeping a safe distance from the car in front at all times.</li><li>• Data collection. Autonomous vehicles may collect private data about their passengers such as locations visited. Passengers may want to keep their journeys private.</li><li>• Job opportunities. Fewer roles needed for some professions such as taxi drivers but other opportunities could be created.</li><li>• Accessibility. Disabled passengers will not have to operate traditional car controls.</li></ul> <p><b>Legal impacts</b></p> <ul style="list-style-type: none"><li>• Liability. There is a grey area about who is at fault (the manufacturer or the driver) in case of an accident.</li><li>• Insurance. The need for driving insurance will change as drivers are no longer responsible for the control of the car.</li><li>• Data protection. Car manufacturers must keep driving data secure in accordance with data protection laws.</li><li>• Security. Autonomous vehicles could be vulnerable to being hacked and hijacked for criminal purposes.</li><li>• Law updates. Driving laws will need to be amended to account for new types of vehicles on the roads.</li></ul>	Level	Description	Mark range	3	There is a structured discussion of <b>both</b> the legal and ethical impacts of the increased use of autonomous vehicles.	5–6	2	There is an explanation of the legal <b>and/or</b> ethical impacts of the increased use of autonomous vehicles. Answers may focus on <b>only one</b> aspect (legal or ethical) but clear and relevant points are made.	3–4	1	There is some reference to the legal <b>and/or</b> ethical impacts of the increased use of autonomous vehicles but the points made may not always be clear or well-explained.	1–2	No creditworthy material		0	6
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05		9 marks for AO2 (apply)			9
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		3	<p>An answer at the top of the level contains a <b>well-developed discussion</b> of the benefits and issues related to the collection of personal, health-related data from wearable devices <b>and</b> data privacy <b>and</b> legal issues relating to the data collection.</p> <p>An answer at the bottom of the level contains <b>good explanations</b> covering the benefits and issues related to the collection of personal, health-related data from wearable devices <b>and</b> data privacy <b>and</b> legal issues relating to the data collection.</p> <p>The discussion is <b>logically structured</b> and considers a <b>range of relevant points</b>.</p>	7–9	
		2	<p>An answer at the top of the level includes an <b>explanation</b> of <b>at least one</b> benefit of collecting personal, health related data from wearable devices <b>and</b> data privacy <b>or</b> legal issues relating to the data collection.</p> <p>An answer at the bottom of the level includes detailed <b>descriptions</b> of <b>both</b> the benefits of collecting personal, health related data from wearable devices <b>and</b> data privacy <b>or</b> legal issues relating to the data collection.</p> <p>The answer has some structure and considers a range of points though these may not always be entirely focused on the topic.</p>	4–6	
		1	<p>The answer includes <b>statements</b> or <b>brief descriptions</b> of some of the benefits of collecting data from wearable devices, <b>or</b> related data privacy issues, <b>or</b> related legal issues.</p> <p>The response lacks structure but some relevant points are made. These may not, however, remain focused on the topic.</p>	1–3	
		0	<b>No creditworthy material.</b>	0	
<b>Note to Examiners:</b> Only content referring to wearable devices is creditworthy.					

**Indicative Content****Benefits:**

- keeping and sharing the data allows convenient tracking of health and goal setting
- individual data collected over time can be motivational for maintaining fitness
- shared data increases social engagement with other users promoting healthy habits
- could lead to lots of business opportunities with apps tying into trackers
- sharing data could identify health issues early that can be treated before it is too late
- data can be important in criminal investigations
- provides a large, otherwise inaccessible pool of data which can be used in medical investigations and trials.

**Data privacy:**

- huge amount of personal data collected, could be used / sold by companies to insurance firms and affect life insurance quotes or be used for invasive advertising
- often users are unaware of how much / type of data that is collected about them and what it is going to be used for
- often users are unaware who the data is shared with
- users sharing data with friends voluntarily may not be aware if the friends' privacy settings are protecting their own data / are passing their data on
- not all companies collecting the data will have adequate protection against cyber security threats
- criminals know the value of health-related data which can make companies involved more likely to be attacked, threatening the security of the data
- if companies collecting the data get hacked, it can lead to criminal activity against the users compromising their safety, eg making some vulnerable users more likely to be targeted for physical break-ins, assault or a variety of social engineering attacks
- personal data collected can be very private and a breach of the data security embarrassing
- criminals getting hold of personal data could use it for blackmail
- release of data could harm the professional reputation of users such as athletes or contractors or affect the value of companies where key personnel have had their data released
- companies collecting the data may change their privacy settings and users are slow to check
- companies other than the hardware provider may have / want / need access to the data.

**Legal:**

- users may be unaware of which country their data is being stored in and the data protection laws in place for them
- can be unclear if the consent given is legally binding
- future implications of consent rarely made clear and hard to predict future uses of the data – who has control over the future use of the data? How long for?
- does the company controlling the data comply with data protection regulations?

		<ul style="list-style-type: none"><li>• there is a question of who is responsible if too much data is collected or if data is stolen or misused – are the terms and conditions clear? Has the user read them?</li><li>• tracking devices or apps could publish GPS location which could be exploited by criminals and the device or app company may be legally responsible for the damage caused by this</li><li>• insecure devices may enable increased likelihood of identity theft and the company may be legally responsible for the damage caused by this</li><li>• reliance on manufacturing / app development company for data security; the company may expose itself to legal action if there are any security breaches.</li></ul>	
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		<p><b>Guidance - Indicative Response (reasons for growth)</b> Higher bandwidth mobile networks (eg 4G); Increased availability of mobile devices; Reduction in cost of large capacity storage devices; Improvements in network security; People have a higher level of trust in cloud storage; Improvements in web browser software; Increased availability of supercomputers (for cloud processing); Companies have managed to develop business models based on cloud computing that allow them to make a profit;</p> <p><b>Guidance - Indicative Response (advantages of cloud storage)</b> Enables user to access their data from more places/devices; Enables user to more easily share data with others (can make parts of their cloud storage publically available); Increases the amount of storage available; Reduced cost of computing devices for users as no need for as much built-in secondary storage;</p> <p><b>Guidance - Indicative Response (disadvantages of cloud storage)</b> Increased security risks; Relies on access to high-bandwidth network connection; Could potentially cost more due to ongoing costs; Reliance on company providing the cloud service; Increased chance of others accessing personal data (data privacy issues);</p>	
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