

**Cambridge Technicals
Applied Science**

Unit 22: Global scientific information

Level 3 Cambridge Technical in Applied Science
05874

Mark Scheme for June 2022

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

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MARKING INSTRUCTIONS

PREPARATION FOR MARKING

TRADITIONAL

Before the Standardisation meeting you must mark at least 10 scripts from several centres. For this preliminary marking you should use **pencil** and follow the **mark scheme**. Bring these **marked scripts** to the meeting.

MARKING

1. Mark strictly to the mark scheme.
2. Marks awarded must relate directly to the marking criteria.
3. The schedule of dates is very important. It is essential that you meet the traditional 40% Batch 1 and 100% Batch 2 deadlines. If you experience problems, you must contact your Team Leader (Supervisor) without delay.
4. If you are in any doubt about applying the mark scheme, consult your Team Leader by telephone or by email.
5. Work crossed out:
 - a. where a candidate crosses out an answer and provides an alternative response, the crossed out response is not marked and gains no marks
 - b. if a candidate crosses out an answer to a whole question and makes no second attempt, and if the inclusion of the answer does not cause a rubric infringement, the assessor should attempt to mark the crossed out answer and award marks appropriately.
6. Always check the pages (and additional lined pages if present) at the end of the response in case any answers have been continued there. If the candidate has continued an answer there then add an annotation to confirm that the work has been seen.
7. There is a NR (No Response) option. Award NR (No Response)
 - if there is nothing written at all in the answer space
 - OR if there is a comment which does not in anyway relate to the question (e.g. 'can't do', 'don't know')
 - OR if there is a mark (e.g. a dash, a question mark) which isn't an attempt at the questionNote: Award 0 marks - for an attempt that earns no credit (including copying out the question)
8. Assistant Examiners will email a brief report on the performance of candidates to your Team Leader (Supervisor) by the end of the marking period. Your report should contain notes on particular strength displayed as well as common errors or weaknesses. Constructive criticism of the question paper/mark scheme is also appreciated.

9. Annotations

PE to update subject specific - insert details in table for annotation to mark your paper

Annotation	Meaning

10. Subject-specific marking instructions

PE to provide any additional information here.

Question			Answer	Marks	Guidance
1	(a)	(i)	company / business ✓	1	
		(ii)	international body/organisation ✓	1	
		(iii)	international body/organisation ✓	1	
	(b)		developed countries ✓ workplace ✓ online ✓	3	
	(c)		<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p style="text-align: center;">Concern</p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">an industry which supports over 200 million jobs globally</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">illegal, unrecorded and unregulated fishing</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">the ability to offer products that display the MSC ecolabel</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">the development of a global information exchange system</div> <div style="border: 1px solid black; padding: 2px;">the impact of fishing practices on ecosystems</div> </div> <div style="width: 45%;"> <p style="text-align: center;">Stakeholder</p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px; text-align: center;">consumers</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px; text-align: center;">employees</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px; text-align: center;">harvesters</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px; text-align: center;">retailers</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px; text-align: center;">scientists</div> <div style="border: 1px solid black; padding: 2px; text-align: center;">UN Food and Agriculture Organisation</div> </div> </div> <p>✓ for each correct line</p>	5	
			Total	11	

Question		Answer	Marks	Guidance
2	(a)	<p>[Level 3] Candidate shows a high level of understanding and gives a thorough explanation of the reasons for transmission of scientific information in relation to PSMA. <i>(5 – 6 marks)</i></p> <p>[Level 2] Candidate shows an understanding and gives a good explanation of the reasons for transmission of scientific information in relation to PSMA. <i>(3 – 4 marks)</i></p> <p>[Level 1] Candidate shows a basic understanding and gives a limited explanation of the reasons for transmission of scientific information in relation to PSMA. With little evidence of a logical order. <i>(1 – 2 marks)</i></p> <p>[Level 0] Candidate includes fewer than two valid points.</p>	6	<p>Valid points to include:</p> <p>General reasons for transmission of scientific information</p> <ul style="list-style-type: none"> • funding • access • ownership • sharing • promotion <p>Specific reasons in relation to PSMA</p> <ul style="list-style-type: none"> • funding – PSMA recognised ports will benefit economically from certification through increased sales of MSC ecolabelled products • access to an international database of fishing vessels involved in IUU to prevent their entry to ports • ownership of the agreed international procedures to deal with IUU • sharing of inspection reports so that other ports can ban fishing vessels involved in IUU • promotion/publicising of ports that are part of the PSMA agreement so that their achievements are recognised and they can attract funding/grants • promotion/publicising of ports that are part of the PSMA so that fishing vessels that carry out sustainable fishing practices will know where to land their catch.

Question		Answer	Marks	Guidance
2	(b)	<p>to have trust that the data will be used fairly/responsibly ✓</p> <p>to justify why the data is being collected ✓</p> <p>to share good practice ✓</p> <p>so that compliance can be monitored ✓</p> <p>to take enforcement action if necessary e.g. remove PSMA accreditation ✓</p> <p>to have a common standard for dealing with confidentiality ✓</p> <p>so that an identical database can be used ✓</p>	max. 4	<p>ALLOW any other realistic reason.</p> <p>To be agreed during the SSU.</p>
		Total	10	

Question		Answer	Marks	Guidance	
3	(a)	3 ✓ 2 ✓ 3 ✓ 1 ✓ 1 ✓	5		
	(b)	(i)	Freedom of Information Act	1	
		(ii)	(to know:) the general state/quality of the environment ✓ impacts/levels of pollution / discharges / contamination ✓ impact of climate change ✓ (changes to) populations of species / stock levels ✓ (presence of) invasive/non-native species ✓ (presence of) diseases ✓ measures to protect fragile habitats / prevent over-exploitation ✓ measures to have protected/conservation areas ✓ levels of enforcement / prosecutions ✓	max.3	ALLOW any other realistic suggestion. ALLOW use information to make lifestyle choices that reduce impact on the environment
			Total	9	

Question			Answer	Marks	Guidance
4			confidentiality ✓ authorisation ✓ authentication ✓ integrity ✓	4	
			Total	4	

Question		Answer	Marks	Guidance								
5	(a)	to understand the importance/risks/impacts/principles of information security ✓ to act in ways that minimize risks to data / avoid impacts / to apply protocols ✓ to act within the law ✓	max.2									
	(b)	(i)	1									
		<table border="1"> <tr> <td>Copyright, Designs and Patents Act 1988</td> <td></td> </tr> <tr> <td>Data Protection Act (DPA) 1998</td> <td>✓</td> </tr> <tr> <td>Information Commissioner’s Office (ICO) codes of practice</td> <td></td> </tr> <tr> <td>Protection of Freedoms Act 2012</td> <td></td> </tr> </table>	Copyright, Designs and Patents Act 1988		Data Protection Act (DPA) 1998	✓	Information Commissioner’s Office (ICO) codes of practice		Protection of Freedoms Act 2012			
Copyright, Designs and Patents Act 1988												
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		(ii)	1	ALLOW fine								
		(iii)	1	ALLOW enforcement notice/fine/warning/drop in the share value								

Question		Answer	Marks	Guidance
	(c)	<p>types of risk</p> <p>Any two from: unauthorised or unintended access to data accidental loss of data intentional destruction of / tampering with data denial of access to data malware/ransomware/server overload ✓✓</p> <p>impact of risks</p> <p>Any two from: slowing/stopping research others accessing data loss of contracts loss of reputation repeat of research ✓✓</p> <p>how to reduce risk</p> <p>Any two from: use of back up (files) encryption file closure systems data retrieval systems / file opening system training of personnel ✓✓</p>	6	<p>ALLOW other realistic examples.</p> <p>ALLOW passwords</p>
	(d)	Equality Act (EQA) 2011	1	ALLOW the correct name of the Act, without the date.
		Total	12	

Question		Answer	Marks	Guidance														
6	(a)	the infrastructure (needed to transmit information) ✓ the reliability of systems used for storing data ✓ the compatibility of networks/software/systems (designed for different environments) ✓	3	IGNORE different languages/translation														
	(b)	<table border="1"> <tr> <td>access without permission e.g. looking at someone else's files</td> <td>✓</td> </tr> <tr> <td>access without permission with intent to commit further crimes</td> <td>✓</td> </tr> <tr> <td>allowing a computer to close down without saving data</td> <td></td> </tr> <tr> <td>altering data without permission / installing a virus</td> <td>✓</td> </tr> <tr> <td>failure to check the accuracy of data before storage on a computer</td> <td></td> </tr> <tr> <td>failure to save data correctly on a computer</td> <td></td> </tr> <tr> <td>loss of a computer containing sensitive data</td> <td></td> </tr> </table>	access without permission e.g. looking at someone else's files	✓	access without permission with intent to commit further crimes	✓	allowing a computer to close down without saving data		altering data without permission / installing a virus	✓	failure to check the accuracy of data before storage on a computer		failure to save data correctly on a computer		loss of a computer containing sensitive data		3	
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Question	Answer	Marks	Guidance												
(c)	C ✓ E ✓ A ✓ B ✓ D ✓	5													
(d)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">It includes a mechanism to alert the operator in the event of unauthorised modification</td> <td style="text-align: center; width: 50px;">✓</td> </tr> <tr> <td style="padding: 5px;">It is compatible with cloud storage</td> <td></td> </tr> <tr> <td style="padding: 5px;">It is compliant with ICO Codes of Practice</td> <td></td> </tr> <tr> <td style="padding: 5px;">It is compliant with recognised standards for encryption</td> <td></td> </tr> <tr> <td style="padding: 5px;">It is more difficult to intercept</td> <td style="text-align: center;">✓</td> </tr> <tr> <td style="padding: 5px;">It protects data from unauthorised modification</td> <td style="text-align: center;">✓</td> </tr> </table>	It includes a mechanism to alert the operator in the event of unauthorised modification	✓	It is compatible with cloud storage		It is compliant with ICO Codes of Practice		It is compliant with recognised standards for encryption		It is more difficult to intercept	✓	It protects data from unauthorised modification	✓	3	Deduct one mark for each additional box ticked
It includes a mechanism to alert the operator in the event of unauthorised modification	✓														
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It protects data from unauthorised modification	✓														
	Total	14													

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 **Cambridge
Assessment**

