Cambridge Technicals
Applied Science

Unit 22: Global scientific information

Level 3 Cambridge Technical in Applied Science
05874

Mark Scheme for June 2023

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support, which keep pace with the changing needs of today's society.

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.

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 question
   Note: 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 available in RM Assessor

Annotation	Meaning
✔	Correct response
✘	Incorrect response
∧	Omission mark
BOD	Benefit of doubt given
CON	Contradiction
RE	Rounding error
SF	Error in number of significant figures
ECF	Error carried forward
L1	Level 1
L2	Level 2
L3	Level 3
NBOD	Benefit of doubt not given
SEEN	Noted but no credit given
I	Ignore

10. Abbreviations, annotations and conventions used in the detailed Mark Scheme (to include abbreviations and subject-specific conventions).

Annotation	Meaning
/	alternative and acceptable answers for the same marking point
DO NOT ALLOW	Answers which are not worthy of credit
IGNORE	Statements which are irrelevant
ALLOW	Answers that can be accepted
( )	Words which are not essential to gain credit
__	Underlined words must be present in answer to score a mark
ECF	Error carried forward
AW	Alternative wording
ORA	Or reverse argument

Question			Answer	Marks	Guidance
1	**(a)**		public✓ confidential✓ public ✓	3 **3x2.1**	Responses **must** be in the correct order.
	(b)	**(i)**	Data / measurements (obtained) ✓ (from) breathing rates/patterns / resistance measurements / the output of the algorithm/app ✓	2 **2x2.2**	
		(ii)	the device / the sensor / the wearable technology (made) ✓ that detects/senses/monitors/collects data (the breathing) ✓ OR the app / the algorithm ✓ that warns of an asthma attack ✓	2 **2x2.2**	
		(iii)	a series of actions / a service that is provided ✓ e.g. gathering data / the transfer of data from the sensor to the app / the processing/analysis of data (by the app algorithm) / the a research proposal / standard operating procedure (SOP) / (review by) ethics committee ✓	2 **2x2.2**	**ALLOW** a method **ALLOW** connecting the device to the app/phone **ALLOW** use of patient information

Question			Answer	Marks	Guidance
(c)			Charitable organisation ☐ Company research department ☐ Educational institution ✓ Individual researcher ✓ International body ☐ Research group ✓	3 3x1.1	
(d)			**Any four from:** compatibility ✓ the app must work on different operating systems ✓ data storage / do the volunteers have enough memory on their smartphones ✓ infrastructure ✓ do the volunteers have suitable connectivity on their smartphones e.g. 4G **or** Wi-Fi to send data to the cloud / **or** Bluetooth (to connect device to phone) **or** access to internet ✓ different language / translation ✓ not an issue as volunteers are UK resident and selected via social media ✓	4 4x1.4	**ALLOW** correct use of access terms, or alternative wording, even without reference to the case study. **ALLOW** iphone **and** android for different operating systems IGNORE networks cybersecurity ✓
			Total	16	

Question			Answer	Marks	Guidance
2	**(a)**		Any **three** from: unauthorised access to data ✓ unauthorised disclosure of data ✓ intentional destruction/deletion of data ✓ intentional tampering with / altering of data ✓ AVP e.g. accidental loss of data ✓	3 4.2a	**ALLOW** reference to hacking / data theft **ALLOW** leaking for disclosure **ALLOW** corrupting /erasure of data **ALLOW** increased vulnerability of other connected devices
	(b)		backup / data sent (from smartphone) to cloud ✓ encryption (of data) ✓ password to access data ✓	3 4.2c	**IGNORE** anonymisation **ALLOW** firewall /anti-virus software **ALLOW** file closure system ✓
	(c)		no reference to the identity of the individual ✓ a code number is used (to identify the individual) ✓	2 2.1.7	**ALLOW** data is changed to symbols/code **ALLOW** only a code number /bar code can be used to identify an individual (= 2 marks)
			Total	**8**	

Question			Answer	Marks	Guidance
3	(a)		A or B ✓	1 3.1	
	(b)		D ✓	1 3.1	
	(c)		F ✓	1 3.1	
	(d)		F ✓	1 3.1	
	(e)		B ✓	1 3.1	
	(f)		C ✓	1 3.1	
			Total	6	

Question			Answer	Marks	Guidance
4	(a)		confidentiality ✓ (private/confidential data stays within) • are restricted to the company • employees of the company ✓ integrity ✓ • up to date • accurate • complete information is available to employees • data that employees use/need are fit for purpose ✓ availability ✓ • employees can communicate and collaborate with each other • employees have access to data and resources • access to data restricted to some employees • access to internet restricted to some employees ✓	6 **6x4.1**	
	(b)		knowledge – so that the media giving the best conditions for cell growth is used ✓ reassurance – so that customers can trust that the media is pure/ free from contamination ✓ reputation – so that customers will continue to use/buy/trust the product/media/company ✓ sound basis for further investigation – so that if there is a problem the media can be traced back to when it was made ✓	4 **4x2.3**	**ALLOW** without further explanation: knowledge / reassurance / reputation / sound basis for further investigation – one reference = 1 mark, three references = MAX 2 marks

Question			Answer	Marks	Guidance
	(c)		**Any one from:** misinformation ✓ bad decision making ✓ delusion ✓ emotional stress (anxiety) ✓ loss of reputation / loss of contracts / negative publicity ✓	1	
	(d)		**Any two from:** differences in legislation ✓ (constant) changes to legislation ✓ difficult to enforce legislation / difficulty of transferring data internationally ✓ AVP e.g. language barriers ✓	2 2x3.2	 **ALLOW** e.g. difficulty of interpreting legal text/requirements / difficulty of keeping up to date with changes / difficulty of enforcing compliance e.g. cloud services
			Total	**13**	

Question	Answer	Marks	Guidance
5*	**[Level 3]** Candidate shows a high level of understanding and identifies rights concerning the processing of individual data and gives details of those rights. *(5 – 6 marks)* **[Level 2]** Candidate shows an understanding of the details of the rights concerning the processing of individual data *(3 – 4 marks)* **[Level 1]** Candidate shows a basic understanding of the details of the rights concerning the processing of individual data *(1 – 2 marks)* **[Level 0]** Candidate includes **fewer than two** valid points.	6	**Valid points including:** RIGHT TO ACCESS • To obtain a copy of the data • to know the purpose of particular processing • The format of the data must be accessible e.g. clear, concise • AVP w.r.t. disability access RIGHT TO OBJECT / WITHDRAW CONSENT • On legal grounds, to the processing of your data RIGHT TO RECTIFICATION / CORRECTION • If your data is inaccurate or incomplete, you can ask for it to be corrected. RIGHT TO BE INFORMED / TRANSPARENCY • of **the fact** that your personal data is being processed • of **how** your personal data is being processed • of the **purpose for which** your data is processed • of the **identity of the controller** who processes your data • of the **categories of data** concerned • of **to whom** the data is disclosed • data not held for longer than is needed RIGHT TO ERASURE ('RIGHT TO BE FORGOTTEN') • If your personal data is **no longer needed** • if you **withdraw the consent** you gave to the processing of your data • if you consider the processing operation is **unlawful**

Question			Answer	Marks	Guidance
					RIGHT TO DATA PORTABILITY • to obtain the data from the controller has about you and to transmit this data from one controller to another RIGHT TO RESTRICT THE PROCESSING OF YOUR DATA • If you are not sure that your data is being processed lawfully
				Total **6**	

Question			Answer	Marks	Guidance
6	(a)	(i)	optical ✓ solid state media ✓	2 2x1.5.1	
		(ii)	**Any one from:** can record / re-record ✓ high capacity ✓ portability ✓ can be used for backup ✓ high data access speed ✓	1 1x1.5.1	**DO NOT ALLOW** 'durability' unless qualified, e.g ruggedised or 'long term storage'.
	(b)		**Any two from:** recording – easy to make notes on paper ✓ portability – a sheet of paper is easier to carry ✓ durability – will last for many years ✓ reliability – data can't be lost ✓ backup – easy to make (photo)copies of paper ✓ access – each piece of equipment can have its own folder of checklists ✓	2 2x1.5.2	**ALLOW** only the correct term **with** an explanation.
	(c)	(i)	online ✓	1 1x1.2	
		(ii)	**Any two from:** access - makes it easy to look up advice ✓ sharing - the manufacturer learns what problems are occurring / shares information with the customer/user ✓ promotion- the customer/Jamal feels supported ✓ ownership - the manufacturer is responsible for the problems/solutions ✓	2 2x1.3	

Question			Answer	Marks	Guidance
	(d)		slowing/stopping/repeat of research ✓ loss of contracts / loss of reputation ✓ **competitors** accessing data ✓	3 **3x4.2b**	
			Total	**11**	

Need to get in touch?

If you ever have any questions about OCR qualifications or services (including administration, logistics and teaching) please feel free to get in touch with our customer support centre.

Call us on

01223 553998

Alternatively, you can email us on

support@ocr.org.uk

For more information visit

📖 **ocr.org.uk/qualifications/resource-finder**

◎ **ocr.org.uk**

f **Twitter/ocrexams**

🐦 **/ocrexams**

in **/company/ocr**

▶ **/ocrexams**