

Monday 12 June 2023 – Afternoon

Level 3 Cambridge Technical in Applied Science

05874 Unit 22: Global scientific information

Time allowed: 1 hour 30 minutes

C343/2306



You must have:

- the Insert
- a ruler (cm/mm)

You can use:

- a scientific or graphical calculator
- an HB pencil



Please write clearly in black ink. **Do not write in the barcodes.**

Centre number

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Candidate number

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First name(s)

Last name

Date of birth

D	D	M	M	Y	Y	Y	Y
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INSTRUCTIONS

- Use black ink. You can use an HB pencil, but only for graphs and diagrams.
- Answer **all** the questions.
- Write your answer to each question in the space provided. If you need extra space use the lined pages at the end of this booklet. The question numbers must be clearly shown.
- Quality of extended response will be assessed in questions marked with an asterisk (*).
- Use the Insert to answer the questions in Section A.

INFORMATION

- The total mark for this paper is **60**.
- The marks for each question are shown in brackets [].
- This document has **12** pages.

ADVICE

- Read each question carefully before you start your answer.

Section A

This section relates to the case study on wearable technology for monitoring asthma.

1 Information described in the case study can be classified in a number of different ways.

(a) Each of the incomplete sentences below relate to Leo's proposals for his research project.

Complete the sentences.

You may use each word once, more than once or not at all.

classified confidential private public sensitive

The information provided in the 'Data Protection Act' is

However, 'Medical information' is classified as

Leo's plan to 'advertise on social media' means that the information will be

..... **[3]**

(b) **Knowledge, products** and **processes** can describe the impact of scientific information on stakeholders.

Use examples in the case study to explain each of these terms.

(i) Knowledge
.....
..... **[2]**

(ii) Products
.....
..... **[2]**

(iii) Processes
.....
..... **[2]**

(c) Leo is a member of the Wearable Technologies Team of the Biological Sciences department of a university.

His role can be identified as three categories of information holder.

Tick (✓) the **three** correct information holder categories for Leo's role.

Charitable organisation	<input type="checkbox"/>
Company research department	<input type="checkbox"/>
Educational institution	<input type="checkbox"/>
Individual researcher	<input type="checkbox"/>
International body	<input type="checkbox"/>
Research group	<input type="checkbox"/>

[3]

(d) During the course of Leo's study scientific information will be transmitted.

Identify the access issues relating to the transmission of information, using examples from the case study.

.....

.....

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..... [4]

2 Leo must ensure that his research data is accessed and stored in a safe and secure manner.

(a) Describe the **three** main risks to the security of Leo's research data.

1

.....

2

.....

3

.....

[3]

(b) Use the case study to describe **three** ways in which Leo minimises the risk to the safe storage of his research data.

1

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2

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3

.....

[3]

(c) Patient data is partially anonymised.

Explain what **partially anonymised** means and describe how it is achieved.

.....

.....

..... [2]

3 A list of UK legislation and regulation codes of practice relating to the storage and use of information is shown.

A – Data Protection Act

B – Protection of Freedoms Act

C – Freedom of Information Act

D – Computer Misuse Act

E – Copyright, Designs and Patents Act

F – Equality Act

Use the letters **A** to **F** to identify which legislation or regulation applies to the following.

Each letter may be used once, more than once, or not at all.

(a) 'The use of surveillance camera systems.'

Letter

[1]

(b) 'Any action that prevents or hinders access to any program or data held in a computer.'

Letter

[1]

(c) 'Protected characteristics, such as age, race or sexual orientation.'

Letter

[1]

(d) 'Adjustments to the workplace, working conditions or working practices for disabled persons.'

Letter

[1]

(e) 'Guidance on the destruction of fingerprints and DNA profiles.'

Letter

[1]

(f) 'A person making a request to a public authority is entitled to be informed in writing whether that public authority holds the specified information.'

Letter

[1]

Section B

You do not need the case study to answer these questions.

4 Taylor is a laboratory manager at Sarric Ltd.

Taylor, along with all the other employees at Sarric Ltd, must use the company's intranet for their written communications and research when they are at work.

An intranet is defined as a local or **restricted** communications network, especially a **private** network created using World Wide Web software.

(a) State the **three** principles of information security and for each principle suggest why the employees at Sarric Ltd must use the company's intranet.

Principle 1

.....
.....

Principle 2

.....
.....

Principle 3

.....
.....

[6]

(b) Sarric Ltd produces a range of media on which cell cultures are grown.

Cell cultures are used in biomedical research.

The culture media are designed so that different types of cell can grow in the best conditions.

Taylor aims to ensure that the culture media are:

- free from any kind of contamination
- produced from an identical formulation
- selected to provide the best conditions for cell growth.

Use Taylor's aims to identify and explain the importance of **four** features of good quality information.

1

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2

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3

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4

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[4]

(c) In the context of the scientific work carried out at Sarric Ltd, suggest **one** consequence of poor quality information.

..... **[1]**

(d) Sarric Ltd has branches in many countries around the world.

Give **two** reasons why it is difficult for the company to comply with data protection legislation in all these countries.

1

.....

2

.....

[2]

6 Jamila is a research assistant in an industrial laboratory.

One of her roles is to manage the inspection and maintenance of the lab equipment.

Jamila has paper copies of the operating manuals for each piece of equipment.

She also has digital copies of the manuals stored on a computer.

(a) Jamila can use three types of media for storing digital copies of the operating manuals.

(i) What type of storage media is:

- a CD?

.....

- a memory stick?

.....

[2]

(ii) Give **one** advantage of magnetic storage media.

.....

..... [1]

(b) Jamila carries out most of her inspections using checklists printed on paper.

Explain **two** advantages of using paper as a storage medium.

1

.....

.....

2

.....

.....

[2]

(c) A piece of laboratory equipment fails an inspection.

Jamila consults the manufacturer's 'troubleshooting' webpage to find out what to do.

(i) Where can Jamila find the webpage?

Draw a **circle** around the correct location.

book **offline** **online** **spreadsheet** **video**

[1]

(ii) Use **two** reasons for the transmission of scientific information to explain why the manufacturer has a troubleshooting webpage.

1

.....

2

.....

[2]

(d) Some of the equipment in Jamila's lab is connected to a computer network.

Jamila must ensure that each piece of equipment uses the most up-to-date software. Out of date software may contain vulnerabilities that cause risks to information security.

Describe **three** impacts of breaches in information security.

1

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2

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3

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[3]

END OF QUESTION PAPER

ADDITIONAL ANSWER SPACE

If additional answer space is required, you should use the following lined pages. The question numbers must be clearly shown in the margins – for example, 1(d) or 2(c).

Lined area for writing answers, consisting of multiple horizontal dotted lines.



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