

Friday 9 January 2026 – Afternoon

Level 3 Cambridge Technical in IT

05838/05839/05840/05841/05842/05877 Unit 2: Global information

PRE-RELEASE

C381/2601



INSTRUCTIONS

- Do **not** take this copy of the pre-release material into the exam.
- Do **not** take any notes into the exam.

INFORMATION

- A clean copy of this pre-release will be given to you with the question paper.
- This document has **4** pages.

Antarctic Research PHAR

A research project is based in Antarctica. The project is overseen by PHAR which is based in the UK. Many countries are involved in the project including the USA, Canada and Norway. The project follows the principles of the Antarctic Treaty.

The project is carrying out environmental research, including research on penguins and the impact of global warming and climate change on their natural habits. Scientists and support staff spend a minimum of 6 months in Antarctica carrying out research projects.

The project is based in Antarctica at four research stations. Each research station has been purpose built with minimal environmental impact and includes accommodation, storage and laboratory facilities. A range of vehicles are located at each research station including snowcats, snowmobiles and snow blowers.

Broadband access for each research station is provided through a satellite link via a dish. Scientists and support staff use the broadband access for a range of activities including browsing research websites, email, video meetings, VOIP calling and accessing the cloud storage area.

Each research station has a landing strip. Plane landings and take-offs are subject to weather constraints, including snowstorms. Planes are used to bring supplies including food and water, and these can be used for unplanned landings in case of an emergency. Except for an emergency, the only planes that can land and take off from the research stations are those associated with the project. This is because these planes have been adapted for the Antarctic terrain.

Pilots are provided with detailed maps of the landing strips, including the terrain surrounding it. The pilots are also given instructions about take-off and landing procedures. These instructions are specific to each research station and are set according to the terrain and weather conditions.

A research ship is part of the project and is focussed on research at the edge of Antarctica. The ship has negligible environmental impact. The ship includes accommodation, laboratory facilities and equipment, including unmanned submersibles. The submersibles can operate in deep water and go to places which are inaccessible to humans. Live streams can be sent from a submersible to the ship. The live streams are saved onto laptops and are uploaded to a cloud storage area. The cloud storage area can be accessed by scientists based in Antarctica and those based in the countries involved in the project.

Scientists carry out experiments away from a research station, known as 'in the field'. Vehicles are used to transport the scientist and their equipment to the experiment site. They keep in touch using radios. A member of the support staff will monitor radio communication when scientists are in the field. Communication with the research ship is also done using radios. Examples of the experiments being carried out include charting ice depth and the effects of pollution on snow.

The research scientists use drones to check on the penguins. Using a drone enables scientists to view the penguin colony, without disturbing them. Penguins live in colonies which can cover several miles, so using drones is the most effective method of observing their behaviour. During the winter months, when the sun does not rise above the horizon and temperatures can be as low as -20°C , penguins huddle together to keep warm and to protect themselves from predators. Little is known about the behaviour of penguins so using a drone can allow scientists to see this behaviour with little, if any, impact on the colony.

The footage of the live stream from a drone is saved to a memory card and uploaded to a desktop computer when the scientists return to the research station. The footage can be used to analyse in detail the behaviour of the penguins and the huddle. This footage is also uploaded to the secure cloud storage area.

The data collected during experiments in the field is recorded on paper and on handheld digital devices. When scientists return to the research station the collected data is uploaded from the digital devices and saved on desktop computers. Each research station has a network. This data is also uploaded to the secure cloud storage area. The collected data that is recorded on paper is digitised and saved as a back-up resource.

Data and footage collected during experiments is analysed and the results of this analysis are uploaded to the secure cloud storage area.

As part of the analysis, data can be analysed into a graph to show the patterns of behaviour of the penguins, for example, the number of penguin chicks born over a specified time period. Data can also be imported into a database to enable scientists to run queries to locate specific data relevant to their research.

The interim results of the project are presented at climate change conferences held worldwide. The scientists presenting the results of the research to the conference will be based at a research station in Antarctica to ensure the environmental impact of attending a conference is negligible.

Pre-release Research Brief

To prepare for the exam, you should research the following themes:

- The data types, storage media and devices, including the advantages and disadvantages of each, used by the project.
- The information management steps and data analysis stages and tools used by the project.
- The information security principles that need to be considered by the project.
- The quality of information used by the project, including the importance of good quality information and the consequences of poor quality information.
- The information styles that are and could be used by the project.
- A comparison of technologies available, and access issues across the global divide which could arise for the project.

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