

**GENERAL CERTIFICATE OF SECONDARY EDUCATION
ENVIRONMENTAL AND LAND-BASED SCIENCE**

B684

Unit B684: Environmental and Land-Based Science Portfolio

Controlled assessment

INSTRUCTIONS TO TEACHERS

Controlled assessment tasks are subject to differing levels of control at the different stages of preparation and during the production of the work.

Full details of the procedures for controlled assessment tasks are contained in the JCQ Instructions for Conducting Controlled Assessments and the marking criteria are found in Section 5 of the specification.

ASSESSMENT TASKS

There are three elements to this unit

Element 1: Practical Scientific Skills

The controlled assessment task comprises **four** Practical Scientific Skills

[Total: 24]

Element 2: Scientific Investigation

The controlled assessment task comprises **one** Scientific Investigation

[Total: 48]

Element 3: Work-related Report

The controlled assessment task comprises **one** Work-related Report

[Total: 48]

- Quality of written communication is assessed in this paper.
- The total number of marks is **120**.
- This document consists of **8** pages. Any blank pages are indicated.

Sample tasks for Element 1: Practical Scientific Skills

The controlled assessment task comprises four Practical Scientific Skills. It can be presented as an annotated diary that includes critical reflection. Candidates must complete a **minimum of two** from the context of Unit B681 Management of the Natural Environment and a **minimum of two** from either of the optional units B682 Plant Cultivation and Small Animal Care or B683 Commercial Horticulture, Agriculture and Livestock Husbandry.

It is expected that the skills chosen will be related to the option (B682 or B683) students have studied.

These skills will include a practical task, collection and processing of data, and an evaluation of the task and risks involved.

The time suggested to be spent on the Practical Scientific Skills is 8 lessons, i.e. about 8 hours.

Tasks

Unit B681: Management of the Natural Environment

- Carry out an ecological survey of two contrasting habitats using quadrats to collect quantitative data to show the distribution of plant species.
- Test a range of soils to identify their thermal properties.

Unit B682: Plant Cultivation and Small Animal Care

- Monitor the development of a small animal by taking appropriate observations and measurements, handling the animal in the correct way.
- Prepare two potting composts and compare the growth of seedlings using these two different composts, until ready for planting out.

Unit B683: Commercial Horticulture, Agriculture and Livestock Husbandry

- Monitor the development of a farm animal by taking appropriate observations and measurements, handling the animal in the correct way.
- Prepare two potting composts and compare the growth of seedlings using these two different composts, until ready for planting out.

[Total 24 marks]

Sample task for Element 2: Scientific Investigation

The Scientific Investigation produced must be related to one of the units candidates have studied and should include practical scientific work.

The theme of the investigation should be stated and some discussion made in the introduction to the work.

In planning the investigation, candidates are required to collect and use secondary data related to the aim of their investigation. Reference may be made to texts or the Internet for background information, but **all** sources must be quoted.

Primary data / information must be collected by direct observation and/or measurement. Where group data is used candidates must indicate the results they have gathered. Candidates should be prepared to analyse and present their data in a clear, scientific style which can be interpreted by a wide range of audiences (from fellow students to the 'man-in-the-street' and specialists / scientists).

It is not expected that candidates will necessarily solve all the problems encountered, but they should demonstrate some attempt to do so. When problems fail to yield predicted results, candidates are encouraged to discuss their actual findings and comment on any implications.

Choice of Scientific Investigation

Topics may be contextualised by candidates in discussion with their teacher, with due regard for health and safety guidelines.

The time suggested to be spent on the Scientific Investigation is 12 lessons, i.e. about 12 hours.

Task

Investigate the effect of mechanisation and intensification of farming on the soil.

[Total 48 marks]

Sample task for Element 3: Work-related Report

In this element, candidates are required to collect primary data (information). This will be from their visits to work places, from talking to practitioners or from surveys etc. Secondary data (information) will be obtained from published sources and the Internet. They process, analyse and interpret this data to produce a scientific report.

During the course and prior to setting this element of the controlled assessment, the candidates should have covered:

- collecting, presenting and referencing primary data from individuals and organisations
- collecting, processing, analysing, presenting and referencing secondary data from their own research
- researching:
 - information about work carried out in a job role and qualifications needed
 - technical skills used in a job role/workplace
 - application of scientific knowledge used in a job role/ workplace
 - the financial or regulatory factors that affect a job role/workplace.
- collating research into an ordered logical report which contains appropriately used visual material.

The time suggested to be spent on the Scientific Investigation is 18 lessons, i.e. about 18 hours, to include 5-6 hours for a visit to a workplace and/or visit by a practitioner to the centre. Candidates will need to be prepared appropriately for the visit in order to gather relevant information.

Task

Carry out research into the way science is used in the work of a practitioner in the land and environment sector.

[Total 48 marks]

Work-related report topics need to allow coverage of the people involved and their qualifications appropriate to the controlled assessment brief. Appropriate organisations to be considered are:

- a farm enterprise
- a forestry enterprise
- a veterinary practice
- a farrier's business
- water and sewage treatment
- a garden centre or nursery

- conservation organisation
- an agricultural engineering company
- an equestrian centre
- an animal feed supplier
- a pet shop
- a soil analysing service
- an environmental protection organisation
- a zoological park

Centres may contextualise the Work-related Report task to best suit their local circumstances and access to resources, whilst ensuring that the candidates can access the full range of marking criteria.

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