Pearson BTEC Level 3 Nationals Extended Certificate

Applied Science

Unit 3: Science Investigation Skills – Teacher/Technician notes and guidance – Confidential

Part P

June 2017

Paper Reference
31619H

Instructions

- This document contains confidential information for centres on the preparation and administration of the **Part A** practical investigation.
- This document should be opened once it is received to allow centres to prepare for the **Part A** practical investigation.
- This document is confidential. It must be stored securely and must not be disclosed to learners.
- This document should not be returned to Pearson.

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Guidance for Teachers/Tutors

Set task

The set task requires learners to carry out a practical investigation in **Part A** and then complete a taskbook in **Part B**.

Both **Part A** and **B** of the task must be completed in the assessment period timetabled by Pearson.

The teacher/technicians notes provided in this document give information on the method for the practical investigation. It is the responsibility of centres to resource and trial the practical investigation prior to it being undertaken by learners in the assessment period.

Any assessment material not required by learners for submission must be collected and held securely by the Exams Office until the EAR deadline at which point they may be recycled or destroyed.

Part A Practical investigation

Learners must not see the teacher/technician notes. A separate **Part A** will be available for learners at the beginning of the assessment period.

The **Part A** task brief provides all the necessary information for learners to conduct the practical investigation and includes a notes page for learners to record their results/observations.

Centres will be required to supervise learners when they carry out the investigation.

Teachers cannot provide guidance during the practical investigation. The practical investigation may take up to three hours depending on the nature of the investigation and it should be completed in the first section of the assessment period.

Learners may work in pairs to conduct the practical investigation, however they must record their set of results/observations independently.

Once learners have completed the practical investigation, teachers must keep the **Part A** taskbook containing learner results/observations secure.

This must be returned to learners when they start **Part B** in the third week of the assessment period.

Learners will need to refer to their results/observations obtained from **Part A** when they complete **Part B**.

Teachers/Technician Notes for the Practical Investigation

Learners must observe safe practice when carrying out practical scientific investigations.

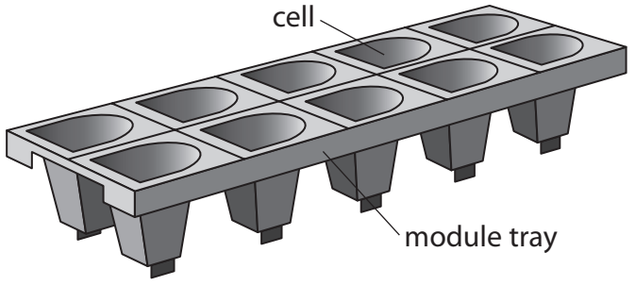
It is the responsibility of centres to carry out risk assessments for all practical investigations.

Technician's list of equipment needed

- Ericaceous compost
- Garden lime (ground limestone)
- Seed plug module trays (minimum of ten cells per pH)
- Seeds, e.g. cress, radish, marigold or all-year round lettuce

Learner's list of equipment needed

- Module trays, labelled A–F
- A calibrated pH probe
- Six boiling tubes and bungs
- Spatula
- Distilled water
- 30 cm ruler with mm increments



Method for technicians

Each learner/pair of learners will need a set of six compost samples with a range of different pH values. These will be the 'soil samples from the small, inner city nature reserve' the learners use in **Parts A** and **B**.

To make up the samples:

1. Measure the pH of a sample of ericaceous compost.
2. Fill one set of module trays with this ericaceous compost. Label these module trays A.
3. Prepare an additional five samples of ericaceous compost by adding varying amounts of garden lime to give a range of pH values between approximately pH 3 and pH 8.
4. Fill five sets of module trays, labelled B–F, with these additional compost samples.

For each soil pH:

1. Place one seed on top of the compost in each cell.
2. Cover the seeds with a thin layer of the same compost.
3. Water each cell so that the compost is moist.
4. Place the module trays in a suitable light place, e.g. near a window.
5. Ensure the compost remains moist until required by the learners (minimum seven days).

   NB Some seeds may not germinate.

Learners will measure and record:

1. the height of the plants
2. the pH of the compost
3. any relevant observations.

Method for measuring the height of the plants

1. Cut each plant off at compost level.
2. Measure the height of each plant using a 30 cm ruler.

Method for measuring the pH of the compost

1. Fill a boiling tube to a depth of 2 cm with compost from module tray A.
2. Add distilled water to the boiling tube until it is two thirds full.
3. Place a bung in the boiling tube and shake ten times.
4. Place a pH probe in the boiling tube and record the pH.
5. Rinse the pH probe with distilled water.
6. Repeat steps 1-5 with compost from module trays B-F, using a clean boiling tube each time.