



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2008

LIFE SCIENCES: PAPER III

Time: 1½ hours

75 marks (reduced to 50 marks)

INSTRUCTIONS TO TEACHERS AND LABORATORY TECHNICIANS

FOCUS OF THE PAPER: LO 1: AS 1, AS 2, AS 3; LO 3: AS 2

Learners will plan an investigation, conduct an investigation and analyse, synthesise and evaluate data. The paper will assess the 8 skill areas (as set out in the SAG document). In addition, the learner will evaluate the use and development of a particular resource and its impact on society.

SAFETY: Care must be taken when working with Hydrogen Peroxide. It is slightly corrosive and can cause skin to become bleached. Flush with cold tap water if it comes into contact with skin or eyes. Do not swallow. Please advise the learners of these dangers before they begin this examination.

PLEASE NOTE: This is an open-ended practical and, as such, results can be **HIGHLY** variable from one school to another and also from one candidate to another. There is no **CORRECT** result for this investigation. It is imperative that candidates write up and discuss **EXACTLY** what they get. They **MUST NOT** try to guess the result and make their data 'fit' the expected result.

The following equipment is to be laid out for EACH candidate at an individual workstation:

NOTE: You may not run successive sessions in order to accommodate all the candidates on an individual basis. This examination must run at the same time for ALL candidates. It is designed so that it can be carried out in any venue.

- 100 ml hydrogen peroxide (20-volume) in a labelled beaker or plastic cup
- Small piece of fresh liver (about 5 cm³)
- 20 ml distilled water in a labelled beaker or plastic cup
- Teaspoon of dried yeast (about 5 cm³)
- 50 ml clean river sand/ builder's sand
- Teaspoon of activated charcoal (about 5 cm³) in a labelled beaker or plastic cup
- Tile for cutting on
- Scalpel or sharp knife
- Ruler
- Four identical boiling tubes (test tubes) of dimension 24 x 150. (Make sure that EACH candidate gets four matching test tubes i.e. same volume, diameter and thickness of glass.)
- Test tube rack to hold the 4 tubes above
- Forceps
- Permanent marker
- Filter funnel
- 2 pieces of filter paper to fit funnel
- Bunsen burner or camping gas or spirit burner or candle
- Test tube holder
- Wooden splint
- 10 ml or 20 ml syringe

Students must have access to:

- Pestle and Mortar (at least one per venue)
- Timing device

Notes about the apparatus and materials

The above items are to be set out for each candidate at a dedicated work station.

Candidates must have access to tap water and a washing up station during the investigation. This may be supplied in plastic basins and bottles.

Hydrogen Peroxide must be used as fresh as possible. Purchase as close to the time as possible and only open the bottles on the day of the examination.

Chicken livers are ideal to use although any type of liver can be used.

Clean sand can be obtained from a building supply store and then acid washed and rinsed with tap water.

Activated Charcoal can be obtained from any store that sells pet requisites. It is used in filters of fish tanks.

Narrow test tubes should be avoided. Boiling tubes of dimension 24 x 150 are best. Test tubes must have a volume of at least 50 ml. The Rutland Catalogue reference number is either 600715 (rimless) or 600906 (with rim).

Plastic disposable 'party cups' are useful containers to use if beakers are not available (they are relatively cheap as well).

If you choose to alter any of the quantities of solutions suggested in the instructions then please make this clear to all candidates.

General Instructions

Candidates must supply their own pen, sharp HB pencil, ruler, eraser and calculator.

Candidates may be requested to bring their own watches/ stopwatches and marking pens if not supplied above.

Several skills are to be assessed in this examination. Make sure that sufficient copies of the grid are made before you commence the examination. These grids **MUST** be stapled to the front cover of each candidate's question paper.