



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2015

LIFE SCIENCES: PAPER III

Time: 1½ hours

50 marks

INSTRUCTIONS TO TEACHERS AND LABORATORY TECHNICIANS

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 learner to another. There is no **CORRECT** result for this investigation. It is imperative that learners write up and discuss **EXACTLY** the results they get. They **MUST NOT** try to guess the result and make their data 'fit' the expected result.

- Do **NOT** share any of this information with your learners. It will be considered an irregularity if you do.
- Do **NOT** open the examination packs before the day that the examination is to be written.
- Do **NOT** try the experiments out first or adjust any of the instructions or volumes/amounts of chemicals.

You may **NOT** run successive sessions in order to accommodate all the learners on an individual basis. This examination must run at the same time for **all** learners. It is designed so that it can be carried out in any venue and **MUST BE** invigilated by staff members who **do not have a Life Sciences background**. Invigilators are to be carefully briefed before the examination on how to complete the grid for procedural and manipulative skills.

IT IS IMPORTANT THAT TEACHERS READ THROUGH THIS ENTIRE SET OF INSTRUCTIONS CAREFULLY BEFORE THE EXAMINATION.

SPECIAL ATTENTION IS DRAWN TO INSTRUCTIONS (AT THE END OF THIS DOCUMENT) TO BE GIVEN TO INVIGILATORS SO THEY CAN PERFORM THEIR DUTY ON THE DAY.

The following equipment is to be laid out for EACH learner at each individual workstation:
THIS MUST BE DONE BEFORE THE 45 MINUTES NEEDED TO GO THROUGH THE INFORMATION WITH INVIGILATORS.

- test tube rack
- five **identical** test tubes (standard size to hold 50 ml of liquid)
- beaker of 100 ml distilled water – label distilled water
- container of additional tap water for rinsing – label tap water
- 50 ml concentrated ethanol in a marked container
- 10 ml syringe
- sharp knife
- three cylinders of fresh beetroot in a container of distilled water (each to be 20 mm long)
- forceps/spatula
- empty container/beaker
- wooden kebab stick
- marking pen (student to supply own)
- access to a wall clock/timer
- absorbent tissue paper/laboratory paper for wiping equipment
- white cutting tile or board
- white A4 sheet of paper (NOT to be written on and used for your answers)

NOTES ABOUT THE APPARATUS AND MATERIALS

The items listed above are to be set out for **each** learner at a dedicated workstation.

Test tube rack – make sure that the test tubes fit properly in the holes. If you do not have sufficient, a large beaker or other container which will be able to support the test tubes may be used.

Test tubes – five identical test tubes. Must each be able to hold 50 ml of liquid.

100 ml distilled water – 100 ml of distilled water marked clearly and available in the learner's practical 'tray'. Learners should have access to other water which can be used to clean apparatus. This could be in a large beaker, basin or laboratory sink.

Small empty beaker or container – each learner needs to have a small container (at least 100 ml in size).

Large beaker/container of tap water for rinsing.

50 ml of pure 'Ethanol' (96%) in a marked container.

Wooden kebab stick – each learner needs one of these. These can be purchased from any supermarket.

10 ml syringe – these can be obtained cheaply from your local pharmacy or chemical supplier. Have some spares available in case some are problematic.

Sharp knife – vegetable or steak knife or scalpel.

Three cylinders of fresh beetroot in a small container of distilled water – to cut these cylinders, you can use the largest size of cork borer available from Rutland OR you can use an apple corer (full circular type) that you buy at a supermarket. It is important to have three cylinders that will each be at least 20 mm in length. The diameter of the cylinder **MUST** be able to fit into the test tube. Note: when in water for a while, the cylinders can swell. The preparation of these cylinders needs to be mid morning on the day of the investigation. Work on using about one fresh beetroot for each learner. Place in distilled water after cutting, to cover the cylinders. Practise cutting beetroot before day of the examination; older beetroot will be difficult to cut. If you have a large group of students, have more than a single cork borer or corer, as this will take time.

Forceps/spatula – each learner needs one.

Permanent marker – any brand of marker.

Timing device – any clock or watch provided by the learner or the teacher. Wall clock is adequate. No cell phones.

Paper towel – two pieces per learner. Have spare pieces of towel available in the venue.

Cutting tile or board – each learner needs one.

Single white A4 sheet of paper.

GENERAL INSTRUCTIONS

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

Learners may be requested to bring their own marking pens if not supplied above.

Several skills are to be assessed in this examination. Attached is a suitable grid which can be photocopied and used on clipboards by the invigilators during the examination. Make sure that sufficient copies of the grid are made for each venue before you commence the examination.

The information contained in these grids **MUST** be transposed to the front cover of EACH learner's script after the completion of the examination. This needs to be checked by the Examination Officer at the school.

You **MUST** send the completed original grids with the completed scripts in an envelope back to the IEB. **ARRANGE** the scripts in examination number order (in packs of 20) and record clearly absentees on the forms supplied.

CONFIDENTIAL INFORMATION; DO NOT SHARE WITH THE LEARNERS.

OBSERVATIONS TO BE MARKED BY INVIGILATORS. THIS INFORMATION IS TO BE DISCUSSED BETWEEN THE INVIGILATORS AND THE LIFE SCIENCES TEACHER IN THE 45 MINUTES BEFORE THE EXAMINATION COMMENCES.

SCRIPTS THAT DO NOT HAVE THE MARKS WRITTEN ON THE FRONT COVER OF THE SCRIPT (BY INVIGILATOR) WILL LOSE THESE ASSESSMENT MARKS.

Following instructions: relates to learners doing exactly what the examination requires in the instructions. This will be a direct instruction learners must follow.

Test tube contents: same volume/same level in all tubes/colour of contents as given in instructions to invigilators on the day.

Manipulation: in the examination, there will be an instruction given to invigilators involving measurement. If the instruction has been followed exactly as required, candidate is to receive this mark.

THERE ARE TO BE NO STUDENT NAMES, NAMES OF SCHOOLS OR RED PEN MARKS ON ANY OF THE SCRIPTS.

Invigilators are asked to please complete this after the examination on the front of the script.

EXAMINATION NUMBER												
CRITERIA												
Following instructions											0	1
Test tube contents											0	1
Manipulation											0	1
TOTAL												(3)

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CRITERIA												
Following instructions											0	1
Test tube contents											0	1
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