



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2017

LIFE SCIENCES: PAPER III

INSTRUCTIONS TO TEACHERS AND LABORATORY TECHNICIANS

IT IS IMPORTANT THAT TEACHERS READ THROUGH **THIS ENTIRE SET** OF INSTRUCTIONS CAREFULLY, WELL AHEAD OF THE EXAMINATION.

This examination begins at 10h00 on 20 September 2017. It is essential that all workstations and equipment are tested and ready ahead of candidates entering the venue.

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 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 candidates. It is 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 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 and **MUST BE** invigilated by staff members that **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.

SPECIAL ATTENTION IS DRAWN TO THE 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 candidate at each individual workstation.

This must be done by 09h00 on 20 September 2017 so that the venue/s is completely ready for the candidates.

The security bag containing the scripts will be opened in the venue/s by the chief invigilator 45 minutes before the commencement of the examination. This will give the Life Sciences teacher enough time to prepare the invigilator/s.

- four identical test tubes in a test tube rack
- 50 ml distilled water
- 200 ml of tap water in a cup (for cleaning)
- two empty polystyrene or plastic cups
- 10 ml syringe
- 3 ml syringe
- 5 ml measuring spoon
- permanent marking pen
- wall clock or timing device
- thermometer
- access to boiling water in a kettle or urn
- 250 ml beaker or container to hold boiling water
- Sample A, Sample B and Sample C
- access to a dropper bottle of indicator X
- access to a dropper bottle of indicator Y
- sheet of white paper

NOTES ABOUT THE APPARATUS AND MATERIALS

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

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

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

50 ml distilled water in a beaker/container labelled 'distilled water'.

200 ml tap water – 200 ml of tap water in a cup marked clearly 'cleaning water'. Candidates should have access to other water which can be used to clean apparatus. This could be in a large beaker, basin or laboratory sink.

Two small polystyrene/plastic cups – each candidate needs to have these available.

10 ml syringe and a 3 ml syringe – these can be obtained cheaply from your local pharmacy or chemical supplier. Have some spares available in case some are problematic.

5 ml measuring spoon – one per candidate.

Permanent marker – any brand of marker. The candidate may be asked to bring their own.

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

Thermometer – alcohol type is sufficient for each candidate.

Boiling water in an urn or a kettle. May require multiple kettles if no urn.

Not sufficient to use water that is warm. Needs to be boiling water.

Candidates will each need 150–200 ml of boiling water at some point in the examination. Some plastic measuring jugs with handles must be available for candidates to fill up with boiling water, walk slowly back to their workstation, decant the boiling water safely and return the plastic measuring jug to the urn/kettle for others to use, if sharing. Precautions must be made so that candidates do not burn themselves.

Technician to make up beforehand:

Need 100% apple juice – Ceres or Woolworths brand used.

Solution A: 5ml of apple juice mixed with 500 ml of water. Stir.

Each candidate needs 40 ml of this solution in a container labelled "Sample A"

Solution B: Pure apple juice. Each candidate needs 40 ml of this solution in a container labelled "Sample B".

Solution C: 5 ml apple juice in 1 250 ml water. Each candidate needs 40 ml of this solution in a container labelled "Sample C"

Indicators: These can be available in dropper bottles along the side of the venue or on the desk for each candidate. Each candidate should have easy access to 15 ml of Indicator X and 4 drops of Indicator Y.

Label indicators as follows:

Indicator X in a dropper bottle – this is Benedicts solution. Purchase it from a chemical supply house. There should be no name on the dropper bottle, just the label "indicator X". Please check that the indicator is fresh. (Use glucose solution to test well ahead of the examination. This is a standard test in Life Sciences.)

Indicator Y in a dropper bottle – this is Iodine solution. Purchase it from a chemical supply house. There should be no name on the dropper bottle, just the label "indicator Y".

Paper towel – have spare towels available in the venue.

GENERAL INSTRUCTIONS

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

Several skills are to be assessed during this examination. The observations to be marked by invigilator/s must be discussed between the invigilator/s and the Life Sciences teacher in the 45 minutes before the examination commences. The venue/s must be fully prepared by this time.

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 the examination commences.

The information contained in these grids **MUST** be transposed to the front cover of EACH candidate's script after the completion of the examination. This needs to be checked by the Chief Invigilator at the school, not only by the invigilator/s.

If a script does not have the marks written on the front cover, the candidate will lose these assessment marks.

The completed original grids must be sent back to the IEB in an envelope, together with the completed scripts.

There must be no candidate names, names of schools or red pen marks on any of the scripts.

The completed scripts must be arranged in examination number order (in packs of 20). Absentees must be clearly recorded on the forms supplied.

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

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

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CRITERIA		
Following instructions	0	1
Test tube contents	0	1
Recording	0	1
TOTAL		(3)

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CRITERIA		
Following instructions	0	1
Test tube contents	0	1
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