



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2016

LIFE SCIENCES: PAPER III

Time: 1½ hours

50 marks

INSTRUCTIONS TO TEACHERS AND LABORATORY TECHNICIANS

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

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 candidate at each individual workstation:
THIS MUST BE DONE BEFORE THE 45 MINUTES NEEDED TO GO THROUGH THE INFORMATION WITH INVIGILATORS.

- test tube rack
- four **identical** test tubes (standard size to hold 50 ml of liquid)
- beaker of 100 ml milk clearly labelled "milk"
- beaker of 100 ml tap water clearly labelled "water"
- 10 ml of powder in a container clearly labelled "X"
- empty polystyrene/plastic cup
- wooden kebab stick
- two 10 ml syringes
- 5 ml measuring spoon
- permanent marker (student to supply own or school may provide)
- access to a dropper bottle of indicator A
- access to a dropper bottle of indicator B
- access to a dropper bottle of indicator C
- paper towel
- access to a timing device

NOTES ABOUT THE APPARATUS AND MATERIALS

The items listed 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 sufficient, a large beaker or other container that 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.

100 ml fresh milk – in a beaker/container clearly labelled "milk".

100 ml tap water – in a beaker/container clearly marked "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.

10 ml of powder in a container clearly labelled "X" – this is to be cornflour, such as Maizena, available from the supermarket.

Small polystyrene/plastic cup – each candidate needs to have one available.

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

Two 10 ml syringes – 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.

Indicators – these can be available along the side of the venue with easy access for candidates to have about 10 drops of each. Droppers for each indicator need to be made available.

Label indicators as follows:

Indicator Biuret Solution A (purchase from chemical supply house)

Indicator Biuret Solution B (purchase from chemical supply house)

Indicator C (this is iodine solution – the name iodine should **not** be on the bottle)

Timing device – any clock or watch provided by the candidate or the teacher. A wall clock is adequate. **No cellphones.**

Paper towel – have spare paper towel available in the venue.

GENERAL INSTRUCTIONS

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

Candidates may be requested to bring their own marking pen if not supplied by the school.

Several skills are to be assessed in this examination. Attached is a suitable grid, which can be photocopied, placed on clipboards and used 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 transcribed on the front cover of EACH candidate'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 back to the IEB in an envelope. **ARRANGE** the scripts in examination number order (in packs of 20) and record absentees clearly on the forms supplied.

THE INFORMATION IN THIS DOCUMENT IS CONFIDENTIAL: IT MUST NOT BE SHARED WITH THE CANDIDATES.

OBSERVATIONS TO BE MARKED BY INVIGILATORS: THIS INFORMATION IS TO BE DISCUSSED BETWEEN THE INVIGILATOR/S AND THE LIFE SCIENCES TEACHER(S) IN THE 45 MINUTES BEFORE THE EXAMINATION COMMENCES.

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

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

Invigilators must transcribe these marks onto the front of the scripts after the examination.

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

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