NATIONAL SENIOR CERTIFICATE EXAMINATION
SUPPLEMENTARY EXAMINATION – MARCH 2019

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, WELL AHEAD OF THE EXAMINATION.

This examination will be written in March 2019 as per the IEB circular sent to schools. 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.

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The following equipment is to be laid out for EACH candidate at each individual workstation.

This must be done prior to the 45 minutes briefing session with the invigilators.

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).

- Five 50 ml beakers
- Test tube rack with five identical test tubes
- 30 ml alkaline-milk solution in a container labelled "milk"
- Bromothymol Blue Indicator solution in a dropper bottle labelled "ADS"
- 3 ml/5 ml syringe
- 20 ml syringe
- 100 ml **distilled water** in a beaker or cup labelled "distilled water"
- Polystyrene cup or beaker containing 100 ml tap water for rinsing labelled "rinsing water"
- Glass rod or kebab stick for stirring
- Paper towel
- Permanent marker
- Sheet of A4 plain white paper

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NOTES ABOUT THE APPARATUS AND MATERIALS

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

Beakers – five 50 ml beakers or equivalent container/cup that is able to hold 50 ml of liquid.

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 – five identical test tubes. Must each be able to hold 20 ml of liquid.

Alkaline-milk solution – to be made fresh the day before the practical; 30 ml in a container labelled "milk". Mix the following and stir until dissolved:

- 80 ml distilled water
- 3 ml **Bicarbonate of soda** (for household use – available at your local supermarket)
- 20 ml **milk** (fresh/long-life/full cream or two percent – any milk – available at your local supermarket)
- This 100 ml alkaline milk solution is sufficient for 5 pupils

Bromothymol Blue indicator solution – in a dropper bottle labelled "ADS".

3 ml/5 ml and 20 ml syringes – these can be obtained cheaply from your local pharmacy or chemical supplier. Have some spares available in case some are problematic.

Pipette or dropper – each candidate must have a pipette or dropper for use with ADS detector (Bromothymol Blue Indicator Solution).

100 ml of distilled water in a beaker or cup labelled "distilled water". It is important that the water is distilled, and has a neutral pH.

100 ml tap water – 100 ml of tap water in a polystyrene cup or beaker clearly marked "rinsing 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.

Glass rod or kebab stick for stirring.

Paper towel – have spare towels available in the venue.

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

Sheet of A4 plain white paper

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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 invigilator(s) 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 by the invigilator (in blue or black pen) 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 of the examination, 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 the examination number order (in packs of 20). Absentees must be clearly recorded on the forms supplied.

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Invigilators are asked to please transfer this after the examination on to the front of the script in blue or black pen.

EXAMINATION NUMBER		
CRITERIA		
Following instructions	0	1
Procedural skills	0	1
Manipulative skills	0	1
TOTAL		**(3)**

EXAMINATION NUMBER		
CRITERIA		
Following instructions	0	1
Procedural skills	0	1
Manipulative skills	0	1
TOTAL		**(3)**

EXAMINATION NUMBER		
CRITERIA		
Following instructions	0	1
Procedural skills	0	1
Manipulative skills	0	1
TOTAL		**(3)**

EXAMINATION NUMBER		
CRITERIA		
Following instructions	0	1
Procedural skills	0	1
Manipulative skills	0	1
TOTAL		**(3)**

EXAMINATION NUMBER		
CRITERIA		
Following instructions	0	1
Procedural skills	0	1
Manipulative skills	0	1
TOTAL		**(3)**

EXAMINATION NUMBER		
CRITERIA		
Following instructions	0	1
Procedural skills	0	1
Manipulative skills	0	1
TOTAL		**(3)**

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An alternate method: Invigilators are asked to please transfer this after the examination on to the front of the script in blue or black pen.

EXAMINATION NUMBER	**Following instructions (1)**	**Procedural skills (1)**	**Manipulative skills (1)**	**Total (max 3)**

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