Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

CO-ORDINATED SCIENCES **0654/53**

Paper 5 Practical Test **October/November 2019**

CONFIDENTIAL INSTRUCTIONS

This document gives details of how to prepare for and administer the practical exam.

The information in this document and the identity of any materials supplied by Cambridge International are confidential and must NOT reach candidates either directly or indirectly.

The supervisor must complete the report at the end of this document and return it with the scripts.

If you have any queries regarding these confidential instructions, contact Cambridge International stating the centre number, the syllabus and component number and the nature of the query.

email info@cambridgeinternational.org
phone +44 1223 553554
fax +44 1223 553558

This document consists of **7** printed pages and **1** blank page.

DC (ST/SG) 174791/3

Cambridge Assessment International Education

[Turn over

General information about practical exams

Centres must follow the guidance on science practical exams given in the *Cambridge Handbook*.

Safety

Supervisors must follow national and local regulations relating to safety and first aid.

Only those procedures described in the question paper should be attempted.

Supervisors must inform candidates that materials and apparatus used in the exam should be treated with caution. Suitable eye protection should be used where necessary.

The following hazard codes are used in these confidential instructions, where relevant:

C	corrosive	**MH**	moderate hazard
HH	health hazard	**T**	acutely toxic
F	flammable	**O**	oxidising
N	hazardous to the aquatic environment		

Hazard data sheets relating to substances used in this exam should be available from your chemical supplier.

Before the exam

- The packets containing the question papers must **not** be opened before the exam.
- It is assumed that standard school laboratory facilities, as indicated in the *Guide to Planning Practical Science*, will be available.
- Spare materials and apparatus for the tasks set must be available for candidates, if required.

During the exam

- It must be made clear to candidates at the start of the exam that they may request spare materials and apparatus for the tasks set.
- Where specified, the supervisor **must** perform the experiments and record the results as instructed. This must be done **out of sight** of the candidates, using the same materials and apparatus as the candidates.
- Any assistance provided to candidates must be recorded in the supervisor's report.
- If any materials or apparatus need to be replaced, for example, in the event of breakage or loss, this must be recorded in the supervisor's report.

After the exam

- The supervisor must complete a report for each practical session held and each laboratory used.
- Each packet of scripts returned to Cambridge International must contain the following items:
    - the scripts of the candidates specified on the bar code label provided
    - the supervisor's results relevant to these candidates
    - the supervisor's reports relevant to these candidates
    - seating plans for each practical session, referring to each candidate by candidate number
    - the attendance register.

Specific information for this practical exam

During the exam, the supervisor (NOT the invigilator) must do the experiments in Questions 1, 2, 4, 5 and 6 and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

For Question 1

Each candidate will require:

- **(i)** 10 cm^3 yeast suspension in a small beaker labelled **yeast suspension** (see note 1)
- **(ii)** 5 cm^3 10 vol (3%) hydrogen peroxide solution in a small beaker labelled **hydrogen peroxide** (see note 2)
- **(iii)** 25 cm^3 measuring cylinder
- **(iv)** 2 cm^3 syringe without needle
- **(v)** stopclock
- **(vi)** stirring rod
- **(vii)** container of approximately 200 cm^3 labelled **waste**
- **(viii)** distilled/deionised water.

Note 1

The yeast suspension can be made using 5 g dried yeast and 25 cm^3 distilled water. It should be freshly made prior to the examination and kept at room temperature.

Note 2

Prior to the examination, 3 cm^3 yeast suspension and 2 cm^3 hydrogen peroxide solution should be added to a 25 cm^3 measuring cylinder and left for 3 minutes. If the volume of the liquid and foam exceeds 25 cm^3 the concentrations should be reduced. If the volume of the liquid and foam is less than 15 cm^3 after 3 minutes the concentrations should be increased up to a maximum concentration of 18 vol (5%) **[MH]** in the case of hydrogen peroxide solution.

For Question 2

Each candidate will require:

- **(i)** 5 cm^3 yeast suspension in a small beaker labelled **yeast suspension** (this is the same yeast suspension as in question 1)

[C]

- **(ii)** biuret solution with dropping pipette labelled **biuret solution**
- **(iii)** iodine solution with dropping pipette labelled **iodine solution**
- **(iv)** 2 × test-tubes (125 × 15 mm) and means of supporting them
- **(v)** stirring rod.

For Question 4

Each candidate will require:

[MH] **(i)** approximately 10 cm^3 of 0.1 mol dm^{-3} iron(II) ammonium sulfate ($(NH_4)_2Fe(SO_4)_2.6H_2O$) solution labelled **H** (this is made up with equal volumes of distilled/deionised water and 0.5 mol dm^{-3} sulfuric acid)

[MH] **(ii)** approximately 1 g iron(II) ammonium sulfate in a stoppered hard glass test-tube (approximately 125 mm × 15 mm) labelled **J**

(iii) approximately 5 cm^3 0.1 mol dm^{-3} hydrochloric acid labelled **hydrochloric acid**

[MH] **(iv)** approximately 10 cm^3 0.1 mol dm^{-3} nitric acid labelled **nitric acid**

(v) approximately 5 cm^3 0.1 mol dm^{-3} barium nitrate solution labelled **barium nitrate**

[N] **(vi)** approximately 5 cm^3 0.05 mol dm^{-3} silver nitrate solution labelled **silver nitrate**

[MH] **(vii)** approximately 10 cm^3 0.4 mol dm^{-3} sodium hydroxide solution labelled **sodium hydroxide**

(viii) 4 × test-tubes (approximately 125 mm × 15 mm) and means to support them

(ix) test-tube holder to fit hard glass test-tube in **(ii)**

(x) spatula

(xi) red litmus papers

(xii) blue litmus papers

(xiii) Bunsen burner and means to light it.

For Question 5

Each candidate will require:

(i) disposable drinks cup with a capacity of approximately 200 cm^3, but no greater than 210 cm^3 (see note 1)

(ii) 30 cm or a 50 cm rule graduated in millimetres

(iii) 250 cm^3 measuring cylinder

(iv) supply of cold water (each candidate will require approximately 300 cm^3).

Note 1

Identical cups must be provided for all candidates. The cups need to be dry.

Note 2

Supervisors must record the dimensions of the diameter of the top and the bottom of the cup, together with the vertical height of the cup (to the nearest millimetre) on the copy of the Supervisor's results that is submitted with the scripts.

Action at Changeover

The measuring cylinder must be emptied. The supply of cold water must be replenished.

The cup must be emptied of water and dried, or a new dry cup provided.

For Question 6

Each candidate will require:

(i) convex lens with focal length f = 15 cm, with holder
(ii) metre rule
(iii) an illuminated object with a hole in the shape of an equilateral triangle of side approximately 2 cm (see note 1)
(iv) a white screen (see note 2).

Note 1

The object can be made by cutting a triangular hole in a piece of white card, and covering the hole with translucent paper. The illumination can be provided by a 12 V, 24 W lamp, or similar. The orientation of the triangle must be as shown in Fig. 6.1.

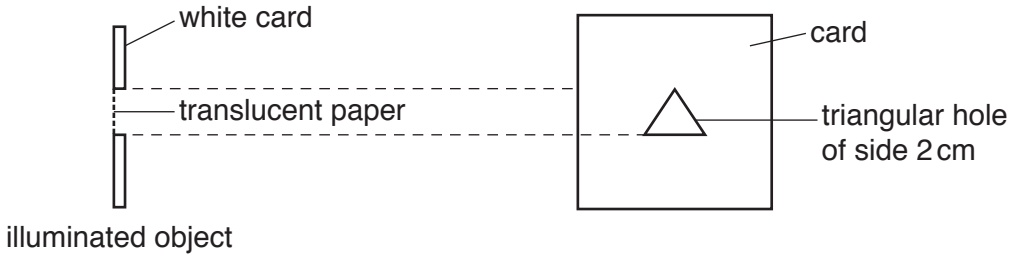

Fig. 6.1

Note 2

The screen can be made from a sheet of white card (10 cm × 10 cm approx.). Some means of supporting the screen vertically must be supplied (e.g. fixing the white card to a small block of wood). See Fig. 6.2.

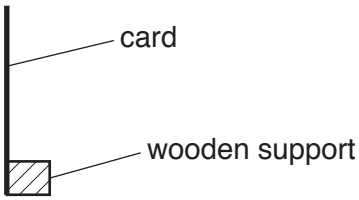

Fig. 6.2

Note 3

The lamp filament, the centre of the hole in the object card and the centre of the lens should be arranged to be the same height above the bench.

Action at Changeover

Switch off the lamp and return the apparatus to the starting position.

BLANK PAGE

Supervisor's report

Syllabus and component number | | | | | / | | |

Centre number | | | | | |

Centre name .....

Time of the practical session .....

Laboratory name/number .....

Give details of any difficulties experienced by the centre or by candidates (include the relevant candidate names and candidate numbers).

You must include:

- any difficulties experienced by the centre in the preparation of materials
- any difficulties experienced by candidates, e.g. due to faulty materials or apparatus
- any specific assistance given to candidates.

Space for supervisor to record results, if relevant, e.g. temperature of the laboratory; results for Question 1.

Declaration

1 Each packet that I am returning to Cambridge International contains the following items:

- ☐ the scripts of the candidates specified on the bar code label provided
- ☐ the supervisor's results relevant to these candidates
- ☐ the supervisor's reports relevant to these candidates
- ☐ seating plans for each practical session, referring to each candidate by candidate number
- ☐ the attendance register

2 Where the practical exam has taken place in more than one practical session, I have clearly labelled the supervisor's results, supervisor's reports and seating plans with the time and laboratory name/number for each practical session.

3 I have included details of difficulties relating to each practical session experienced by the centre or by candidates.

4 I have reported any other adverse circumstances affecting candidates, e.g. illness, bereavement or temporary injury, directly to Cambridge International on a *special consideration form*.

Signed ..... (supervisor)

Name (in block capitals) .....