

## UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

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| PHYSICS Paper 5 Practical Test |  | (<br>May/Ju         |  |
|--------------------------------|--|---------------------|--|
| CENTRE<br>NUMBER               |  | CANDIDATE<br>NUMBER |  |
| NAME                           |  |                     |  |

## **READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

All of your answers should be written in this Answer Booklet: scrap paper must **not** be used.

DO **NOT** WRITE IN ANY BARCODES

Answer all questions.

Graph paper is provided in this Answer Booklet. Additional sheets of graph paper should be used only if it is necessary to do so.

At the end of the examination, fasten any additional answer paper used securely to this Answer Booklet. The number of marks is given in brackets [ ] at the end of each question or part question.

| For Examiner's Use |  |  |  |
|--------------------|--|--|--|
| 1                  |  |  |  |
| 2                  |  |  |  |
| 3                  |  |  |  |
| 4                  |  |  |  |
| Total              |  |  |  |

This document consists of **5** printed pages and **3** blank pages.



|     |      | $2$ cord of $\theta_1$                      |
|-----|------|---|
| (b) | Rec  | cord of $\theta_1$                          |
| (d) | Rec  | cord of $\theta_2$                          |
| (f) | Rec  | cord of $\theta_3$ [5]                      |
| (g) | Rec  | cord of $\theta_2$                          |
| (i) | Rec  | cord of $\theta_3$ [2]                      |
| (j) | (i)  | A practical explanation for this difference |
|     |      |   |
|     |      | [1]   |
|     | (ii) | Two practical improvements                  |
|     |      | 1   |
|     |      |   |
|     |      | 2   |
|     |      | [2]   |
|     |      | [Total: 10]                                 |

**2 (a)** Record of  $h_0$  .....

(c) - (h)

| Hole | d/mm | h/mm | b/mm |
|------|------|------|------|
| 1    |      |      |      |
| 2    |      |      |      |
| 3    |      |      |      |
| 4    |      |      |      |
| 5    |      |      |      |
| 6    |      |      |      |

[3]

(i)

| $\mathbf{H}$ | +++++ | ++++        | ++++   | ++++   | ++++        | -      | ++++    | +++++  | +             | Ш   |
|--------------|-------|-------------|--|--|-------------|--------|---------|--|---------------|-----|
| -            | ++++  | ++++        | ++++   | ++++   | ++++        |        | ++++    | +++++  | -             | +H  |
| -            |       | <del></del> | <del>+ + + + + +</del>                           | ++++   |             |        |         | <del></del>                                      | ++++          | +   |
| -            | ++++  | ++++        |  | ++++   |             |        |         | +++++  | ++++          | ++  |
|              |       | ++++        |  |  | ++++        |        | -       |  | +             |     |
|              |       |             |  |  |             |        |         |  | $\neg$        |     |
|              |       |             |  |  |             |        |         |  |               |     |
| Щ            |       | $\Box$      |  |  |             |        |         | $\square$  |               | Ш   |
| -            |       | ++++        | ++++   | +++++  | +           |        | ++++    | $\cdots$   | $\bot$        | Ш   |
| -            | +++++ | ++++        | $\cdots$   | ++++   | ++++        |        | ++++    | +++++  | +++           |     |
| -            | ++++  | ++++        | ++++   | ++++   | ++++        |        | +++     | +++++  | ++++          | +   |
| -            |       | $\cdots$    | <del></del>                                      | ++++   |             |        | +++     |  | ++-           | ++  |
| -            | ++++  |             | ++++   | <del>+ + + + + +</del>                           |             |        |         | <del> </del>                                     | +++           | +   |
| -            | ++++  | ++++        | ++++   | ++++   | ++++        |        | +++     | +++++  | +++           |     |
|              |       |             |  |  |             |        |         |  |               |     |
|              |       |             |  |  |             |        |         |  |               |     |
|              |       |             |  |  |             |        |         |  |               | Ш   |
| -            | ++++  | ++++        | ++++   | ++++   | ++++        |        | +++     | +++++  | +++           |     |
| -            | +++++ | $\cdots$    | +  | $\cdots$   | +           |        | ++++    | $\cdots$   | +             | +   |
| -            | ++++  | ++++        | ++++   | ++++   | ++++        | -      | +++     | +++++  | +++           | +   |
| -            | ++++  | ++++        | ++++   | ++++   | ++++        | -      | +++     | ++++   | ++++          | +   |
|              |       | ++++        | <del>+ + + + + + +</del>                         |  |             |        |         |  | +++           | HH  |
|              |       |             |  |  |             |        |         |  |               |     |
|              |       |             |  |  |             |        |         |  |               |     |
|              |       |             |  |  |             |        |         |  |               |     |
| Ш            |       | $\Box$      | $\bot$   | $\cdots$   |             |        | $\perp$ | $\square$  |               | Ш   |
| -            | ++++  | ++++        | ++++   | ++++   | ++++        | -      | +++     | +++++  | +++           |     |
| -            | ++++  | ++++        | ++++   | ++++   | +++++       |        | +++     | +++++  | ++++          |     |
| -            | ++++  |             | ++++   | <del>                                     </del> | ++++        |        |         | <del></del>                                      | ++++          | +   |
|              |       | ++++        | ++++   |  |             |        |         |  | ++++          | +   |
|              |       |             | <del>                                     </del> |  |             |        |         | <del>                                     </del> | $\overline{}$ | +   |
|              |       |             |  |  |             |        |         |  | -             |     |
|              |       |             |  |  |             |        |         |  |               |     |
|              |       |             |  |  |             |        |         |  |               |     |
| ш            |       | ++++        | ++++   | ++++   | +           |        | $\perp$ |  | $\bot$        | ш   |
| -            | ++++  | $\cdots$    | ++++   | ++++   | ++++        | ++++   | ++++    | $\cdots$   | +++           | Ш   |
| $\mathbf{H}$ |       | ++++        |  | +  |             |        |         |  |               | +H  |
| -H           | ++++  | <del></del> | <del></del>                                      | <del> </del>                                     | ++++        |        | ++++    | <del></del>                                      | +             | +   |
|              | -     |             | <del>                                     </del> |  |             |        |         | <del>                                     </del> | ++++          | +   |
|              |       |             |  |  |             |        |         |  | $\rightarrow$ |     |
|              |       |             |  |  |             |        |         |  | $\neg$        |     |
|              |       |             |  |  |             |        |         |  |               |     |
| -            |       | ++++        | ++++   | ++++   | $\bot$      |        | ++++    | +++++  | $\bot$        | Ш   |
| -            |       | Щ           |  |  |             | $\Box$ |         |  |               | Щ   |
|              | - 1   | - 1         |  | - 1  |             |        |         |  |               | - 1 |
| 0            | 10    | 20          | 30   | 40   | 50          | 60     | 70      | 80   | 90            | 100 |
| U            | 10    | 20          | 50   | +0   | 50          | 00     | 10      | 50   | 30            | 100 |
|              |       |             |  |  |             |        |         |  |               |     |
|              |       |             |  |  | d/mm        |        |         |  |               |     |
|              |       |             |  |  | G / 1111111 |        |         |  |               |     |

| [4] |
|-----|
|-----|

| (j) | Statement |     |
|-----|-----------|-----|
|     | Reason    |     |
|     |           | [1] |

| cal |
|-----|
|     |

| [1] |  |
|-----|--|

## 3 (b) - (g)

| 3 (b) – (g) |    | 4  | For Examiner's Use |
|-------------|----|----|--------------------|
| wire        | V/ | I/ | R/                 |
| AB          |    |    | COM                |
| CD          |    |    |                    |

[8] (h) • R is proportional to dR is proportional to 1/dR is proportional to  $d^2$ R is proportional to  $1/d^2$ [1] (i) Explanation

[Total: 10]

(a) – (g)

| (a) – (g) |     | 5   | www.Po | For<br>Examiner's<br>Use |
|-----------|-----|-----|--------|--------------------------|
| d/m       | x/m | y/m | f/m    | CHIE                     |
| 0.800     |     |     |        | G.COM                    |
| 0.900     |     |     |        |                          |

[5]

| (h) | Calculation of average value of the focal | length | f |
|-----|---|--------|---|
|-----|---|--------|---|

|     | f =  | [3] |
|-----|--|-----|
| (i) | Two steps that you took to obtain an accurate result |     |
|     | 1  |     |
|     |  |     |
|     | 2  |     |
|     |  | [2] |
|     | [Total:  | 10] |

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