

**MONDAY, 8 JANUARY –
FRIDAY, 9 FEBRUARY 2024**

PHYSICS – Unit 3 (3420U30)

PRACTICAL ASSESSMENT

**INVESTIGATING THE STRENGTH
OF AN ELECTROMAGNET**

SECTION A

1 hour, plus your additional time allowance

Surname _____

First name(s) _____

Centre Number _____

Candidate Number 0 _____

ADDITIONAL MATERIALS

A calculator.

INSTRUCTIONS TO CANDIDATES

Use black ink, black ball-point pen or your usual method.

Write your name, centre number and candidate number in the spaces provided on the front cover.

Answer ALL questions.

Write your answers in the spaces provided in this booklet. If you run out of space, use the additional pages at the back of the booklet, taking care to number the question(s) correctly.

INFORMATION FOR CANDIDATES

The total number of marks available for this section of the task is 6.

The number of marks is given in brackets at the end of each question or part-question.

This task is in 2 sections, A and B. You will complete Section A in one lesson and Section B in the next science lesson.

(Turn over)

For Examiner’s use only		
	Maximum Mark	Mark Awarded
Section A	6	

Introduction

Your task is to investigate the effect of changing the number of coils of wire on an electromagnet.

Apparatus Required

The following apparatus is required for each group: (each group should consist of no more than three candidates).

1 × stand and clamp

1 × soft iron rod

1 × 120 cm enamelled copper wire with crocodile clips

1 × 6 V battery

2 × connecting wires

1 × plastic pot of panel pins

ACCESS TO:

balance

READ THE METHOD AND ANSWER

QUESTIONS 1.(a) AND 1.(b) BEFORE CARRYING OUT THE EXPERIMENT AND RECORDING YOUR RESULTS.

(Turn over)

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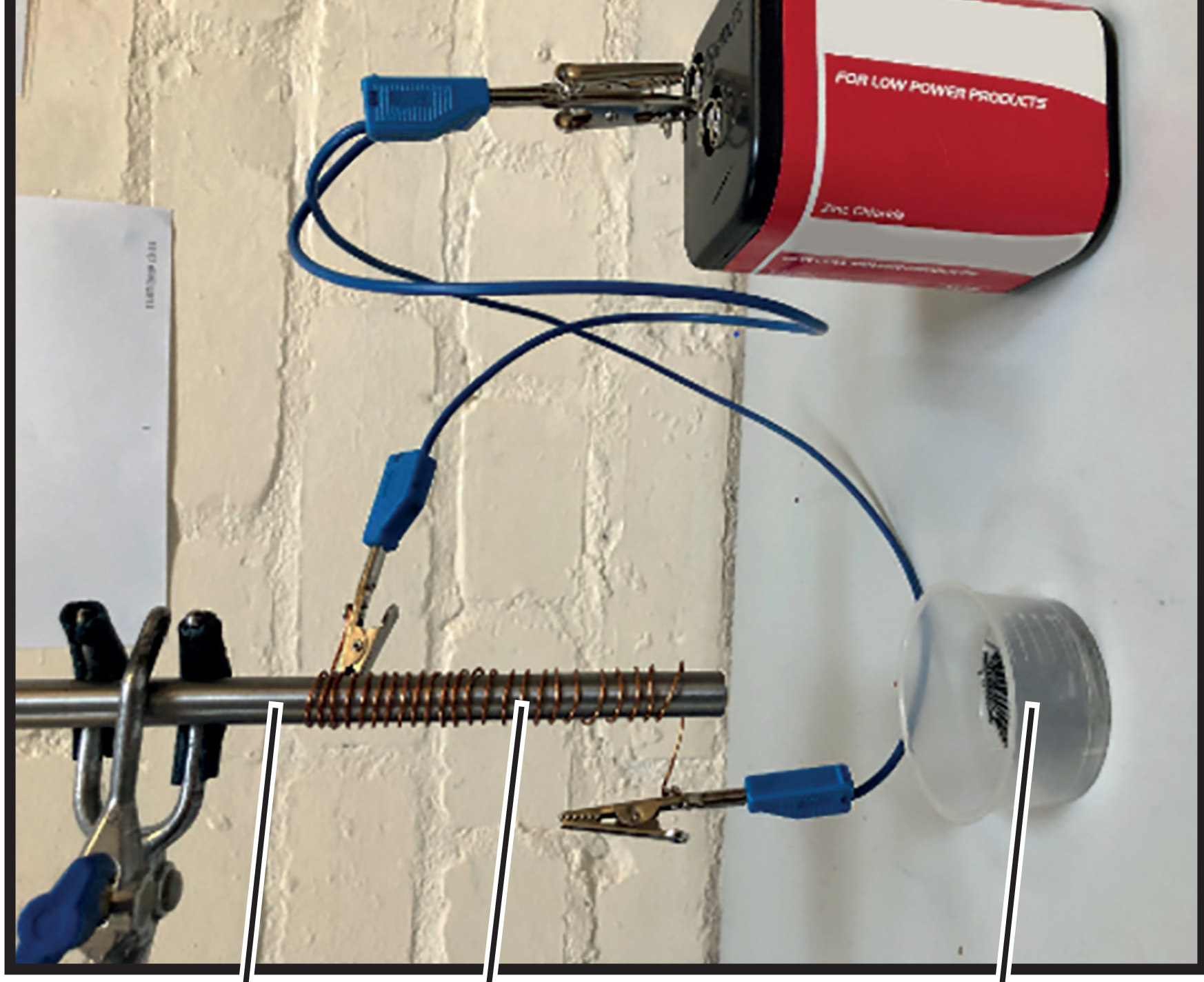
TURN OVER

DIAGRAM

soft iron rod

enamelled
copper wire

plastic pot
of panel pins



METHOD

- 1. Wrap the wire 10 times around the rod to make a coil of 10 turns, close to the bottom end of the rod.**
- 2. Connect the battery.**
- 3. Lift the pot of panel pins until it touches the end of the rod.**
- 4. Move the pot away. Disconnect the battery and collect the pins which were attached to the rod.**
- 5. Use a balance to measure and record the mass of pins collected.**
- 6. Repeat steps 2–5 one more time to get two results in total.**
- 7. Repeat steps 1–6 for coils of 15, 20, 25 and 30 turns.**

(Turn over)

SECTION A

Answer ALL questions.

1 (a) State a hypothesis for this experiment. [1 mark]

(Turn over)

**1 (b) Explain why steel rather than copper pins were used in this experiment.
[1 mark]**

**YOU MAY RECORD RAW RESULTS
IN THE SPACE BELOW.**

(Turn over)

**1 (c) Present your results in a table.
Include all of your results. [4 marks]**

6

END OF PAPER

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