Surname	Centre Number	Candidate Number
First name(s)		0

GCSE

S24-3420U30-1A

MONDAY, 8 JANUARY – FRIDAY, 9 FEBRUARY 2024

PHYSICS – Unit 3 (3420U30)

PRACTICAL ASSESSMENT

INVESTIGATING THE STRENGTH OF AN ELECTROMAGNET

SECTION A

1 hour

3420U301A
01

For Examiner's use only		
	Maximum Mark	**Mark Awarded**
Section A	**6**	

ADDITIONAL MATERIALS

A calculator.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet. If you run out of space, use the additional page(s) 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.

Introduction

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

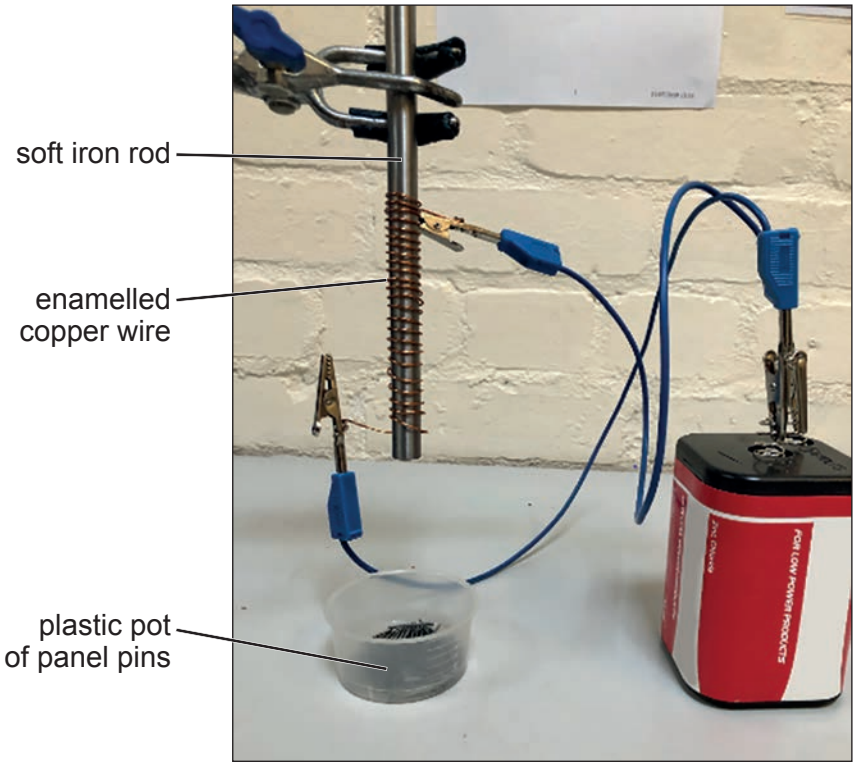
Apparatus Required

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

Diagram



Read the method and answer questions 1.(a) and 1.(b) before carrying out the experiment and recording your results.

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.

Examiner only

SECTION A

Answer **all** questions.

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

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

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You may record raw results in the space below.

Examiner only

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

END OF PAPER

Question number	Additional page, if required. Write the question number(s) in the left-hand margin.

Examiner only

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