

Surname	Centre Number	Candidate Number
First name(s)		2



GCE AS

B480U10-1



S25-B480U10-1



MONDAY, 12 MAY 2025 – MORNING

GEOLOGY – AS component 1
Geological Enquiries

1 hour 30 minutes

ADDITIONAL MATERIALS

In addition to this examination paper, you will need:

- the Resource Sheet
- the Mineral Data Sheet
- the Photographs of Specimens sheet
- Specimens **A, D, F** and **H**
- geological equipment for testing specimens
- a strip of plain paper
- a calculator
- a protractor
- a ruler

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	12	
2.	5	
3.	14	
4.	9	
5.	7	
6.	13	
Total	60	

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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 geology is **not** designed to represent any particular area.

The Mineral Data Sheet and **Map 1** and **Photograph 1** are provided on separate resource sheets.

Four specimens, **A, D, F** and **H**, are provided for use.

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

The assessment of the quality of extended response (QER) will take place in Question **3**.



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Answer **all** questions.

Study **Map 1** on the Resource Sheet before answering **Questions 1–6**.

1. **Specimen A** is representative of **Rock Unit A** on **Map 1**.

- (a) Complete **Figure 1** by drawing the texture of **Specimen A** to the scale provided. [3]

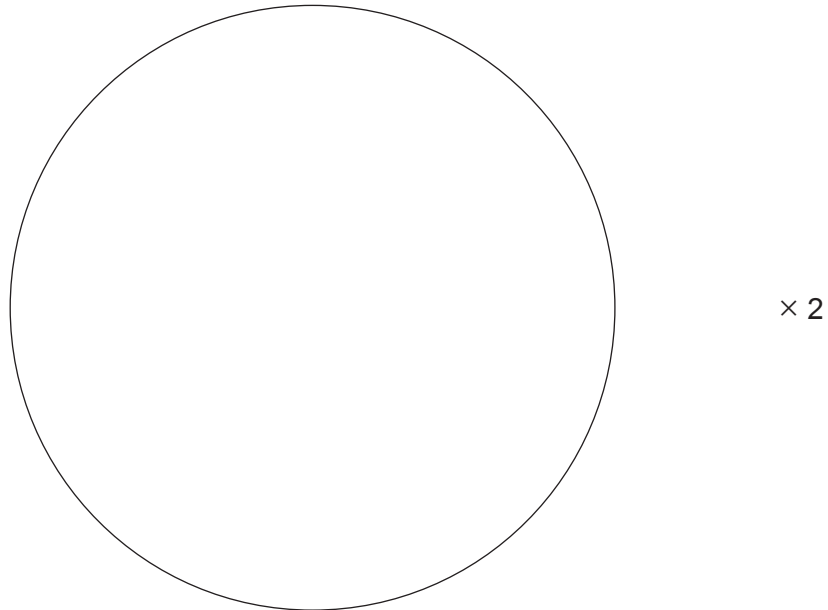


Figure 1

- (b) **Photograph 1** on the Resource Sheet is a photomicrograph of a sample taken from **Rock Unit B**.

- (i) Describe the texture of **Rock Unit B**. [3]

.....

.....

.....

.....

- (ii) State the name of mineral **T** in **Photograph 1**. You may wish to refer to the Mineral Data Sheet. [1]

.....

- (iii) State the name of the rock forming **Rock Unit B**. [1]

.....



- (c) A student has concluded that **Rock Unit B** is a more mature sedimentary rock than **Rock Unit A**. Evaluate this statement with reference to the textures of **Specimen A** and the rock in **Photograph 1**. [4]

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2. **Specimen H** was collected from a vein in **Rock Unit C** on **Map 1**.

(a) **Specimen H** can be identified by diagnostic tests/observations. Complete **Table 1** by:

- stating and describing **two** tests/observations of properties useful for diagnosis
- stating the results.

[4]

Property	Description of test/observation	Result of the test/observation described
colour	observation of the colour of reflected light	white
•	•	•
•	•	•

Table 1

(b) State the name of **Specimen H**.

[1]

.....



3. **Specimen F** is a plaster cast of a fossil found in **Rock Unit F** on **Map 1**.

- (a) (i) Draw a representative area of **Specimen F**, in **Figure 3a**, to the scale provided. [3]
 (ii) Label the name of one hard part of **Specimen F**. [1]

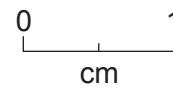
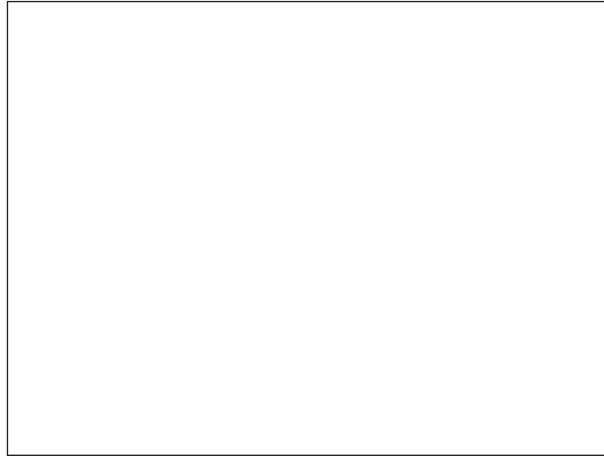


Figure 3a

- (iii) Name the fossil group to which **Specimen F** belongs. [1]

.....



- (b) **Figure 3b** shows a fossil found in a sample taken from **Rock Unit C** on **Map 1**. **Figure 3c** is a flowchart useful for the identification of the fossil in **Figure 3b**.

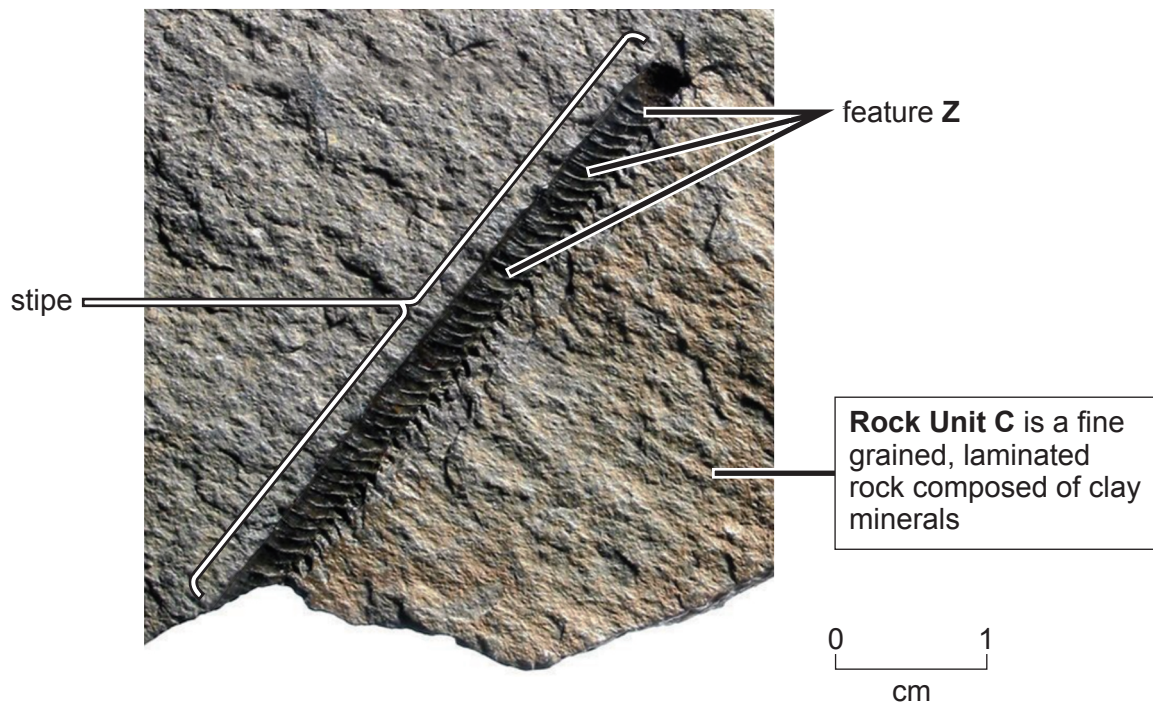


Figure 3b

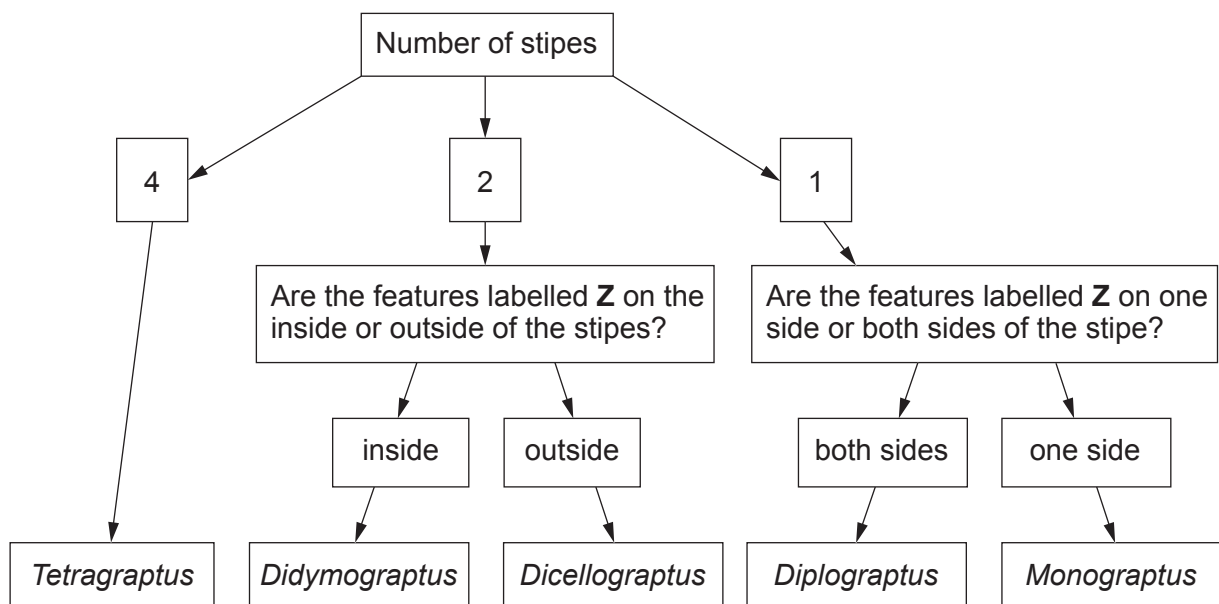


Figure 3c



.....

.....

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.....

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.....

.....

.....



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4. **Specimen D** is representative of **Rock Unit D** on **Map 1**.

- (a) (i) Using evidence from **Specimen D** only, name the rock forming **Specimen D**. Give **two** reasons for your answer. [3]

Name

1.

.....

2.

.....

- (ii) It has been suggested that **Rock Unit D** forms a pluton.

Complete **Table 2** by stating:

- **one** piece of evidence from **Map 1**, and
- **one** piece of evidence from **Specimen D**

to support this conclusion.

[2]

	Evidence
Map 1	•
Specimen D	•

Table 2



- (b) **Figure 4** shows the equipment used by a student to calculate the density of a specimen of **Rock Unit D**.

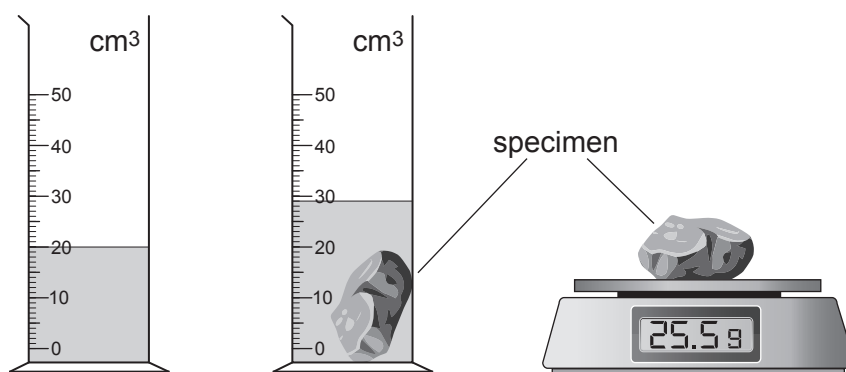


Figure 4

- (i) Use the data in **Figure 4** to calculate the density of the specimen of **Rock Unit D**. Show your working and state the unit. [2]

Answer	Unit
•	•

- (ii) Suggest **two** steps that the student should have taken to minimise any errors that could have occurred when using the equipment shown in **Figure 4**. [2]

1.

.....

2.

.....



5. Refer to **Fault F1**, **Fault F2** and **Fault F3** on **Map 1**.

(a) Complete **Table 3** to compare the three faults.

[5]

	Fault F1	Fault F2	Fault F3
Direction of dip of fault plane	southeast	•	
Relative movement of hanging wall	•	downwards	
Dip angle of fault plane	75°	70°	•
Fault type [normal, reverse, thrust, strike-slip]	•	normal	•

Table 3

(b) (i) Using evidence from **Map 1**, state the throw of **Fault F2**.

[1]

.....

(ii) State which **one** of the following statements is correct. Tick (✓) **one** box only.

[1]

- F2 is older than the unconformity but younger than F3
- F2 is younger than the unconformity and F3
- F2 is younger than the unconformity but older than F3
- F2 is the same age as the unconformity and older than F3

☐
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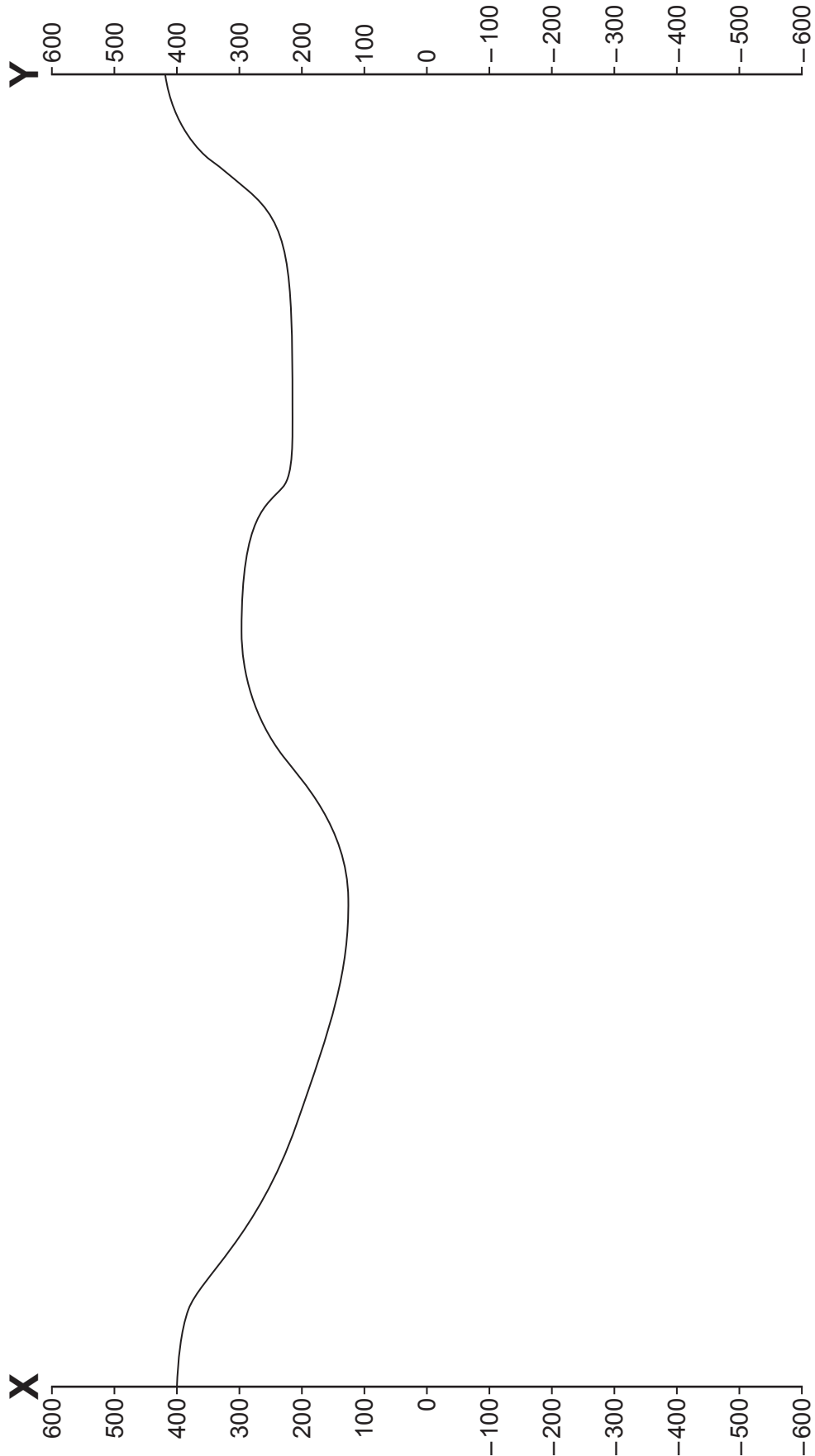



6. The topographic profile below was taken along the line **X–Y** on **Map 1**. Complete the sketch of the geological cross-section along this line using **Map 1**.

- Draw the rock units. Use similar ornament, or letters, to those on **Map 1**
- Draw and label any **fold axes**, with the correct symbol
- Mark on the extent of any metamorphic aureoles
- Draw and label any **faults**. Draw **arrows** alongside faults to show relative movement
- **Project** the rock units and structures **above** the ground surface to illustrate any cross-cutting relationships.

[13]

Metres relative to sea level



Acknowledgement

Figure 3b <https://alchetron.com/> Photograph Barry Marsh



[illegible]

