

Questions 5-8 relate to the British Geological Survey 1:25 000 geological map extract from the Clitheroe and Gisburn Sheet.

This section should take approximately 1 hour to complete.

- Maximum vertical thickness m

- [illegible]

1214-01

- (iii) Suggest **two** possible factors responsible for the variation in outcrop widths identified in **Table 5**. [2]

Factor 1

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Factor 2

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- (iv) Account for the “v shape” in the outcrop pattern of the Pendleside Sandstone (PdS) around **GR 810 430**. [2]

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Total 10 marks

6. **Table 6** and **Figure 6a** show the results of an investigation of three different rock samples from the map area.

Sample characteristics	Pendleside Sandstone (PdS) (within LBS)	Upper Bowland Shale (UBS)	Pendle Grit (PG)
Fossils groups	trilobites	goniatites, bivalves	poor – some plant remains
Sedimentary structures	bedding	laminations	channels, erosion surfaces, flute and groove casts; some lateral and vertical grading of sediments
Sand percentage	60	0	•
Silt percentage	25	5	•
Clay percentage	15	95	10

Table 6

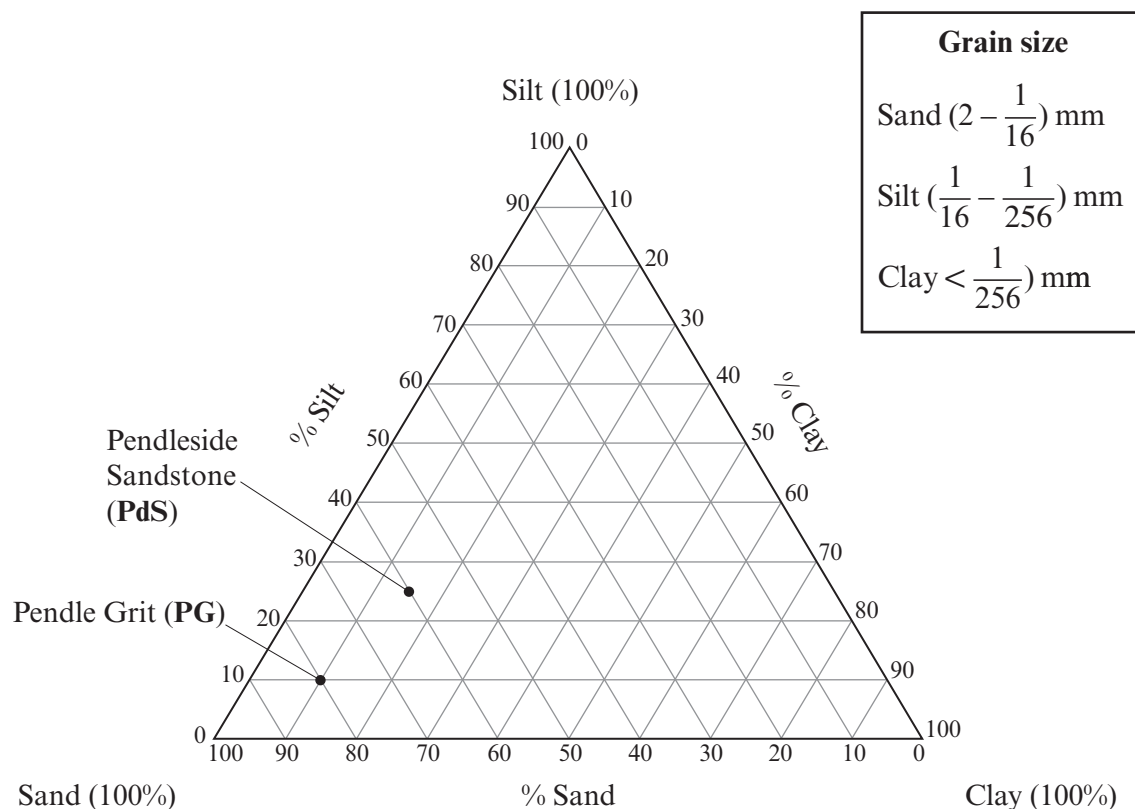


Figure 6a

(a) Using **Table 6** and **Figure 6a** as appropriate:

- (i) complete **Table 6** to show the percentage of sand, silt and clay in the Pendle Grit (PG); [2]
- (ii) plot the percentage of sand, silt and clay in the Upper Bowland Shale (UBS) on **Figure 6a**. Label with an arrow (←UBS); [1]
- (iii) state which of the three rock samples (Pendle Grit, Pendleside Sandstone or Upper Bowland Shale) is the **most** poorly-sorted. [1]

(b) Refer to the **generalised geological column** and data in **Table 6** and **Figure 6a**. Describe and explain the evidence for the environments of deposition of the Upper Bowland Shale (UBS) and the overlying Pendle Grit (PG). [4]

Upper Bowland Shale

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Pendle Grit

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(c) Explain why a spring has formed at Deep Clough (GR 805 405). [2]

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(d) **Figure 6b** illustrates one of the fossil groups identified in **Table 6**.

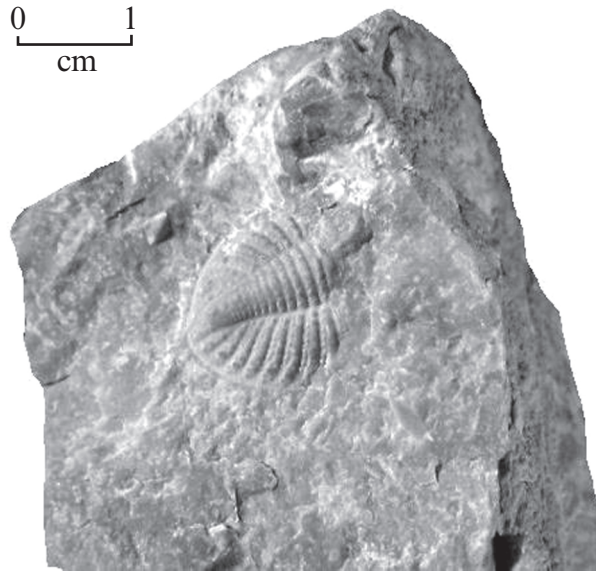


Figure 6b

- (i) State the fossil group to which this specimen belongs. [1]

Fossil group

- (ii) Assess **how useful** this fossil **alone** would be in determining the [3]
- mode of life of the original organism and
 - the environment of deposition of the rock in which it is found.

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Total 14 marks

7. **Figure 7** is a copy of part of the **geological map**. From the outcrop and dips a student identified **two plunging folds** on the **geological map**.

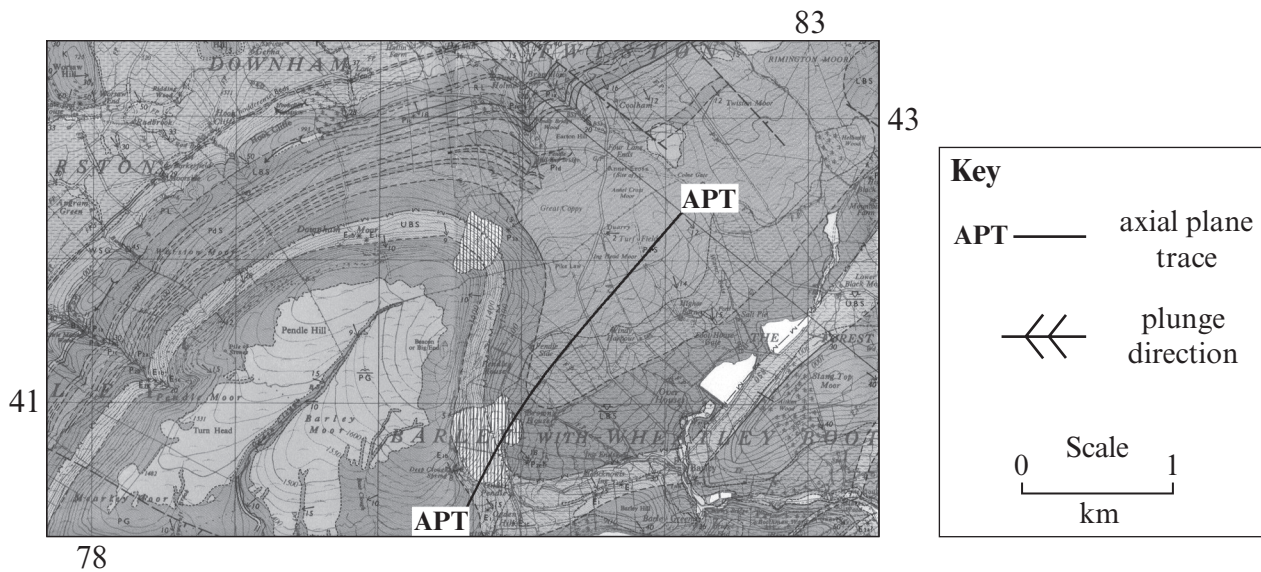


Figure 7

The axial plane trace of one plunging fold is marked on **Figure 7**.

- (a) For this marked fold, name the type of fold and state the direction of plunge. [2]

type of fold	•
direction of plunge	•

- (b) On **Figure 7**, draw the axial plane trace of another plunging fold. Use the symbols in the key to indicate the direction of plunge of this fold. [2]

- (c) The student described these plunging folds as having

“...a wavelength of approximately 1 km...”.

Critically evaluate this statement.

[2]

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Total 6 marks

- [7]