UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

GEOGRAPHY **2217/22**

Paper 2 **May/June 2012**

2 hours 15 minutes

Candidates answer on the Question Paper.

Additional Materials: Ruler
Calculator
Protractor
Plain paper

1:50 000 Survey Map Extract is enclosed with this question paper.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces provided.
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.
DO **NOT** WRITE IN ANY BARCODES.

Section A
Answer **all** questions.
Section B
Answer **one** question.

The Insert contains Photograph A for Question 6, Figs 9 and 10 for Question 7, and Figs 14 and 15 for Question 8.
The Survey Map Extract and the Insert are **not** required by the Examiner.
Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
Section A	
Q1	
Q2	
Q3	
Q4	
Q5	
Q6	
Section B	
Q7	
Q8	
Total	

This document consists of **25** printed pages, **3** blank pages and **1** Insert.

Section A

Answer **all** questions in this section.

For Examiner's Use

1 Study the 1:50 000 map of Marondera, Zimbabwe.

(a) (i) Give the four figure grid reference of the square that contains the disused rifle range, south of Marondera.

.....[1]

(ii) Give the six figure grid reference for the junction of the railway main line with the railway branch line.

.....[1]

(iii) How far is it **by railway**, to Harare, from the western edge of the map?

.....[1]

(b) Study the area of the map indicated in Fig. 1 and answer the questions that follow.

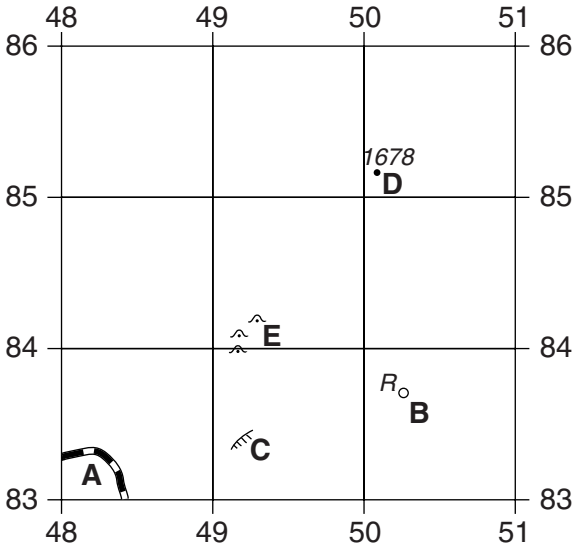

Fig. 1

(i) Name:

- the type of road at **A**; .....[1]
- feature **B**; .....[1]
- feature **C**; .....[1]
- feature **D**; .....[1]
- feature **E**. .....[1]

(ii) What is the land use above 1680 m?

.....[1]

(iii) Shade on Fig. 1 to indicate the extent of cultivated land. [2]

(c) Find the bench marks indicating the height of the road at 429894 and 417906.

(i) Measure the distance of the road between the two benchmarks. Give your answer in metres.

.....[1]

(ii) Use the bench mark heights and your answer to **(c)(i)** to calculate the gradient of this section of road. Show your calculation.

.....

.....

Gradient is 1: .....[2]

(iii) What is the direction of the road from 429894 to 417906?

.....[1]

(d) **(i)** Complete Fig. 2, a cross-section from 420840 to 450840. [1]

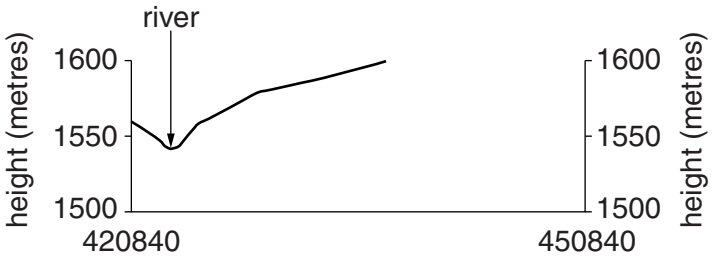

Fig. 2

(ii) Use a labelled arrow to mark on Fig. 2, the position of the other river that crosses the section line. [1]

(e) Describe the road network in grid square 4588.

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.....[3]

[Total: 20 marks]

2 Study Fig. 3, which shows the Mercalli scale levels of intensity for the 2010 Haitian earthquake.

For Examiner's Use

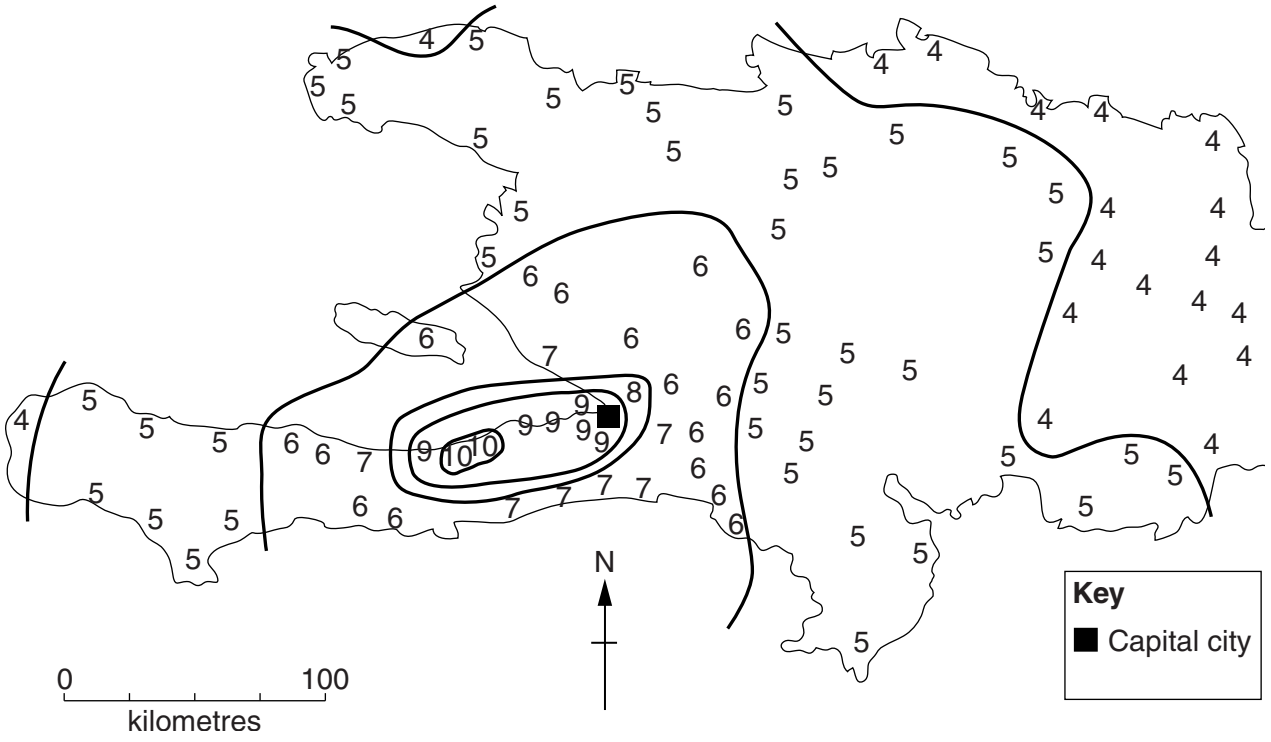

Fig. 3

(a) (i) Complete Fig. 3 by drawing the line to separate level 6 from level 7. [1]

(ii) On Fig. 3, shade the area that experienced an earthquake intensity of level 10. [1]

(b) (i) What was the intensity of the earthquake at the capital city?

.....[1]

(ii) Estimate how far the capital city was from the strongest intensity. Circle the correct answer.

10 km 50 km 75 km 100 km

[1]

(c) Fig. 4 is an extract from the Mercalli scale.

For Examiner's Use

Level 5	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
Level 6	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
Level 7	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.

Fig. 4

(i) What level of damage would be expected in a "well-built ordinary structure" at Mercalli scale level 7?

.....[1]

(ii) Suggest why it is necessary to know how well-built the buildings are when assessing the Mercalli scale level.

.....

.....[1]

(iii) Suggest why it would be necessary to interview more than one person to assess the Mercalli scale level at a particular place.

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.....[2]

[Total: 8 marks]

3 Study Fig. 5, which shows a cross-section of a coastline.

For Examiner's Use

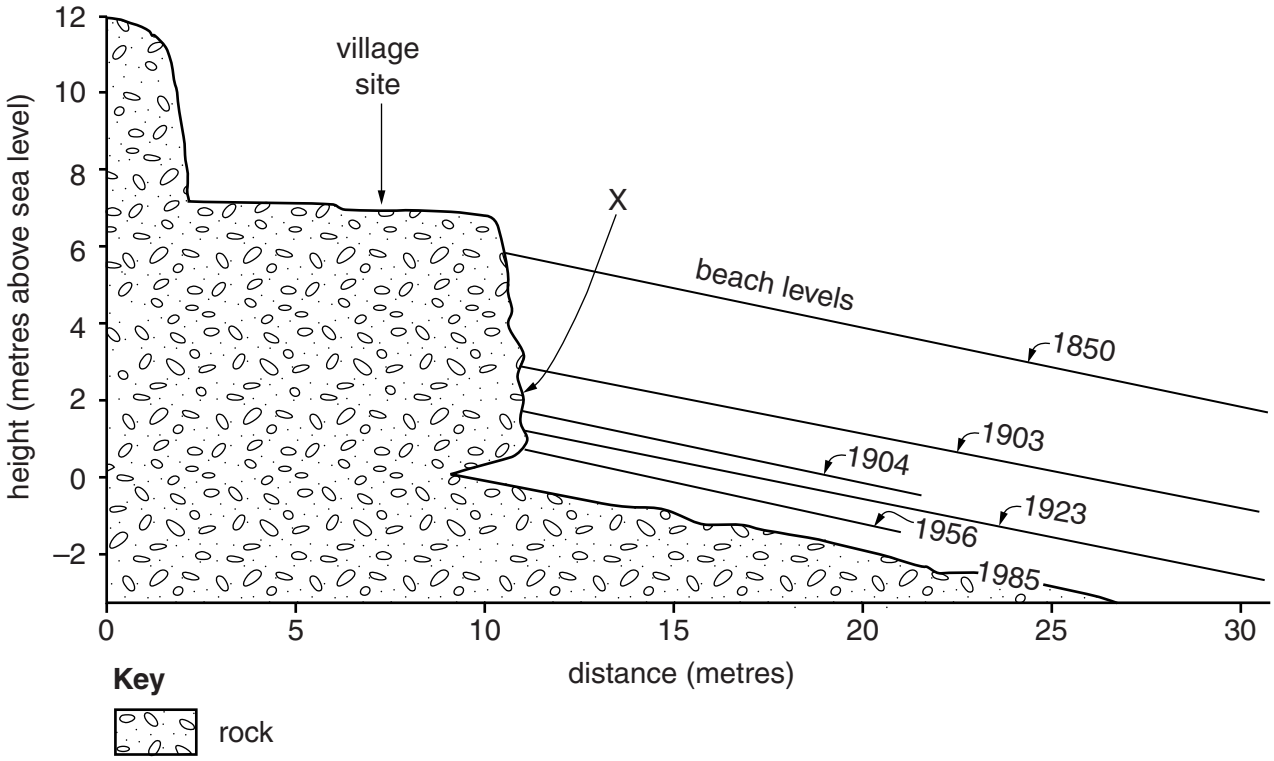

Fig. 5

(a) (i) How has the level of the beach changed since 1850?

.....[1]

(ii) Between which years was the change in beach level most rapid?

.....[1]

(iii) At what height above sea level is the village?

.....[1]

(b) On Fig. 5, use labelled arrows to indicate the positions of:

- wave-cut platform
- notch [2]

(c) Suggest how coastal processes may cause the position of cliff X, marked on Fig. 5, to change in the future.

For Examiner's Use

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[Total: 8 marks]

4 Study Fig. 6, which shows Mexico's population (bars) and growth rate (line).

For Examiner's Use

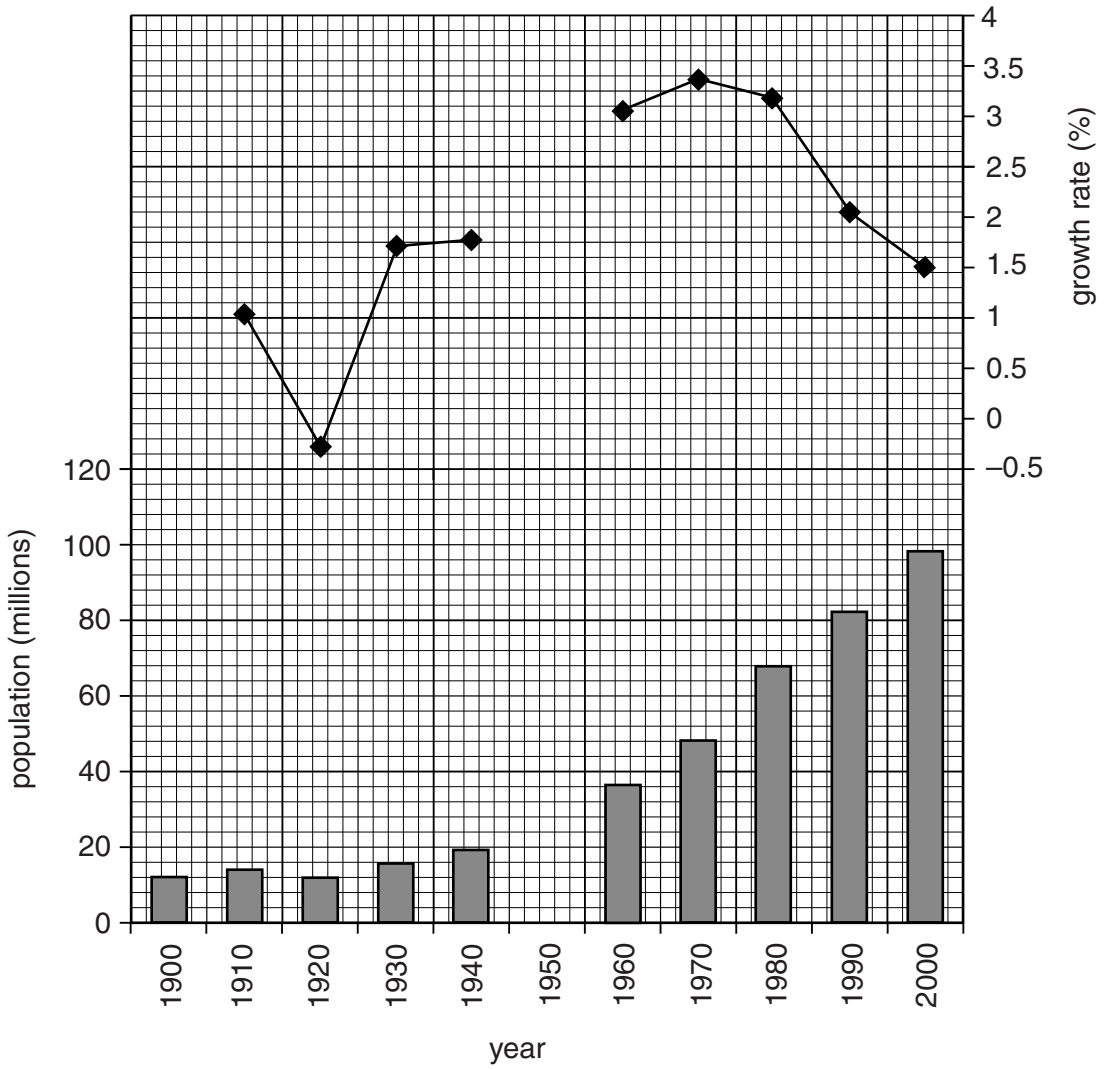

Fig. 6

(a) (i) Complete Fig. 6 to show a population of 28 million and a growth rate of 2.6% in 1950. [2]

(ii) Which year shows a decrease in population?

.....[1]

(iii) Describe the change in annual growth rate from 1910 to 1970.

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.....[3]

(b) Fig. 7 shows Mexico's population structure in 2009.

For Examiner's Use

Fig. 7

(i) Complete Fig. 7 to show 1 million females aged 70–74 in 2009. [1]

(ii) Fig. 6 shows that the growth rate has fallen in recent years. What evidence on Fig. 7 supports this?

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.....[1]

[Total: 8 marks]

5 Study Fig. 8, which shows fertilizer use and percentage of the workforce in agriculture for selected countries.

For Examiner's Use

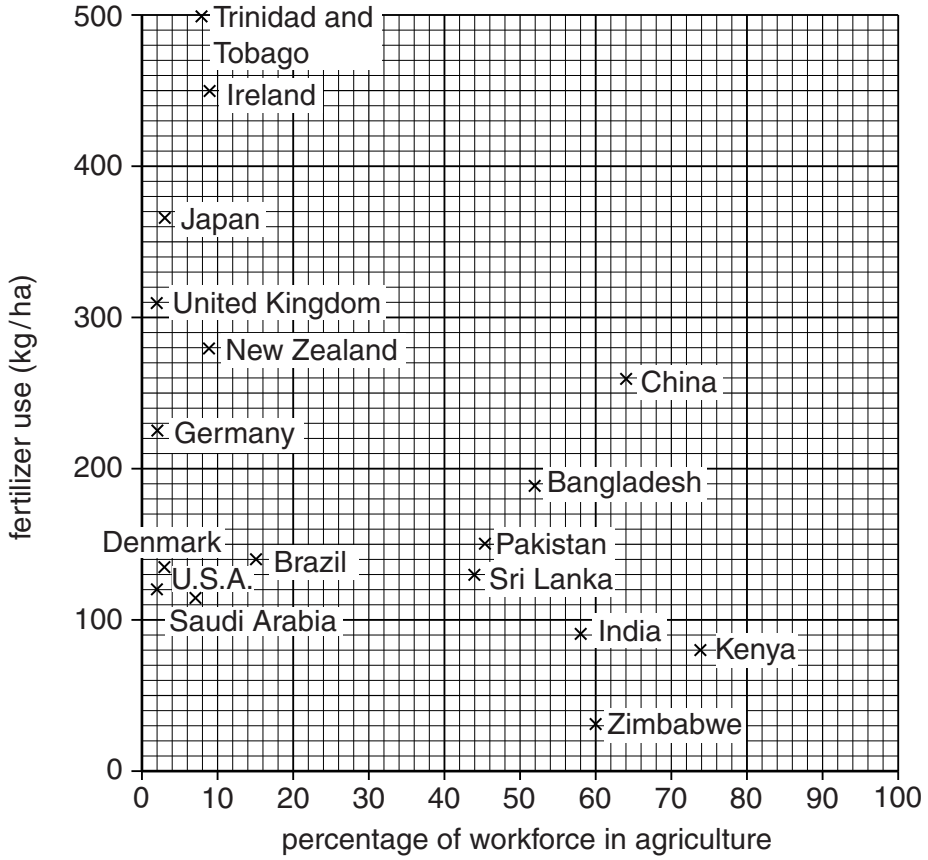

Fig. 8

(a) (i) Which country has the largest percentage of the workforce in agriculture?

.....[1]

(ii) Which country uses the largest amount of fertilizer per hectare?

.....[1]

(iii) How much fertilizer per hectare is used in China?

.....[1]

(iv) Name **two** countries that have the same percentage of the workforce in agriculture.

.....[1]

(b) Comment on the relationship between fertilizer use and percentage of workforce in agriculture. You must use data to support your answer.

For Examiner's Use

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[Total: 8 marks]

[Turn over

For Examiner's Use

6 Study Photograph A (Insert), which shows part of the island of Barbados.

(a) Describe the physical features of the area shown in the photograph.

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.....[3]

(b) **(i)** What is the cloud type shown in the photograph? Circle the correct answer.

Cirrus Cumulus Stratus

[1]

(ii) Using Photograph A, estimate the number of oktas of cloud cover, based on the field of view of the photograph only. Circle the correct answer.

0 3 6 8

[1]

(c) **(i)** From Photograph A, give **two** pieces of evidence for tourism in the area.

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.....[2]

(ii) Give evidence, from the photograph, for secondary industry in the area.

.....[1]

[Total: 8 marks]

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Section B

For Examiner's Use

Answer **one** question in this section.

7 Students who lived near a desert area in Saudi Arabia, were investigating the effects of river processes in a valley called a wadi. Although there was no river flowing in the valley when the students were doing their fieldwork, they could see some evidence of the work of the river when it had flowed through the valley.

The students investigated the following hypotheses:

Hypothesis 1: *The gradient of the valley floor decreases downstream.*

Hypothesis 2: *The river's bedload becomes smaller and more rounded downstream.*

(a) To investigate these hypotheses the students worked at three sites along the valley, one in the upper, one in the middle and one in the lower course.

(i) To test **Hypothesis 1** they measured the slope of the valley floor as shown in Fig. 9 (Insert).
Describe how they measured the slope.

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.....[3]

The students made four measurements at each site. These are shown in Table 1 below.

Table 1

Students' measurements

	Upper course site	Middle course site	Lower course site
Measurement	angle of slope (°)	angle of slope (°)	angle of slope (°)
1	25	20	17
2	30	22	10
3	27	25	7
4	28	23	12
Average (mean)	27.5		11.5

(ii) Calculate the average (mean) angle of slope in the middle course of the valley. Put your answer into Table 1. [1]

(iii) Why did the students make four measurements at each site?

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.....[1]

(iv) What conclusion would the students make about **Hypothesis 1:** *The gradient of the valley floor decreases downstream*? Support your answer with evidence from Table 1.

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.....[2]

(b) To investigate **Hypothesis 2:** *The river's bedload becomes smaller and more rounded downstream* the students measured the bedload in the wadi at each of the three sites. Using a random sampling method they picked 20 rocks. They then measured the size and weight of each rock and estimated its roundness.
The equipment which the students used to measure the bedload is shown in Fig. 10 (Insert).

Describe how the students made each measurement.

Size .....

.....

.....

Weight .....

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.....

Roundness .....

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.....[4]

(c) The students' results from the middle course site are shown in Table 2 below.

For Examiner's Use

Table 2

Students' results at middle course site

Sample number	Size of rock (cm)	Weight of rock (grammes)	Roundness score
1	11	470	3
2	12	320	1
3	8	200	3
4	7	230	2
5	9	130	3
6	13	380	2
7	8	160	4
8	5	190	3
9	9	230	1
10	6	200	3
11	7	140	3
12	4	110	4
13	8	310	2
14	5	100	4
15	8	150	3
16	9	160	2
17	11	110	3
18	9	220	3
19	8	160	4
20	10	240	2

(i) Plot the size of rock samples 6 and 9 in the middle course site on Fig. 11 below. [2]

For Examiner's Use

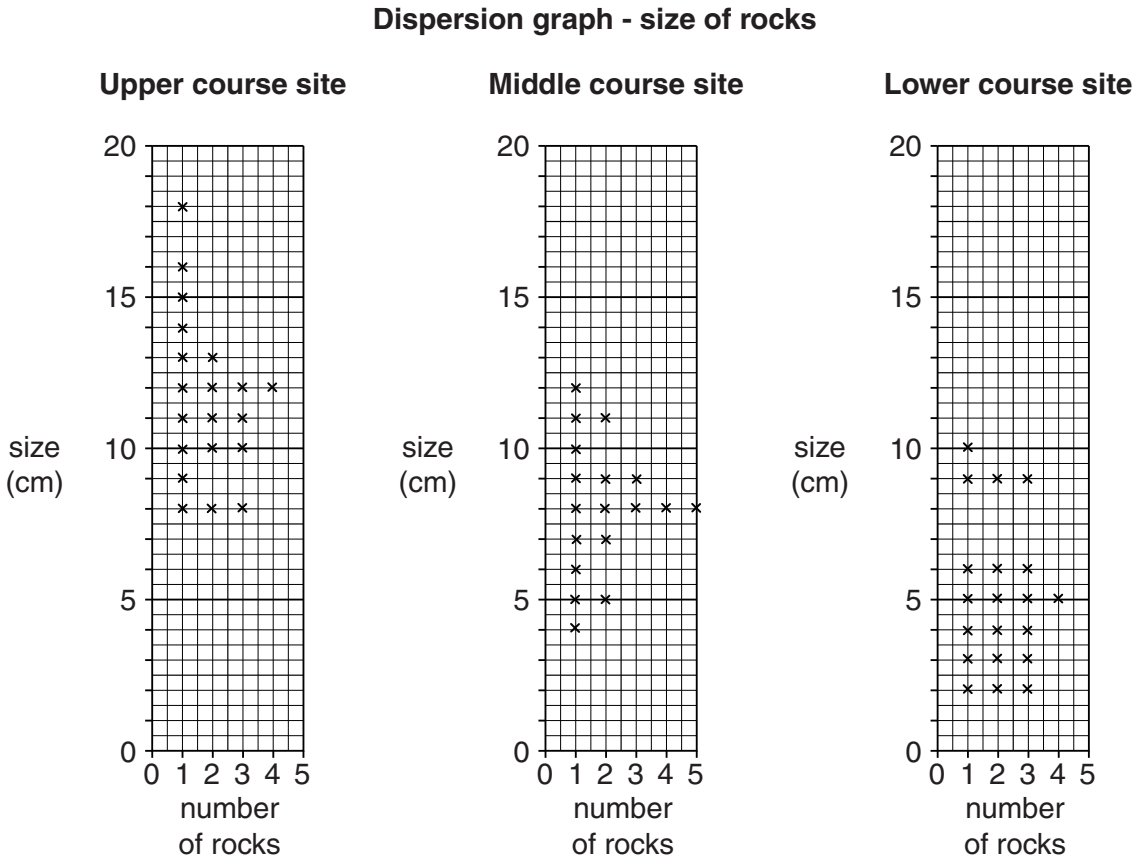

Fig. 11

(ii) Use the results in Table 2 to complete the histogram for the middle course site in Fig. 12 below. [3]

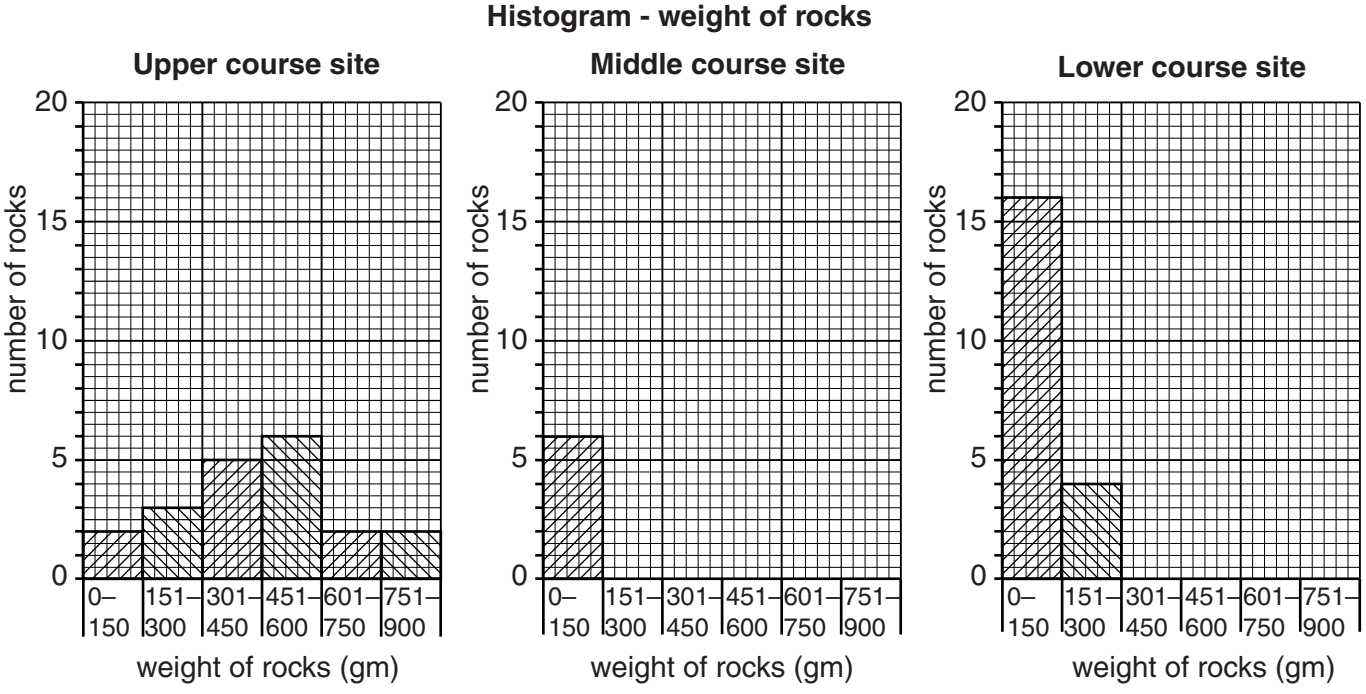

Fig. 12

(iii) Look again at the roundness score chart in Fig. 10 (Insert). To plot the classification of roundness on pie graphs, the students produced Table 3 below.

Table 3

Percentage of rocks in roundness classes

	Class 1	Class 2	Class 3	Class 4	Class 5
Upper course site	30	50	20	0	0
Middle course site	10	25	45	20	0
Lower course site	0	20	30	45	5

Use the data in Table 3 to complete the middle course site pie graph in Fig. 13 below. [2]

Roundness of rocks

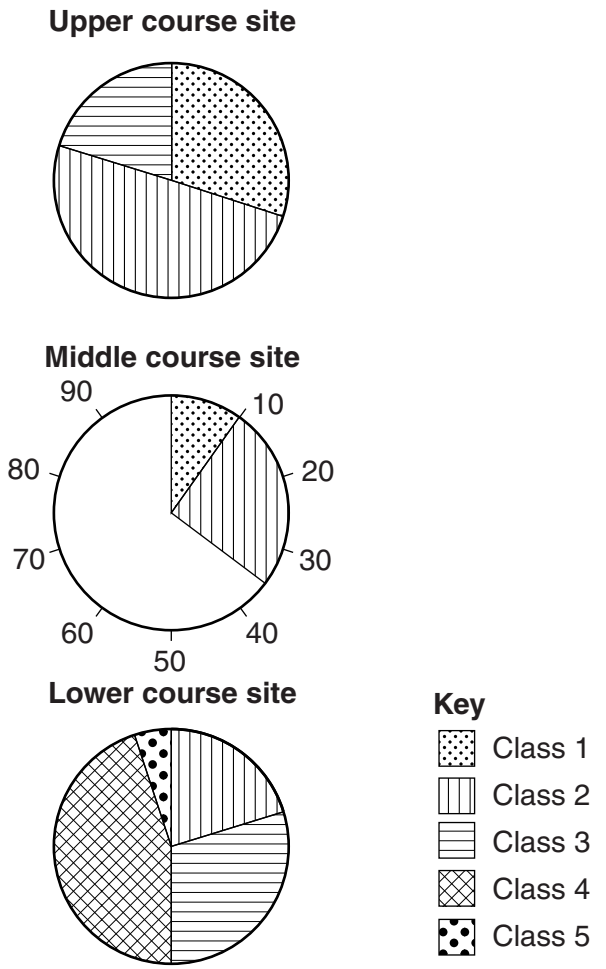

Fig. 13

(iv) Do the results of the students' fieldwork support **Hypothesis 2:** *The river's bedload becomes smaller and more rounded downstream*?
Support your conclusions with evidence from Figs 11, 12 and 13.

For Examiner's Use

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.....[4]

(v) Give **two** reasons why the river's bedload changes downstream.

1 .....

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2 .....

.....[2]

(d) Exfoliation is one weathering process which affects rocks in a dry river bed in a desert. Describe this process.

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.....[3]

(e) Suggest **three** ways that the students could have improved their data collection methods used to investigate the two hypotheses.

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1 .....

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2 .....

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3 .....

.....[3]

[Total 30 marks]

For Examiner's Use

8 Four students in Workington in Cumbria in the U.K. read in the local newspaper about a plan to build six wind turbines on a local hilltop near to their school. The newspaper report said that some local people were objecting to the plan. The students decided to investigate the views of local people on wind power and the possible location of the wind turbines near to where they lived.

The students investigated the following hypotheses:

Hypothesis 1: *Most local people think that wind power is a good way to generate electricity.*

Hypothesis 2: *Most local people think that wind turbines should not be built on the hilltop.*

(a) (i) To begin their investigation the students divided into two pairs to think of some questions to include in a questionnaire. The questions produced by one pair are shown in Fig. 14 (Insert).

Suggest **two** weaknesses of the **questions** in this questionnaire pointed out by their teacher.

1 .....

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2 .....

.....[2]

(ii) The questionnaire produced by the other pair was approved by their teacher. This is shown in Fig. 15 (Insert). Why is this a better questionnaire than the one in Fig. 14?

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.....[3]

(iii) Before using the questionnaire shown in Fig. 15, the four students thought about the best way to make use of it. They decided to ask the opinion of 100 people.

Describe a suitable sampling method for the students to select 100 people.
Explain why you have chosen this method.

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.....[3]

For Examiner's Use

(b) The results of the question (*Do you think that generating electricity by wind power is a good idea?*) and reasons for the answer are shown in Table 4 below.

Table 4

Answers to Question: Do you think that generating electricity by wind power is a good idea?

Answer	Number of people	Answer	Number of people
YES	72	NO	28
Wind power does not pollute the atmosphere	46	Wind turbines only work when it is very windy	16
Wind is free	19	Wind turbines do not produce much power	8
Wind power is renewable	7	Wind power is expensive	4

(i) What is the most common reason given by the 100 people questioned **against** using wind power to generate electricity?

.....

.....[1]

(ii) Complete Fig. 16 below, by drawing in the two missing bars on the graph. [2]

Reasons given by local people

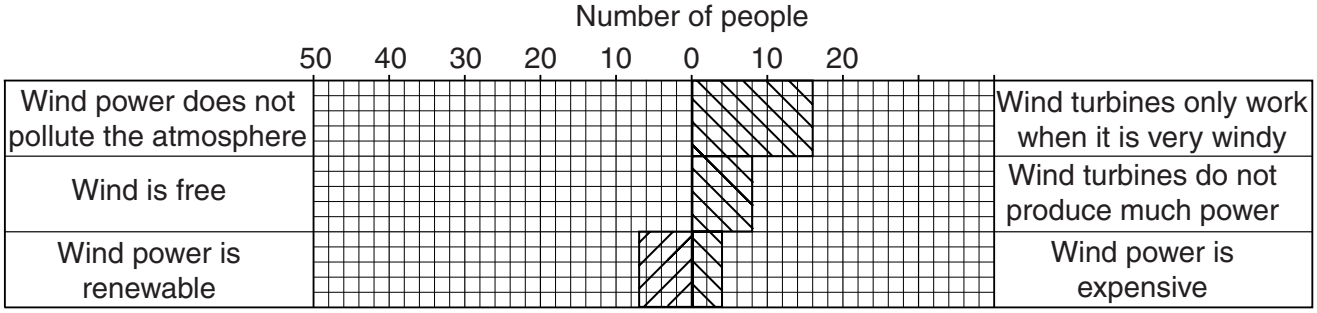

Fig. 16

(iii) Do the results shown in Table 4 and Fig. 16 support **Hypothesis 1:** *Most local people think that wind power is a good way to generate electricity*?
Use data to support your conclusion.

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.....[2]

(iv) Suggest **two** reasons, not shown in Table 4, why wind power is a good way to generate electricity.

For Examiner's Use

1 .....

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2 .....

.....[2]

(c) The opinions of people about whether the local area is a good location to build wind turbines are shown in Table 5, below.

Table 5

The opinions of 100 local people

Opinion	Agree strongly	Agree	Disagree	Disagree strongly
Wind turbines will create a lot of noise	70	20	7	3
Wind turbines will spoil the view	20	40	28	12
Wind turbines will stop tourists visiting the area	7	23	52	18
Wind turbines will be a danger to walkers	7	9	60	24
Wind turbines will create few jobs in the area	21	31	26	22

(i) Complete the results of the statement 'Wind turbines will stop tourists visiting the area' on Fig. 17 below. [3]

The opinions of 100 local people

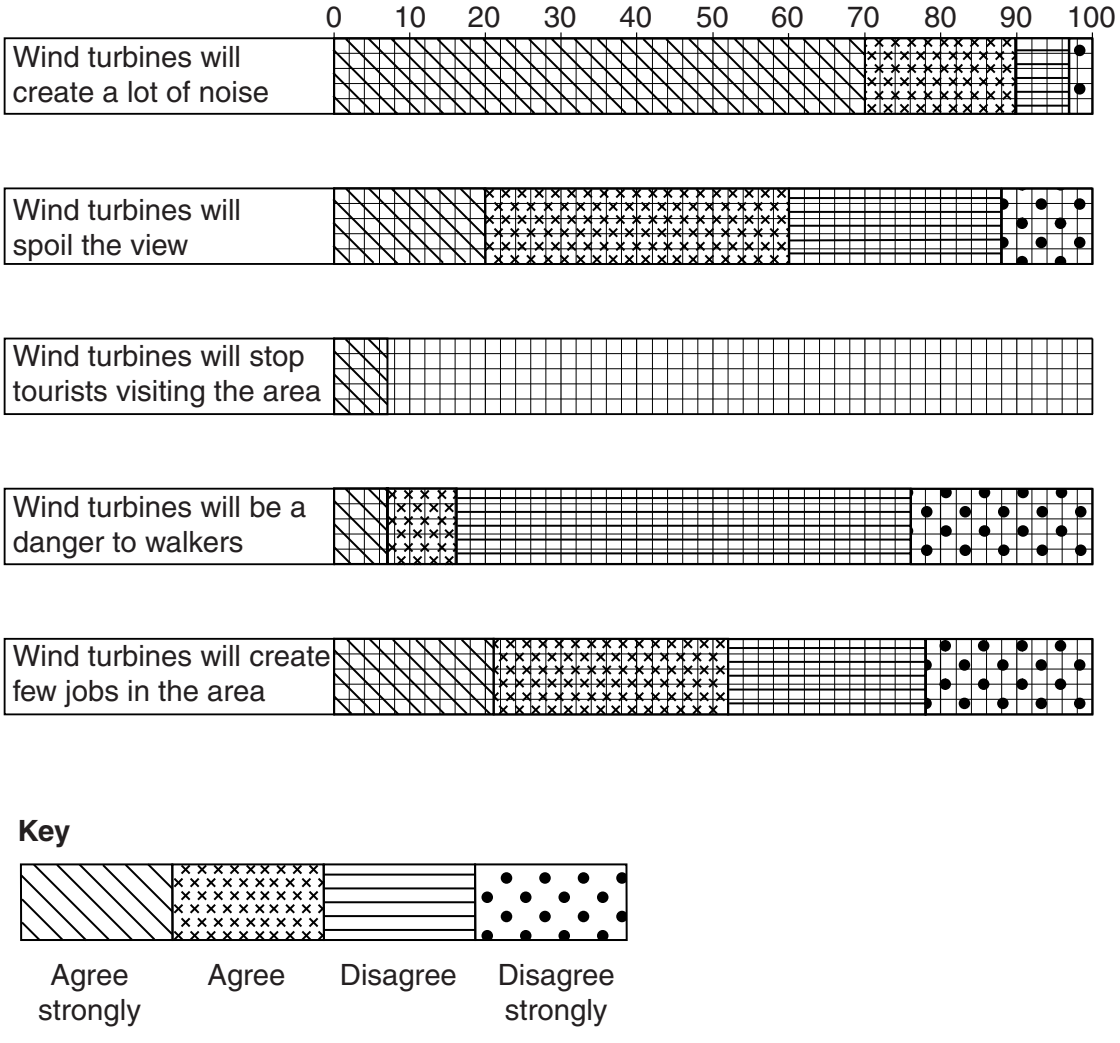

Fig. 17

(ii) Which **one** of the five statements has the most even balance of local people's opinions?

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.....[1]

(iii) What conclusion would the students make about **Hypothesis 2:** *Most local people think that wind turbines should not be built on the hilltop*? Refer to data in Table 5 and Fig. 17 to explain your answer.

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.....[5]

(d) To extend their study the students asked some local people for their opinions on renewable energy and global warming. However, some of the people they spoke to did not understand these topics. So the students decided to produce an information sheet to give to people. The following answers will be part of the information given to people.

(i) Wind power is one type of renewable energy. Give **two** other examples of renewable energy.

1 .....

2 .....[2]

(ii) Explain how global warming occurs.

For Examiner's Use

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[Total: 30 marks]

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