



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

CANDIDATE  
NAME

CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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**GEOGRAPHY**

**2217/23**

Paper 2

**October/November 2012**

**2 hours 15 minutes**

Candidates answer on the Question Paper.

- Additional Materials:
- Calculator
  - Ruler
  - 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 4, Figs 8, 9 and 10 and Table 3 for Question 7, and Figs 14 and 18 and Table 6 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	
<b>Section A</b>	
<b>Q1</b>	
<b>Q2</b>	
<b>Q3</b>	
<b>Q4</b>	
<b>Q5</b>	
<b>Q6</b>	
<b>Section B</b>	
<b>Q7</b>	
<b>Q8</b>	
<b>Total</b>	

This document consists of **26** printed pages, **2** blank pages and **1** Insert.



Section A

Answer **all** questions in this section.

For  
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Use

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

(a) (i) There is a sports field in grid square 8278. Give the four figure grid reference of a grid square containing another sports field.

..... [1]

(ii) Name **two** other leisure activities indicated on the map.

..... [2]

(b) Study the area of the map shown in Fig. 1.

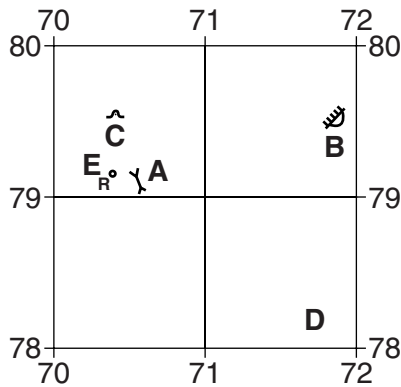


Fig. 1

(i) Identify:

- feature **A**;

.....

- feature **B**;

.....

- feature **C**;

.....

- the land use in area **D**;

.....

- feature **E**.

..... [5]

- (ii) On Fig. 1, show the position of the 1300 m contour. [2]
- (c) (i) Give the six figure grid reference of the trigonometrical station on Manda hill, near the centre of the map. [1]
 

..... [1]
- (ii) From which **two** directions can planes approach to land at the aerodrome landing area at Sunnyside in grid square 7778? [1]
 

..... [1]
- (d) There is a mine dump in grid square 8472. Give **two** other pieces of evidence for mining found in this square. [2]
 

..... [2]
- (e) How far is it, along the railway, in kilometres, to Glendale, from the end of the railway branch at the silos (818752)? Show your working. [2]
 

..... [2]
- (f) Study the area of the map shown in Fig. 2.

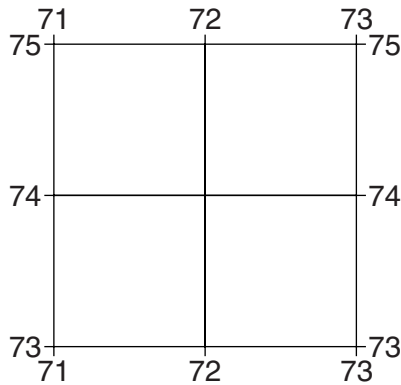


Fig. 2

Describe the relief and drainage of this area.

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.....

.....

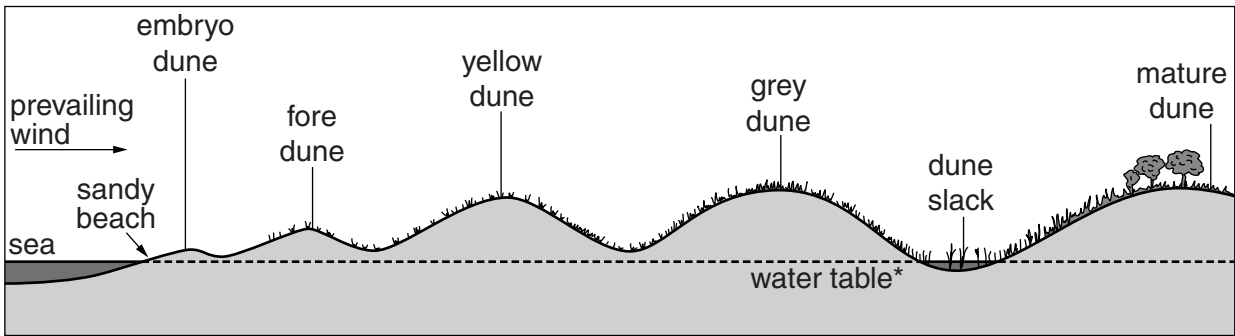
.....

..... [4]

[Total: 20 marks]

[Turn over

2 Study Fig. 3, a cross section through coastal sand dunes.



\* level of water saturation in the ground

Fig. 3

(a) (i) Suggest why sand dunes have formed along this area of coastline.

.....  
.....  
.....  
..... [2]

(ii) Suggest why water is found in the dune slack.

.....  
..... [1]

(b) Study Table 1, which gives more information about these dunes.

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Use

**Table 1**

	Embryo dune	Fore dune	Yellow dune	Grey dune
Height	< 1 m	1–5 m	5–10 m	10 m
Age	Youngest ← → Oldest			
Salinity (salt content)	High ← → Low			
Shelter	Low ← → High			
Vegetation and soil	no vegetation no humus	drought and burial resistant grass e.g. marram roots trap sand	grasses dominate but increased diversity some humus	fewer grasses some small shrubs moss and lichen some soil structure
Ground cover	0%	40%	80%	100%

(i) Using Table 1, what type of plant is first to colonise these dunes?

..... [1]

(ii) Describe the changes in ground cover, shelter and salinity from the embryo dune to the grey dune.

.....  
 .....  
 .....  
 .....  
 .....  
 .....  
 ..... [3]

(iii) Suggest a reason for the change in salinity from the embryo dune to the grey dune.

.....  
 ..... [1]

[Total: 8 marks]

3 Study Fig. 4, which gives information about a volcano.

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Kilauea is Hawaii's youngest volcano and one of the world's most active. All of Kilauea's eruptions have occurred either in or near its summit crater, or along cracks in the east or south-west slope. Most eruptions are relatively gentle, sending lava flows downslope. Over and over again these eruptions occur, gradually building up the volcano and giving it a gentle, shield-like form.

On rare occasions, powerful explosions spread ash across the landscape. In 1992, a series of eruptions caused the summit cone to collapse and form a caldera (a large crater).

Lava flows are typically 3–5 m thick and advance at speeds of 50–500 metres per hour, picking up speed and narrowing on steep slopes. The sparsely populated Royal Gardens settlement is located 6000 metres south-east of the vent. Lava flows have reached the settlement in 13 hours on several occasions. They destroyed 16 houses in 1983 and 1984. Late in November 1986, flows reached the ocean, closing the coastal highway. Over the next three years, lava destroyed homes on either side of the ever-widening flow. New land was added as lava flowed into the sea.

Fig. 4

(a) (i) What is meant by an *active* volcano?  
..... [1]

(ii) How did the 1992 eruption change the shape and height of the volcano?  
.....  
..... [2]

(b) (i) Describe the effects of the lava flow.  
.....  
.....  
.....  
..... [2]

(ii) How does the lava flow change when the slope becomes steeper?  
.....  
..... [2]

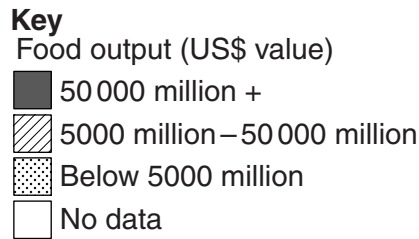
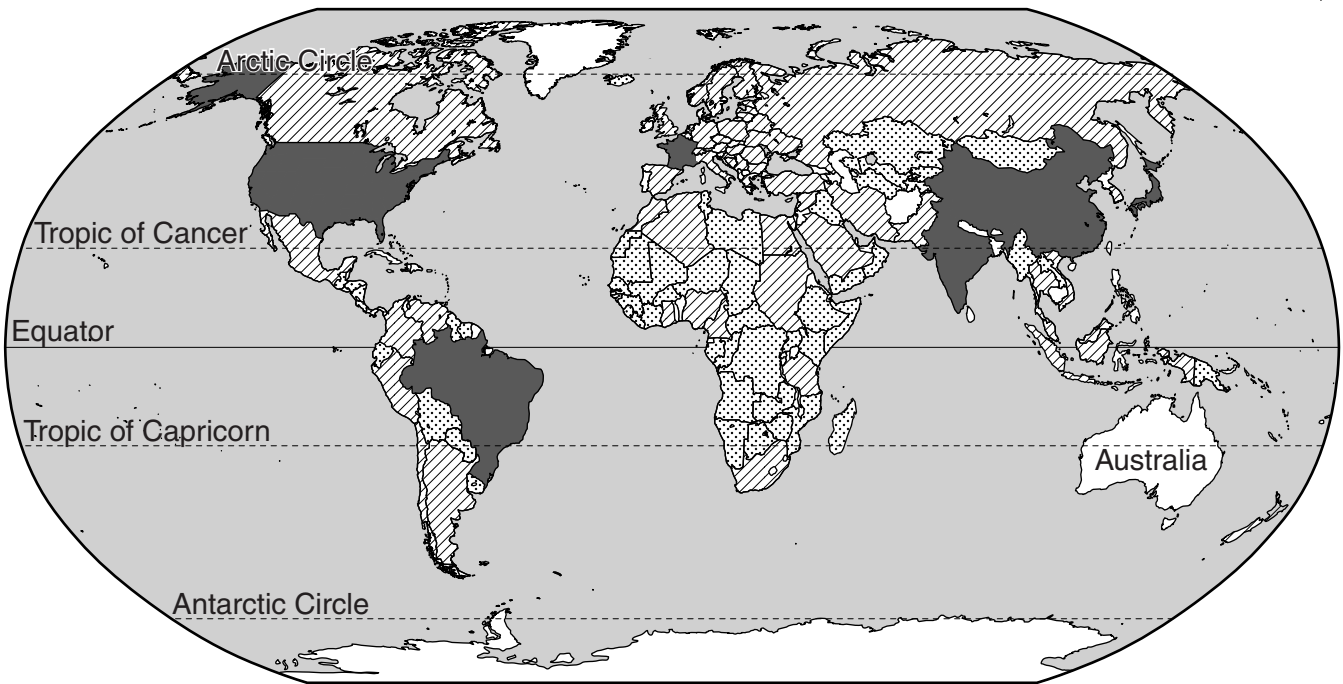
(iii) Calculate the speed of the lava flows to Royal Gardens. Give your answer in metres per hour.  
..... [1]

[Total: 8 marks]



5 Study Fig. 5, which shows world food output, by value, in 2006.

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**Fig. 5**

(a) (i) Complete Fig. 5 to show that Australia produced food valued between 5000 million and 50 000 million US dollars, in 2006. [1]

(ii) Suggest why Antarctica is shown as “no data” on Fig. 5.

.....  
..... [1]



(b) Describe the distribution of countries producing more than 50000 million US dollars worth of food in 2006.

*For  
Examiner's  
Use*

.....  
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.....  
.....  
.....  
.....  
.....  
..... [3]

(c) Fig. 5 shows the food output for the whole of each country. Suggest why food output might vary within a country.

.....  
.....  
.....  
..... [3]

[Total: 8 marks]

6 Study Fig. 6, which shows geothermal electricity production in 2005.

For  
Examiner's  
Use

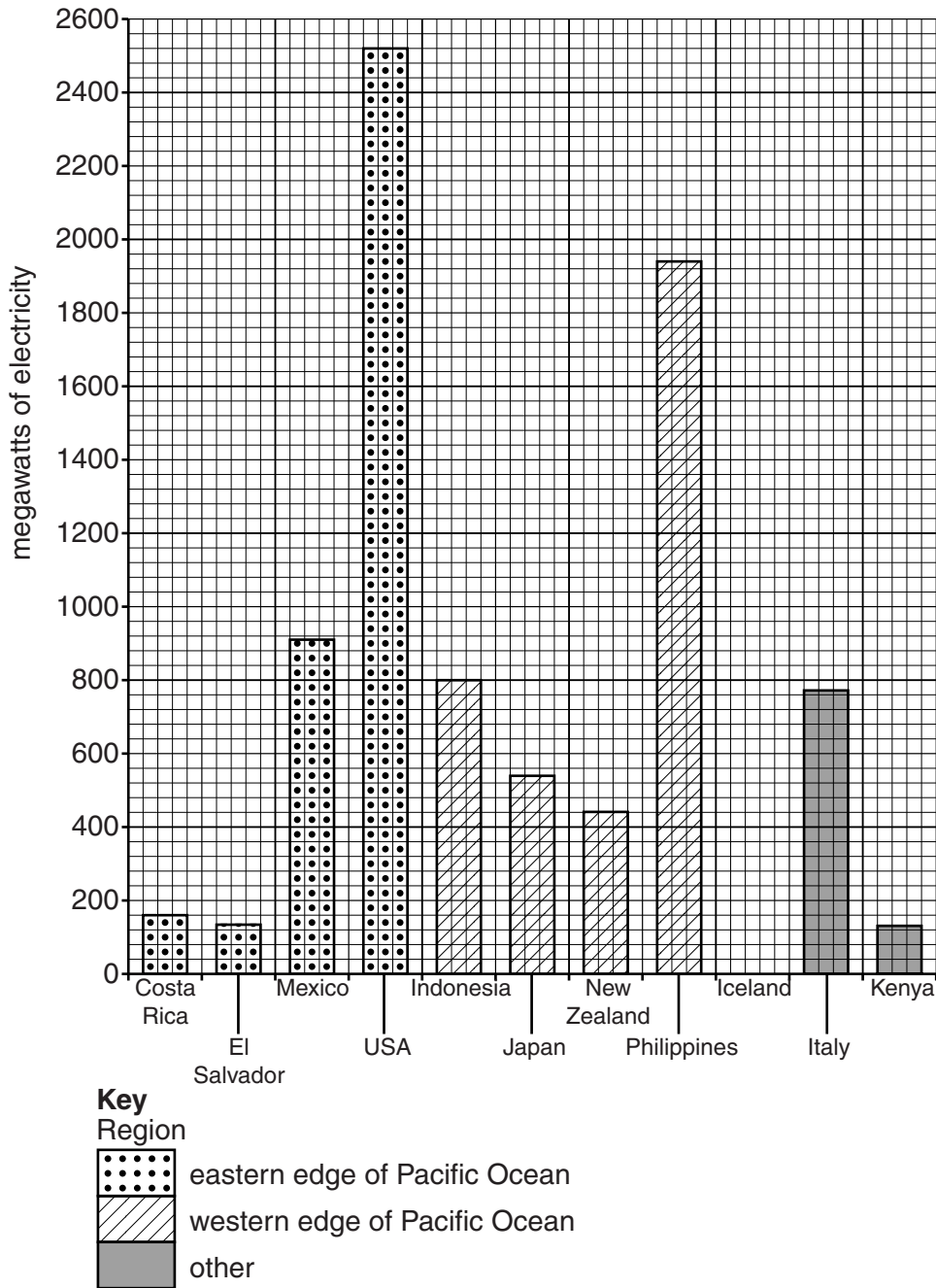


Fig. 6

- (a) Complete Fig. 6 to show that Iceland produces 320 megawatts of geothermal electricity and that it is in the region “Other”. [2]
- (b) (i) Using Fig. 6, state how many megawatts of geothermal electricity were produced in the USA in 2005.

..... [1]

- (ii) Rank the countries on the western edge of the Pacific Ocean in terms of geothermal electricity production.

Highest production .....

.....

.....

Lowest production .....

[1]

- (c) Total geothermal electricity production in 2005 was 9044 megawatts of electricity. Which country produced about 10% of this?

..... [1]

- (d) (i) Complete the pie chart, in Fig. 7 below, to show geothermal electricity production of 42% for countries on the western edge of the Pacific and 14% for other. [2]

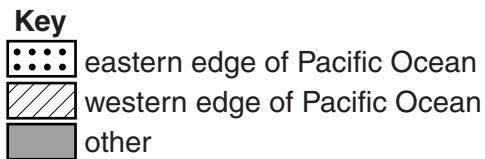
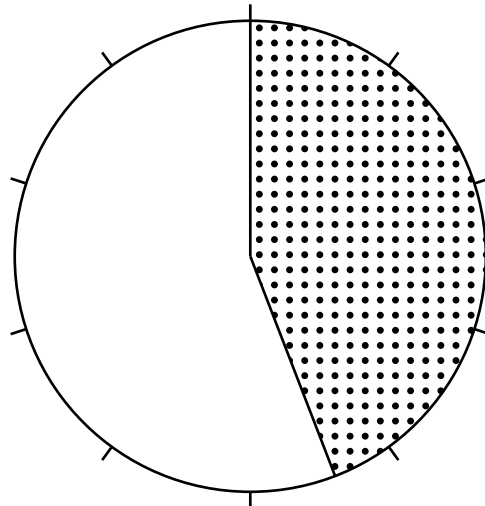


Fig. 7

- (ii) Suggest why most geothermal electricity is produced by countries on the edge of the Pacific Ocean.

.....

..... [1]

[Total: 8 marks]

Section B

Answer **one** question in this section.

For  
Examiner's  
Use

- 7 A geography student was studying local weather conditions. He decided to do an investigation of rainfall and wind direction at his school and at a coastguard station about 60 km away. The locations of the school and coastguard station are shown on Fig. 8 (Insert).

He tested the following hypotheses:

**Hypothesis 1:** *There is more daily rainfall at school than at the coastguard station.*

**Hypothesis 2:** *There is more rainfall on days when the wind is blowing from the south and south west.*

- (a) To investigate the two hypotheses the student used a rain gauge and a wind vane. These are shown in Figs 9 and 10 (Insert).

- (i) Suggest **two** factors which the student should have considered when deciding where to put the rain gauge.

1 .....

.....

2 .....

..... [2]

- (ii) Describe how the student would have used the rain gauge to make his measurements.

.....

.....

.....

.....

.....

..... [3]

- (iii) The student used a wind vane to observe wind direction. Suggest a good location to put the wind vane and explain your choice.

.....

.....

.....

..... [2]

- (iv) Explain how a wind vane shows wind direction.

.....

.....

.....

.....

.....

.....

.....[3]

For  
Examiner's  
Use

- (b) The student recorded the results of his measurements in a fieldwork diary which is shown in Table 2 below.

**Table 2**

**Fieldwork diary from school**

Date	Time measurements taken	Rainfall (mm)	Wind direction
Monday 11th	09.00	2	South
Tuesday 12th	09.00	5	South west
Wednesday 13th	10.00	1	South
Thursday 14th	09.00	5	South west
Friday 15th	09.30	2	South east
Saturday 16th	Not taken		
Sunday 17th	Not taken		
Monday 18th	11.00	8	North
Tuesday 19th	Not taken		
Wednesday 20th	Not taken		
Thursday 21st	09.00	12	North west
Friday 22nd	09.30	6	North
Saturday 23rd	Not taken		
Sunday 24th	Not taken		
Monday 25th	14.00	3	South
Tuesday 26th	10.00	4	South
Average (mean) daily rainfall			

- (i) Calculate the average (mean) daily rainfall for the 10 days in which measurements were taken. Insert your answer into Table 2. [1]

- (ii) The student obtained secondary weather data for the same period of time from the coastguard station. This is shown in Table 3 (Insert).

Often students get both primary and secondary data to investigate a hypothesis. Complete the table below which shows both types of data, by putting the following methods under the correct heading.

Researching on the internet

Measuring the speed of river flow

Using a barometer

Reading a newspaper report

[2]

Primary data	Secondary data
Doing a pedestrian count	Using an atlas map

- (iii) Suggest **two** ways in which the secondary data obtained from the coastguard station is more reliable than the primary data collected by the student.

1 .....

.....

2 .....

..... [2]

- (iv) To compare the rainfall amounts at the school and the coastguard station the student plotted both sets of data onto a dispersion graph, Fig. 11 below.

From Table 3 (Insert) add data to the dispersion graph to show the amount of rainfall at the coastguard station on Saturday 23rd. [1]

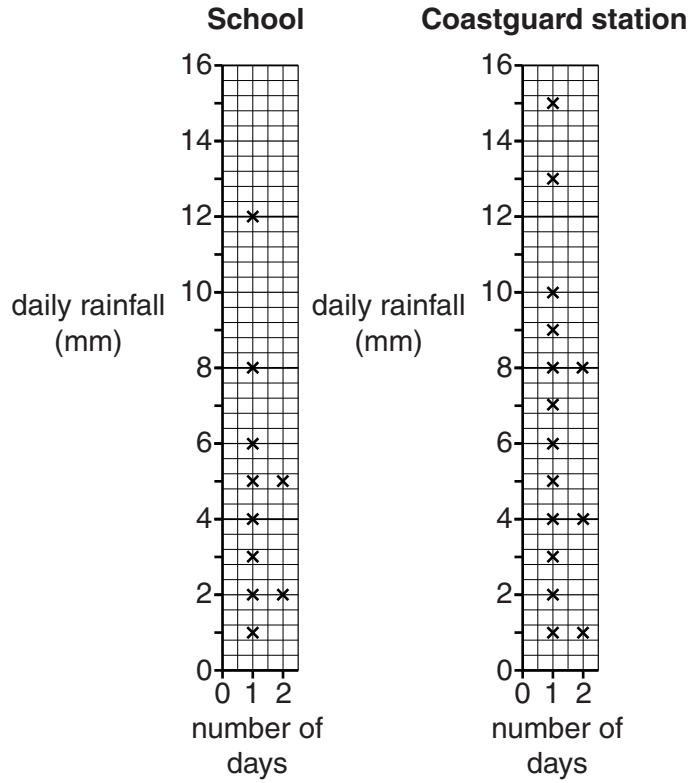


Fig. 11

- (v) The student decided that **Hypothesis 1: There is more daily rainfall at school than at the coastguard station** was false. What evidence from Tables 2 and 3 and Fig. 11 supports his conclusion?

.....

.....

.....

.....

.....

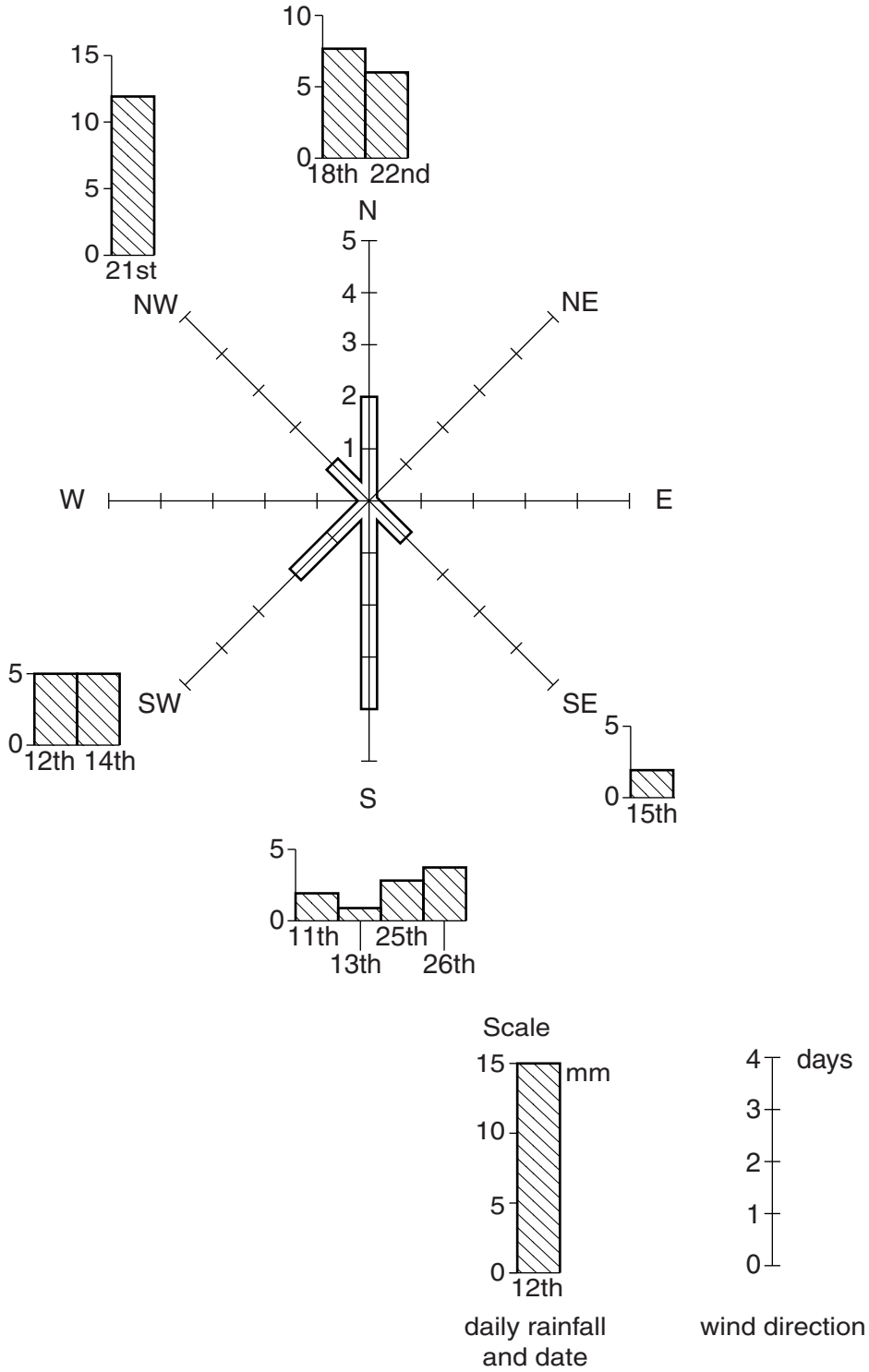
.....

..... [3]

- (c) To help him to reach a conclusion about **Hypothesis 2**: *There is more rainfall on days when the wind is blowing from the south and south west*, the student drew two graphs to compare wind direction and rainfall amounts. These are shown in Figs 12A and 12B below and opposite.

For  
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Use

**Wind direction and rainfall amounts at school**



**Fig. 12A**



Wind direction and rainfall amounts at coastguard station

For  
Examiner's  
Use

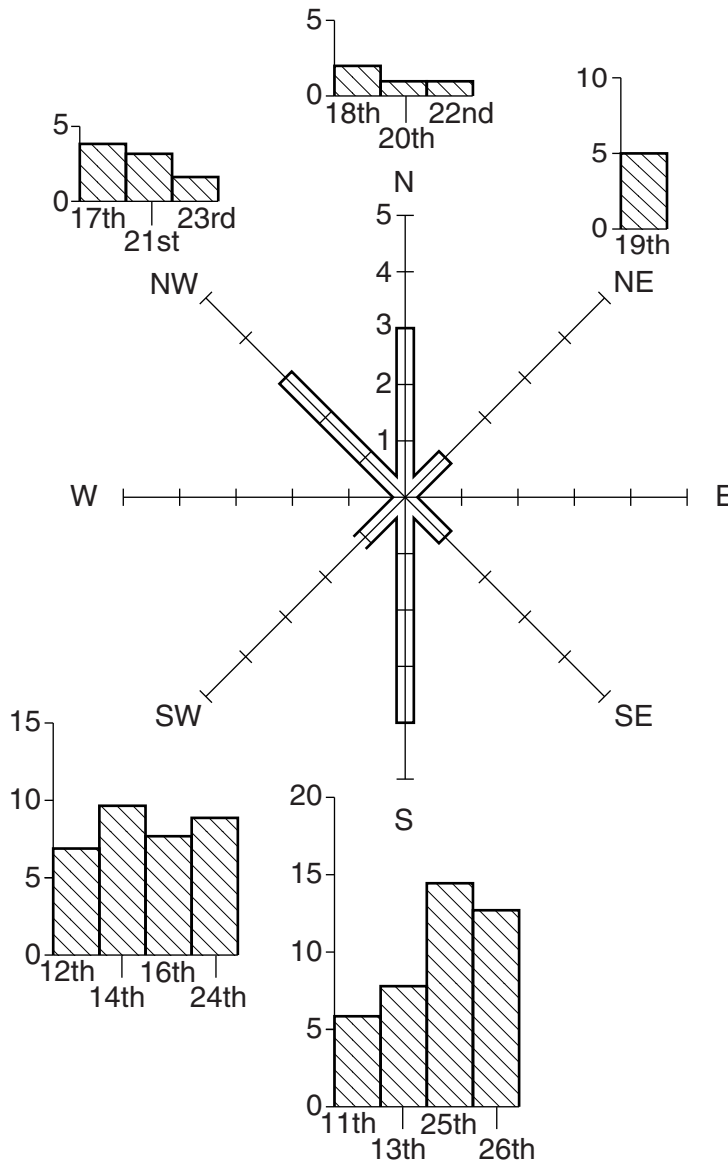


Fig. 12B

- (i) Use the results in Table 3 (Insert) to draw onto Fig. 12B the SW wind direction bar at the coastguard station. Use the scale below Fig. 12A. [1]
- (ii) Use the results in Table 3 to draw onto Fig. 12B the rainfall bar for Friday 15th. Use the scale below Fig. 12A. [3]

- (iii) For the two places he studied, what conclusion would the student make about **Hypothesis 2**: *There is more rainfall on days when the wind is blowing from the south and south west*? Support your answer with evidence from Figs 12A and 12B.

At school (Fig. 12A)

.....  
.....  
.....  
.....

At the coastguard station (Fig. 12B)

.....  
.....  
.....  
..... [4]

- (d) Suggest why daily rainfall **amounts** vary between the school and the coastguard station. Use Fig. 8 (Insert) to help you to answer.

.....  
.....  
.....  
.....  
.....  
..... [3]

[Total: 30 marks]

- 8 Students who lived in Southern Thailand were interested in the effects of tourism in their local town, Hua Hin. They decided to investigate the environmental and economic effects of tourism in different areas of the town.

They agreed on the following hypotheses:

**Hypothesis 1:** *Tourism has a negative impact on the environment of Hua Hin.*

**Hypothesis 2:** *Tourism has an economic benefit for the residents of Hua Hin.*

- (a) To carry out their fieldwork the students identified ten survey sites in the town. These are shown on Fig. 13 (Insert). At each site the students wanted to estimate the importance of tourism. They based their decision on whether shops in the area were used mainly by local people or tourists.

- (i) Suggest **three** ways that they could decide whether shops were used mainly by local people or tourists.

1 .....

.....

2 .....

.....

3 .....

..... [3]

- (ii) Before starting their fieldwork the students did a small pilot (trial) survey near their school. Give **two** advantages of doing a pilot survey.

1 .....

.....

2 .....

..... [2]

(iii) The results of the students' fieldwork are shown in Table 4, below.

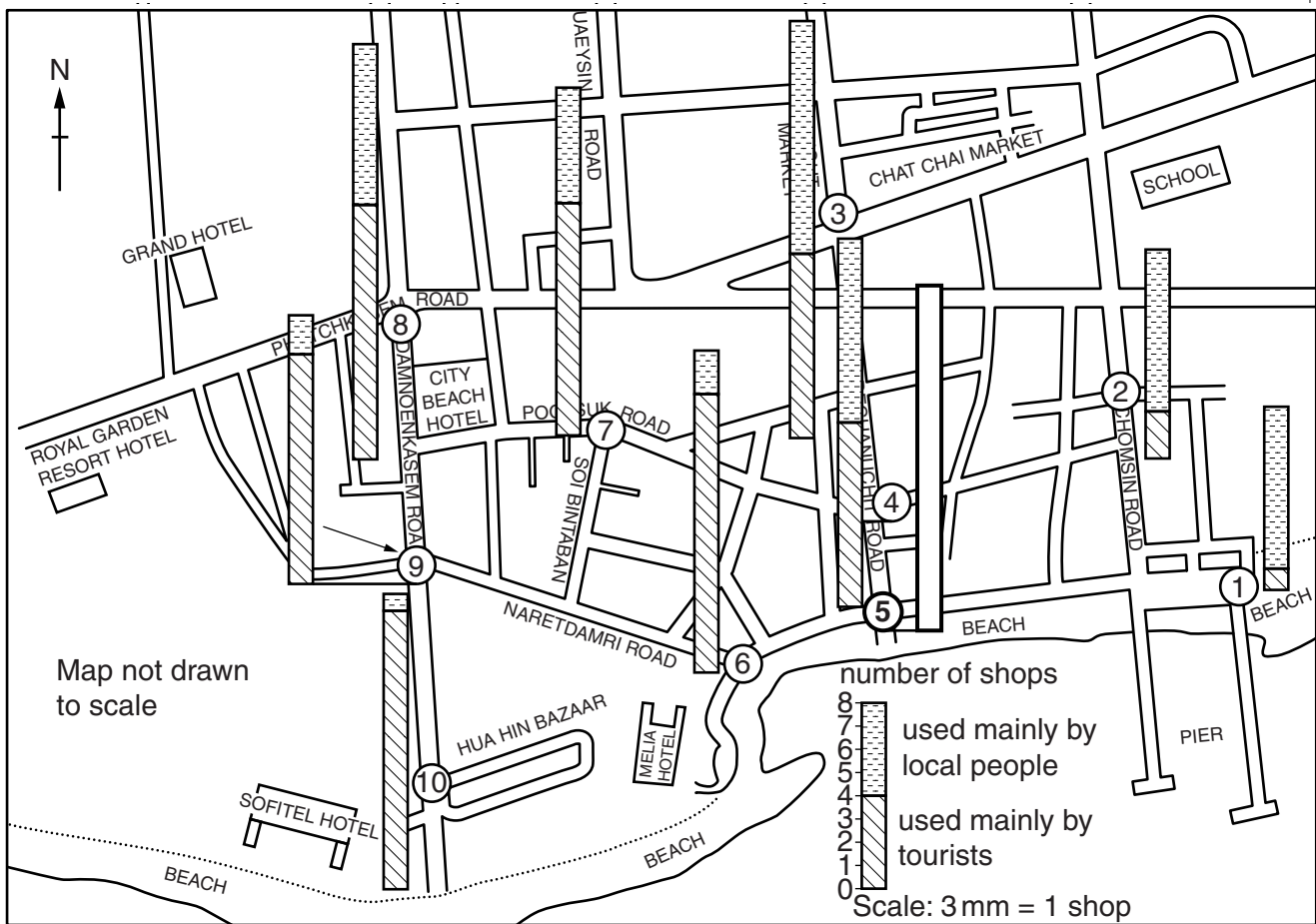
Use these results to complete the divided bar for site 5 on Fig. 14 below.

For  
Examiner's  
Use [2]

**Table 4**  
**Results of fieldwork**

	Pilot site	Survey sites									
		1	2	3	4	5	6	7	8	9	10
Number of shops used mainly by local people	8	7	7	10	8	6	2	5	7	2	1
Number of shops used mainly by tourists	3	1	2	8	8	9	12	10	11	10	12

**Results of fieldwork**



**Fig. 14**

- (iv) The students then decided to rank the ten sites in order of importance for tourism. To do this they first calculated the percentage of shops used mainly by tourists at each site using the following formula:

$$\frac{\text{number of shops used mainly by tourists}}{\text{total number of shops}} \times 100$$

The number of shops at the pilot survey site is shown in Table 4. In the space below calculate the percentage of shops at this site used mainly by tourists. Show your calculation. [2]

<p><b>Pilot site</b></p>          
--

- (v) The results of this calculation for the ten actual survey sites are shown in Table 5 below. Complete the rank order of the percentage of shops used mainly by tourists by inserting ranks 1 to 5. [1]

**Table 5**

**Percentage of shops used mainly by tourists**

Survey site	1	2	3	4	5	6	7	8	9	10
Percentage of shops used mainly by tourists	12.5	22.2	44.4	50.0	60.0	85.7	66.7	61.1	83.3	92.3
Rank order	10	9	8	7	6					

(b) Having decided how important tourism was at the ten sites, the students then did an environmental quality survey at each site. The scoring chart which they used for the pilot survey is shown in Fig. 15 below. The students' decisions are circled.

For  
Examiner's  
Use

**Environmental quality survey recording sheet**

Pilot survey site near school					
Very little litter	4	3	2	①	Lots of litter
Very quiet	4	3	②	1	Very noisy
Unpolluted air	4	③	2	1	Polluted air
Very little traffic	4	3	②	1	Lots of traffic
Lots of vegetation	4	3	2	①	Very little vegetation
Well maintained buildings	4	3	②	1	Buildings in very poor condition
Very safe for pedestrians	4	③	2	1	Very dangerous for pedestrians

Total environmental score =

**Fig. 15**

(i) Calculate the total environmental score for the pilot survey site and insert your answer in the box below Fig. 15. [1]

(ii) Give **two** possible weaknesses of an environmental quality survey.

- 1 .....
- .....
- 2 .....
- ..... [2]

- (iii) The two sets of results for percentage of shops used mainly by tourists and environmental score at the ten sites are shown in Table 6 (Insert). Plot the results for sites 4 and 7 on the scatter graph, Fig. 16, below. [2]



Fig. 16

- (iv) Draw a best-fit line on Fig. 16. [1]

- (v) The students rejected **Hypothesis 1: Tourism has a negative impact on the environment of Hua Hin.** Give one piece of evidence from Fig. 16 to explain why they rejected the hypothesis.

.....  
 ..... [1]

- (vi) Suggest **two** reasons for the relationship shown in Fig. 16.

1 .....  
 .....  
 2 .....  
 ..... [2]

(c) To get data for **Hypothesis 2: Tourism has an economic benefit for the residents of Hua Hin** the students used a questionnaire. At each site they questioned 20 people. The questionnaire which they used is shown in Fig. 17 (Insert).

(i) How would the students use a systematic sampling technique with their questionnaire?

.....  
 ..... [1]

(ii) The results of Question 2 obtained from 20 residents at site 3 are shown below.

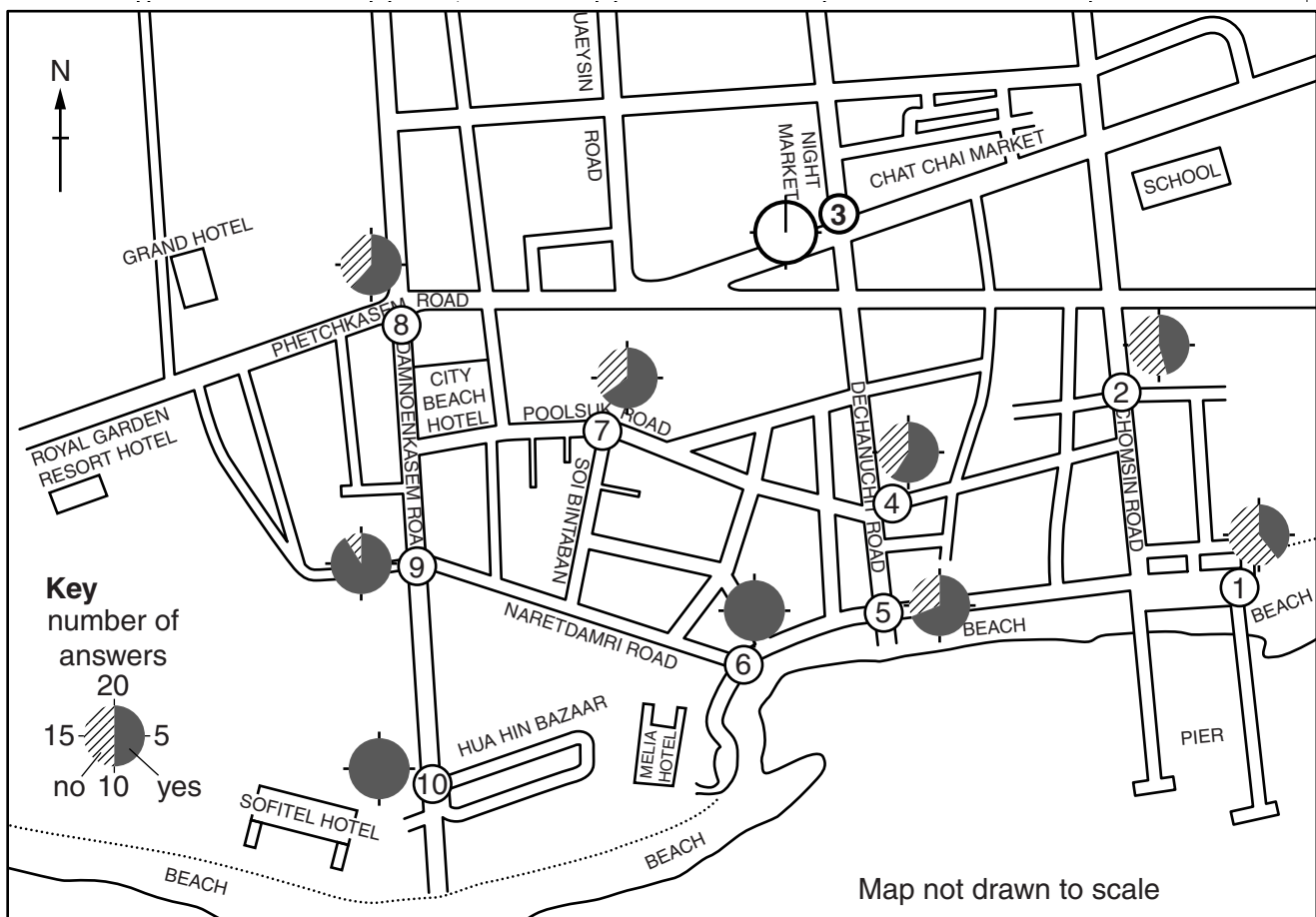
**Q2 Overall do you think tourism has an economic benefit in Hua Hin?**

Yes	11
No	9

Plot these results on Fig. 18 below.

[1]

**Questionnaire results for Question 2**



**Fig. 18**



(iii) The results of Question 3 obtained from 20 residents at site 3 are shown below.

**Q3 What do you think is the main benefit of tourism in Hua Hin?**

More job opportunities	6
Improved standard of living	5
Improved infrastructure	3
Greater range of goods in shops	3
More modern services	3

Plot these results onto the tally chart, Fig. 19 below.

[2]

**Results of survey**

Site	More job opportunities	Improved standard of living	Improved infrastructure	Greater range of goods in shops	More modern services
1	////	///	///	////	## /
2	///	////	//	##	## /
3					
4	## /	## /	//	////	//
5	## ////	////	/	//	///
6	## ##	##	/	//	//
7	## ////	////	//	///	//
8	## ##	##	//	/	//
9	## ## ///	////	/	/	/
10	## ## ##	////		/	

**Fig. 19**





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*Copyright Acknowledgements:*

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Question 3 Fig. 4                      © <http://www.georesources.co.uk/kilauea.htm>.  
Question 4 Photograph A              © James Harper; CIMG1325.JPG.

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