UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

8730719752

GEOGRAPHY **2217/21**

Paper 2 **May/June 2011**

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.
Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.
The Insert contains Photograph A for Question 3, Figs 11 and 12 for Question 7, and Figs 14 and 16 and Tables 5 and 6 for Question 8.

The Survey Map Extract and the Insert are **not** required by the Examiner.

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.

This document consists of **28** printed pages, **4** blank pages and **1** Insert.

Section A

Answer **all** questions in this section.

For Examiner's Use

1 The 1:50 000 map is of Macheke, Zimbabwe.

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

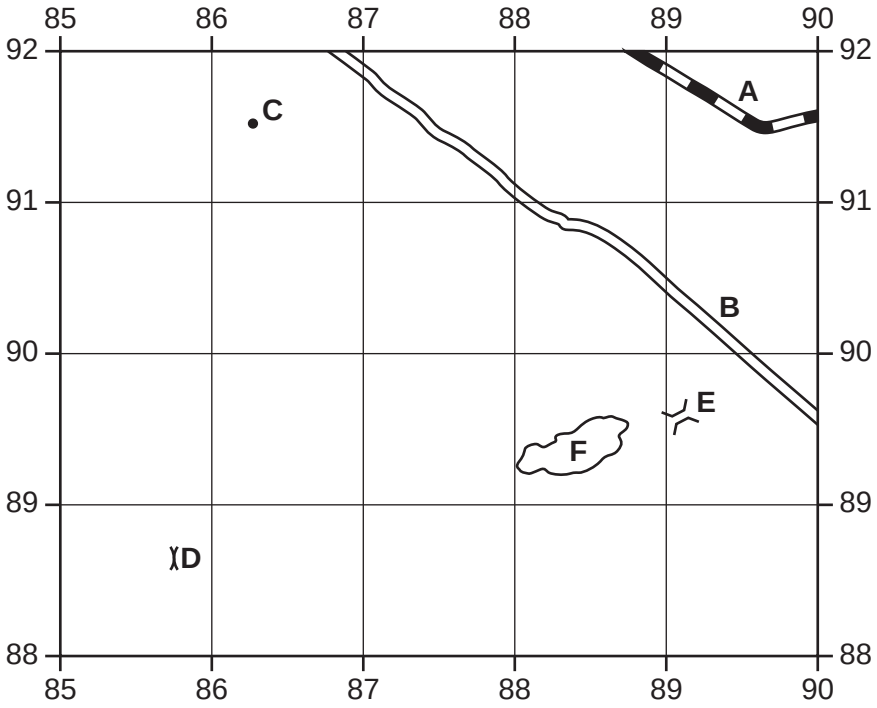

Fig. 1

(i) Name the feature at **A**.

.....[1]

(ii) What type of road is at **B**?

.....[1]

(iii) What height is the spot height at **C**?

.....[1]

(iv) Name the feature at **D**.

.....[1]

(v) Name the feature at **E**.

.....[1]

(vi) How many peaks are shown for hill feature **F**?

.....[1]

(b) Give the six-figure grid reference of the trigonometrical station on the Percyvale Estate, near the centre of the map.

.....[1]

(c) **(i)** Measure the distance along the road from the bench mark at 708912 to the bench mark at 727915.

..... metres [1]

(ii) What is the difference in height between the two bench marks?

..... metres [1]

(iii) What is the average gradient along the road between the two bench marks?

.....

.....

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

(d) Fig. 2 is a cross section from 780890 to 810890 drawn to scale.

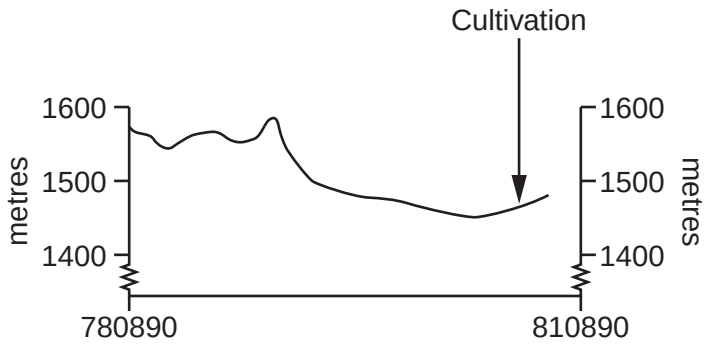

Fig. 2

(i) Complete the eastern end of the cross-section. [1]

(ii) Label on Fig. 2:

- the position of the Macheke River;
- the position of the gravel or earth road. [2]

(e) Suggest **two** reasons for the location of cultivated areas.

1 .....

.....

2 .....

.....[2]

(f) Study the area of the map shown on Fig. 3.

For Examiner's Use

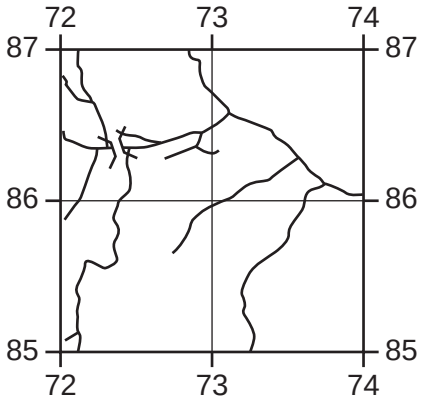

Fig. 3

(i) Describe the River Nyamakovera in this part of the map.

.....

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.....

.....

.....[3]

(ii) Draw on Fig. 3 the routes of the gravel or earth roads in this area. [2]

[Total: 20 marks]

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TURN OVER FOR QUESTION 2

2 Study Fig. 4, which shows population pyramids for three countries.

For Examiner's Use

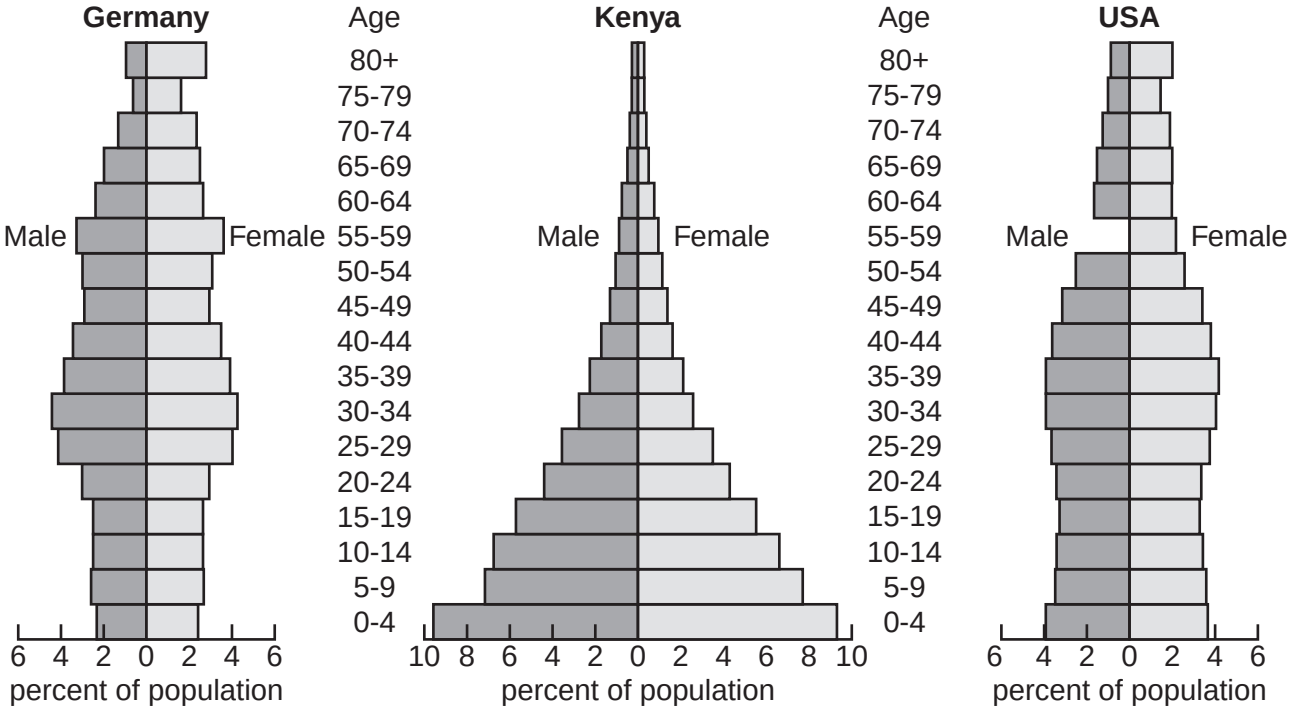

Fig. 4

(a) (i) Complete Fig. 4 to show that USA has 2% males aged 55–59. [1]

(ii) In Germany, what percentage of the population are males aged 35–39?

.....[1]

(iii) Which country, shown in Fig. 4, has the shortest life expectancy?

.....[1]

(b) Describe **two** differences between the pyramids for Kenya and USA.

1 .....

.....

2 .....

.....[2]

(c) Study Fig. 5, which shows the Demographic Transition Model.

For Examiner's Use

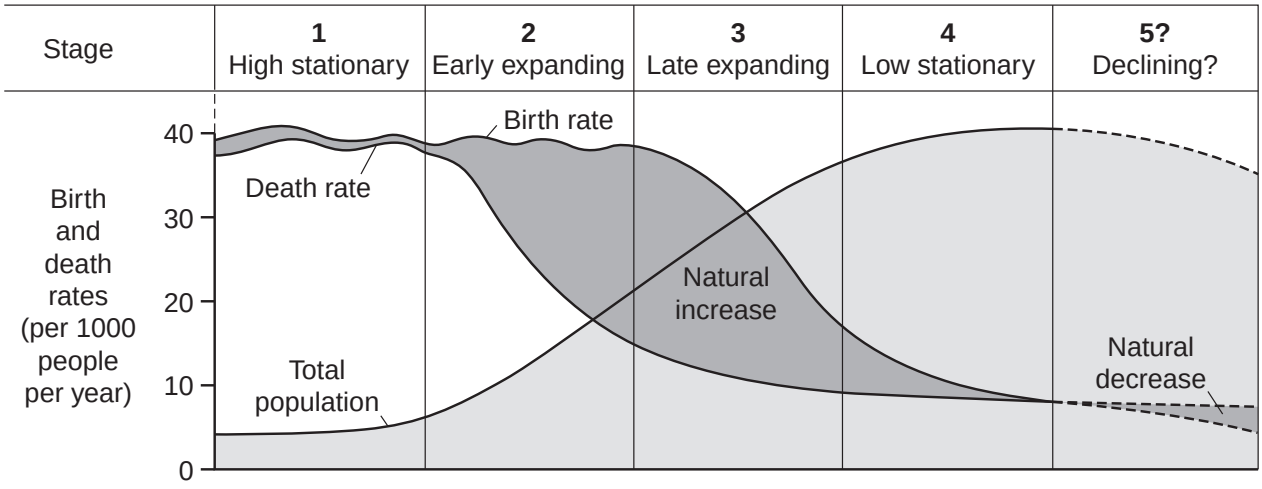

Fig. 5

Suggest which stage of the Demographic Transition Model applies to each of the countries shown on Fig. 4. Give a reason for each answer.

Germany – Stage .....

Reason .....

.....

Kenya – Stage .....

Reason .....

.....

USA – Stage .....

Reason .....

.....[3]

[Total: 8 marks]

3 Study Photograph A (Insert), of a campground on the shores of Lake Kariba, Zimbabwe.

For Examiner's Use

(a) Suggest evidence for human activity in the area of the photograph.

.....

.....

.....

.....[2]

(b) **(i)** During which season was the photograph taken?
Circle the correct answer.

Dry season Hot season Wet season [1]

(ii) Give **two** pieces of evidence to support your choice of season.

1 .....

.....

2 .....

.....[2]

(c) Fig. 6 shows the climate of the area in Photograph A.

For Examiner's Use

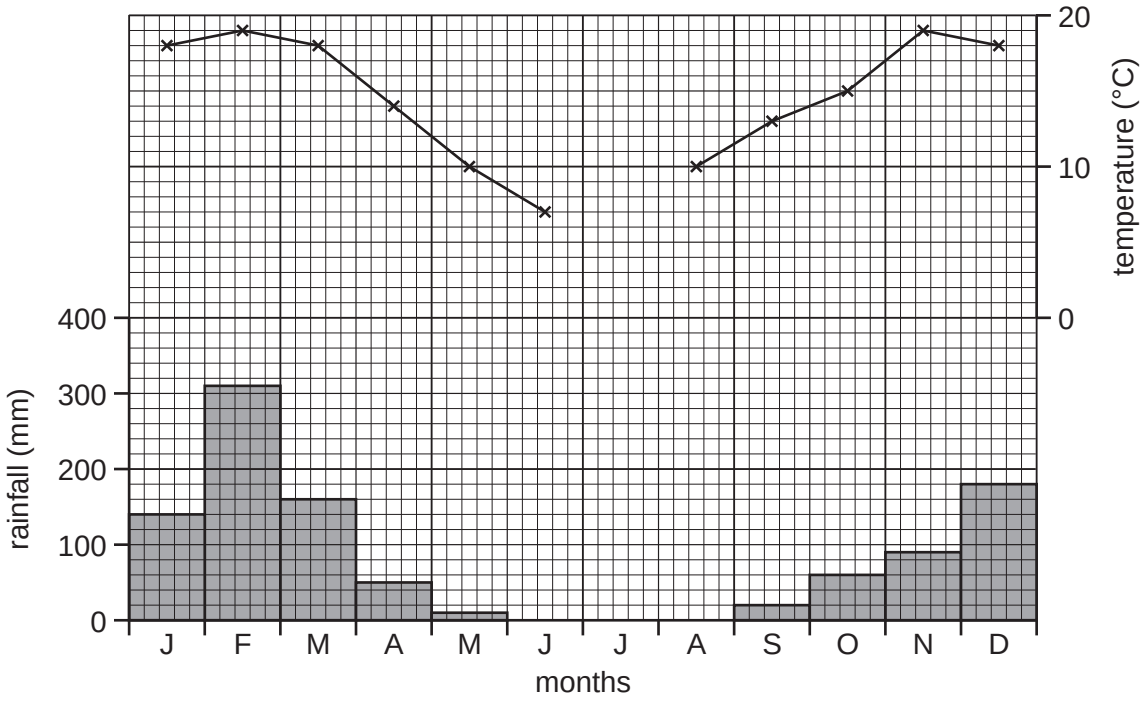

Fig. 6

(i) Complete Fig. 6 to show a temperature of 6 °C in July. [1]

(ii) In which **two** months is Photograph A most likely to have been taken?
Circle **two** answers.

February May July September [2]

[Total: 8 marks]

4 Study Fig. 7, which shows volcanic activity in and around Italy.

For Examiner's Use

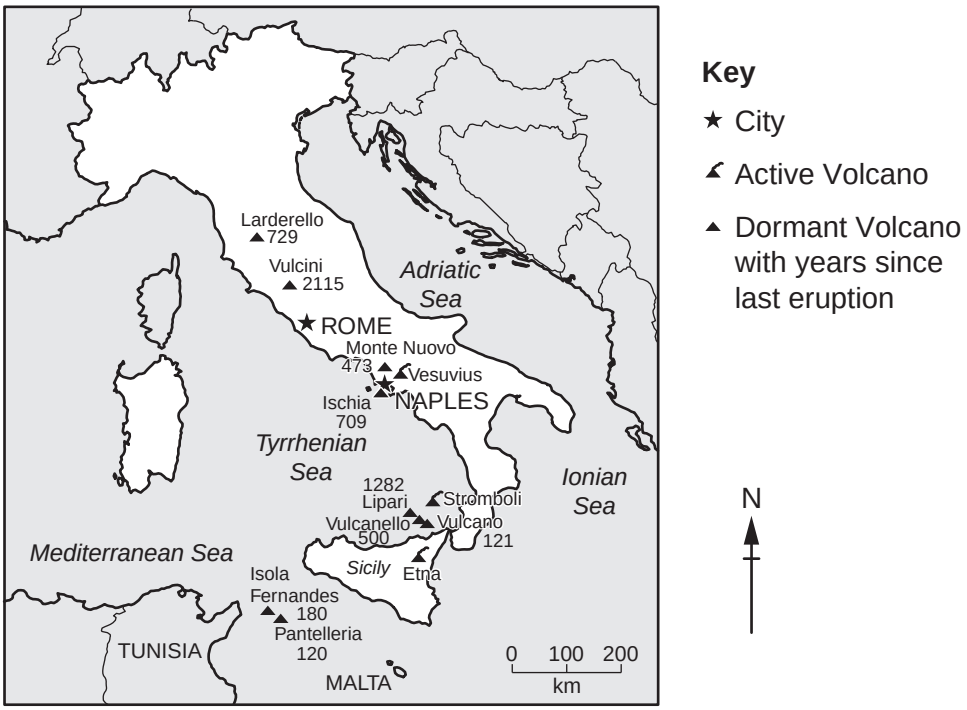

Fig. 7

(a) Describe the location of volcanic activity shown on the map.

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.....

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.....

.....

.....

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.....[4]

(b) **(i)** Which volcano has been dormant for the longest period of time?

.....[1]

(ii) Which **two** dormant volcanoes have their last eruption only one year apart?

.....[1]

(c) Three of the volcanoes shown on Fig. 7 are active. Using map evidence, for eruptions of equal magnitude:

For Examiner's Use

(i) Which would cause the most disruption to human activity? Give a reason for your answer.

.....

.....[1]

(ii) Which would cause the least disruption to human activity? Give a reason for your answer.

.....

.....[1]

[Total: 8 marks]

5 Fig. 8 shows energy consumption in Australia and Vietnam.

For Examiner's Use

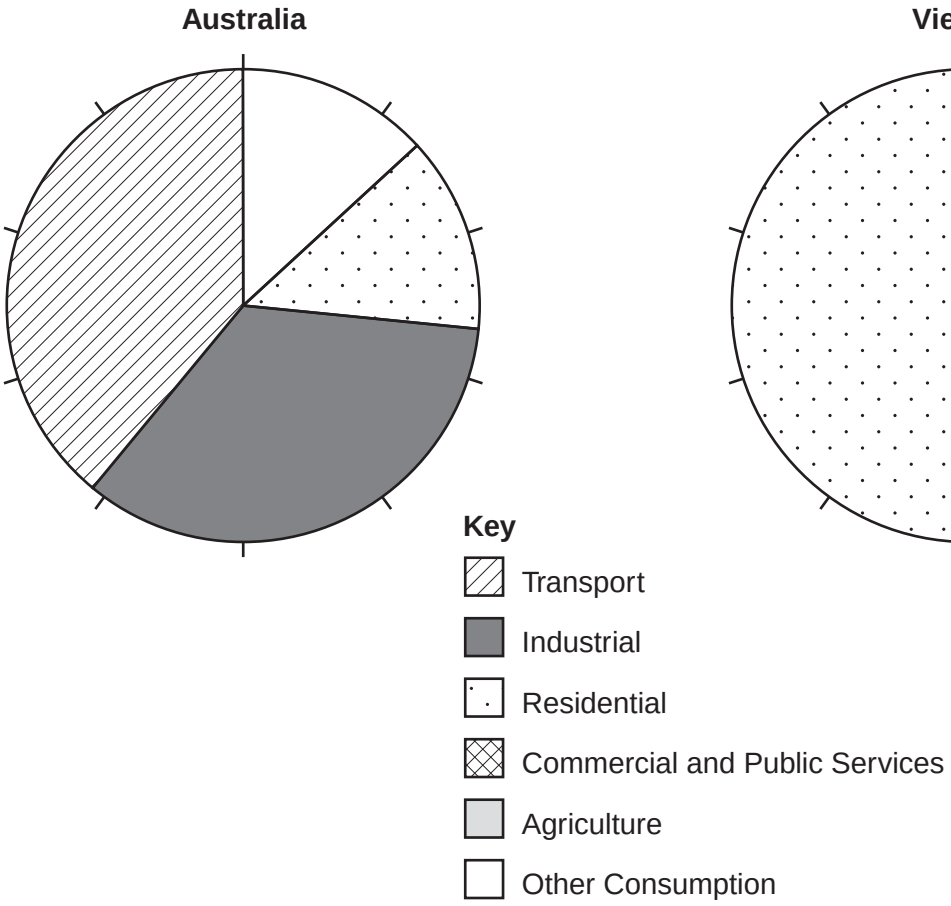

Fig. 8

(a) (i) Complete Fig. 8 using the data for Australia given in Table 1. [2]

Table 1

Commercial and public services	7%
Agriculture	2%
Other	4%

(ii) What percentage of energy consumption is used in the residential sector in Vietnam?

.....[1]

(b) Compare the **three largest** sectors in the two countries.

For Examiner's Use

.....

.....

.....

.....

.....

.....[3]

(c) Study Table 2.

Table 2

	Central Australia	Vietnam
Temperature	Hot	Hot
Rainfall	Low	High
Natural vegetation	Scrub	Forest
Landscape	Flat	Hills and valleys

Using the information in Table 2, give **two** reasons why Vietnam is more suitable for a hydroelectric scheme than Central Australia.

.....

.....

.....

.....[2]

[Total: 8 marks]

6 Study Fig. 9, a sketch map of the location of a car factory.

For Examiner's Use

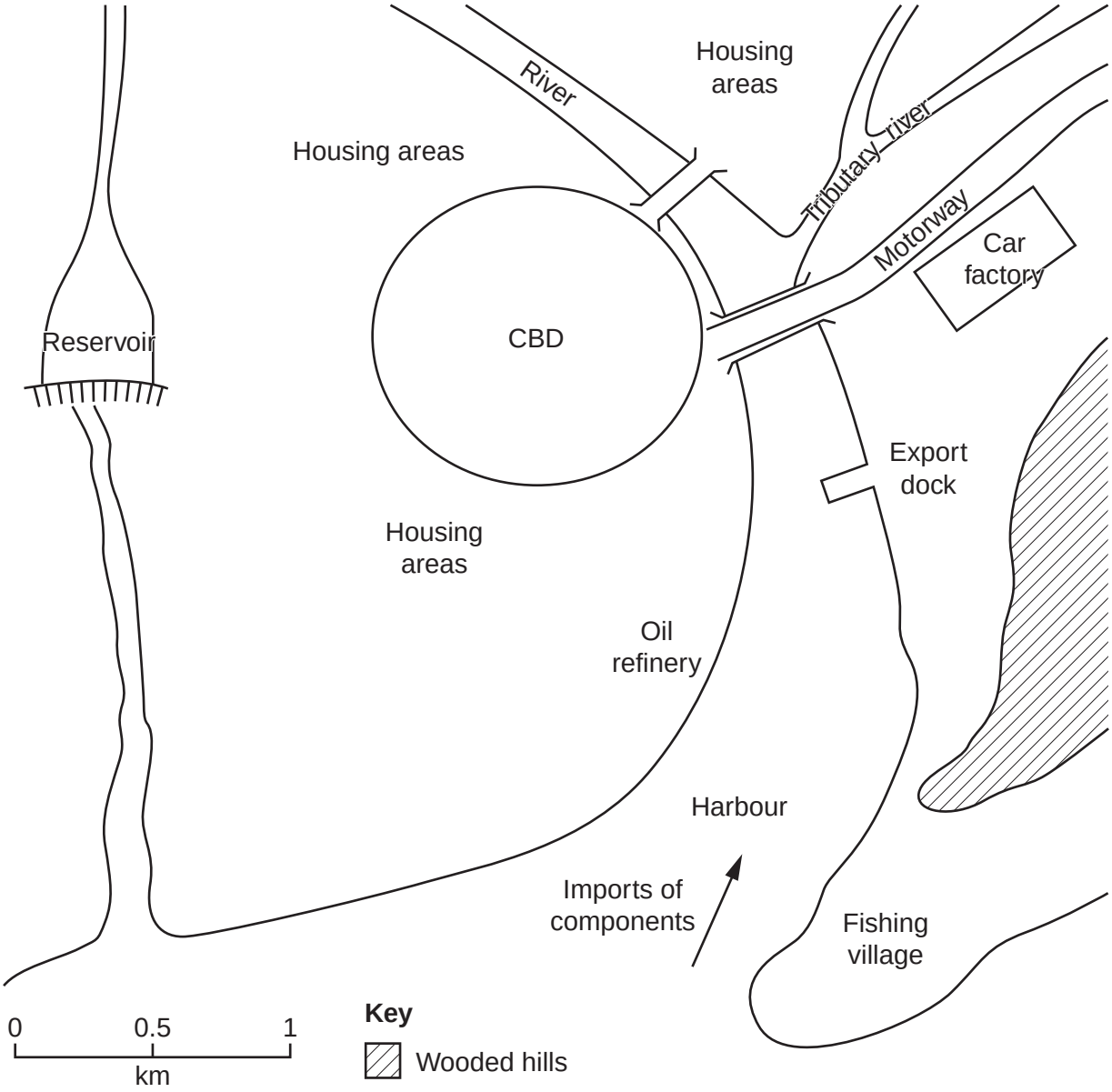

Fig. 9

For Examiner's Use

(a) **(i)** Using the headings given, suggest why this is a good location for a car factory.

Physical factors .....

.....

.....

.....

Human / economic factors .....

.....

.....

.....[4]

(ii) Using Fig. 9, suggest a possible source of energy for the car factory.

.....

.....[1]

(b) Traditional employment in the area is in primary industry. Name a primary industry indicated by Fig. 9.

.....[1]

(c) Study Fig. 10, which shows sales of cars from the factory.

For Examiner's Use

YEAR	SALES
1	
2	
3	
4	
5	
6	
7	
8	
9	

 = 100 000 cars

Fig. 10

(i) Complete Fig. 10 to show sales of 400 000 cars in year 9. [1]

(ii) What was the increase in car production from year 1 to year 4?

.....[1]

[Total: 8 marks]

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TURN OVER FOR SECTION B

Section B

For Examiner's Use

Answer **one** question in this section.

7 Students heard that waste water from a factory was polluting the local river. They decided to do some fieldwork to see if this was true. However, before they started their investigation their teacher warned them about the possible dangers of doing fieldwork in a **polluted** river. She also suggested some precautions they might take to protect themselves.

(a) (i) Suggest **two** dangers which their teacher may have warned them about and suggest how they might protect themselves whilst working in a polluted river.

Danger 1 .....

.....

Protection .....

.....

Danger 2 .....

.....

Protection .....

.....[4]

(ii) Give **two** ways that the students would be able to check if the river was polluted before they began their fieldwork.

1 .....

.....

2 .....

.....[2]

(b) The students agreed on two hypotheses to investigate.

Hypothesis 1: *The river is most polluted near to the factory and the level of pollution decreases downstream.*

Hypothesis 2: *Animal life in the river is affected by water pollution.*

To measure the level of water pollution the students did some research in the local library. They found some secondary data which showed the results of a study into the levels of dissolved oxygen and ammonia in the river. The results of the study included the following:

- Oxygen is essential for animals to live in rivers. Polluted rivers have low dissolved oxygen levels.
- Ammonia is a chemical which pollutes water.

A summary of the secondary data is shown in Fig. 11 (Insert).

(i) Having studied the secondary data shown in Fig. 11 the students agreed with **Hypothesis 1:** *The river is most polluted near to the factory and the level of pollution decreases downstream.*

What evidence on Fig. 11 supports their conclusion?

.....

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.....

.....[2]

(ii) Suggest why the level of pollution changes downstream from the factory.

.....

.....

.....

.....[2]

(c) To investigate **Hypothesis 2:** *Animal life in the river is affected by water pollution* the students carried out the investigation described in Fig. 12 (Insert). They did the investigation at five sites along the river; these are shown in Fig. 11.

(i) Why did the students disturb the river bed when carrying out the investigation?

.....

.....[1]

(ii) Should the students have put the net upstream or downstream of the kick-sampling site? Explain your decision.

.....

.....

.....

.....[2]

(iii) Why did the students need to identify the animals found while sampling at each site?

.....

.....[1]

(iv) Why did the students do three tests at each site?

.....

.....[1]

(d) Table 3, below, shows the results of the students' fieldwork.
The results are recorded using a tally method.

Table 3

Fieldwork results

	Unpolluted ← Quality of water → Very polluted								
Animal species	Stonefly	Mayfly	Caddis fly	Shrimp	Water louse	Leech	Rat-tailed maggot	Bloodworm	Average Biotic Index score at the site
Biotic score	10	8	7	6	5	3	3	2	
Site 1	////	////	////		////				55/7 = **7.9**
Site 2						////	////	////	13/5 = **2.6**
Site 3					////	////	////	////	19/6 = **3.2**
Site 4		////	////	////	////	////			
Site 5		////	////	////	////				46/7 = **6.6**

(i) Calculate the average Biotic Index score for site 4. Put your answer into Table 3. Show your calculation in the space below. [2]

(ii) Plot the average Biotic Index score for sites 4 and 5 on Fig. 13 below. Site 4 is 10.5 km downstream and site 5 is 14 km downstream. [2]

For Examiner's Use

How Biotic Index changes downstream

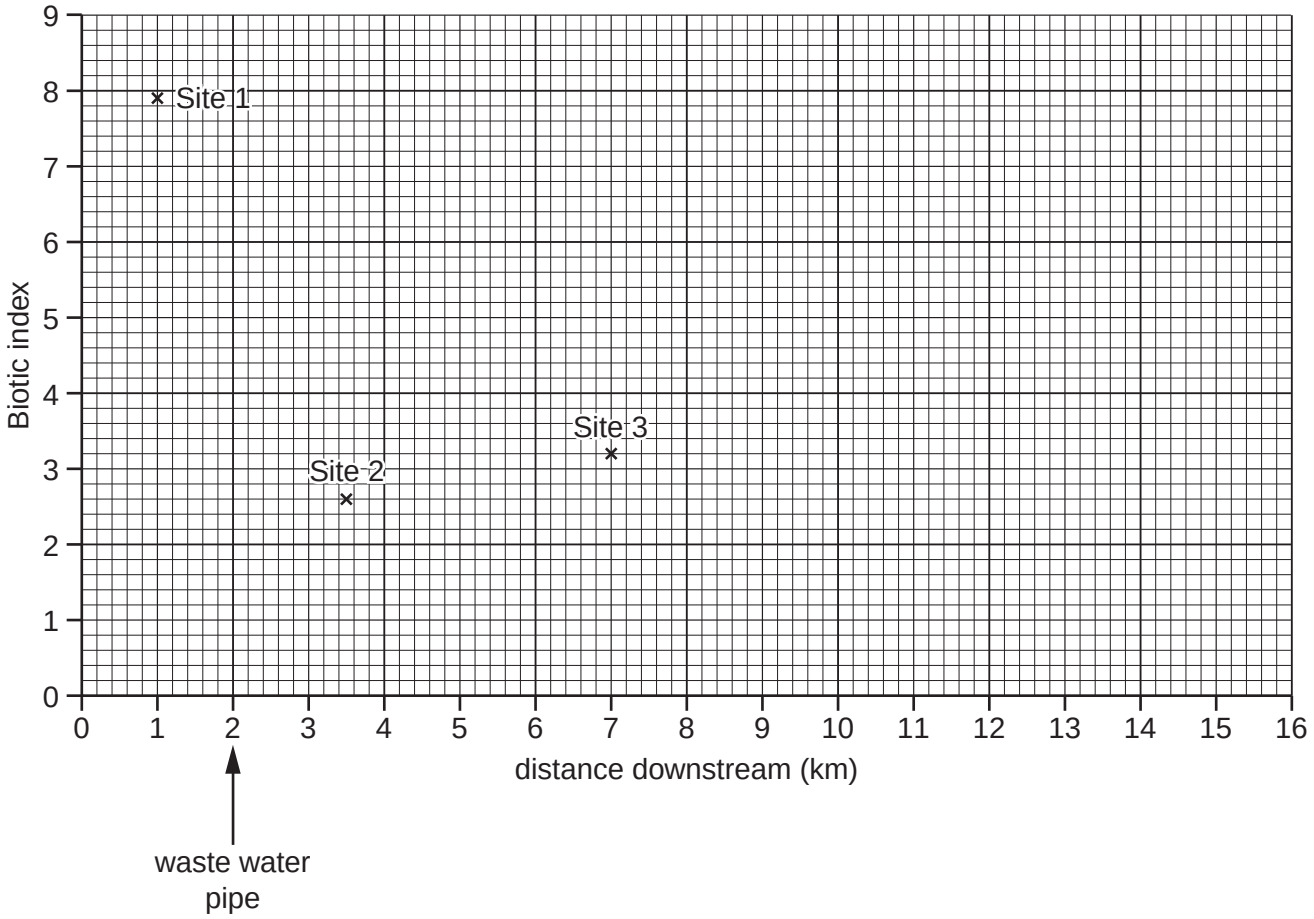

Fig. 13

(iii) How does the average Biotic Index score change downstream? Support your answer with evidence from Fig. 13.

.....

.....

.....

.....

.....

..... [3]

(iv) The students reached a conclusion that **Hypothesis 2:** *Animal life in the river is affected by water pollution* is true. Give **two** pieces of evidence from Table 3 to support this conclusion.

1 .....

.....

2 .....

.....[2]

(e) Describe **two** other ways in which a river may be polluted, other than by waste water from a factory.

1 .....

.....

2 .....

.....[2]

(f) Suggest **one** hypothesis that students might investigate through fieldwork in a river which is **not** polluted. Describe how they would test their hypothesis.

Hypothesis: .....

.....

How they would test it: .....

.....

.....

.....

.....

.....

.....[4]

[Total: 30 marks]

8 Students who lived in Thailand were interested in the development of tourism at Chiang Mai, a city in the north of the country. They decided to investigate why tourists came to Chiang Mai and what impact tourism had on people who lived in the city. Their two hypotheses were:

For Examiner's Use

Hypothesis 1: *Physical attractions brought more tourists to Chiang Mai than human attractions.*

Hypothesis 2: *Tourism has a positive rather than negative impact on people who live in Chiang Mai.*

(a) The students decided to use the questionnaire, shown in Fig. 14, (Insert), to investigate Hypothesis 1.

(i) When they showed their questionnaire to the teacher she suggested that they should start the questionnaire by asking:

'Are you a tourist in this city?'

Why do you think the teacher made this suggestion?

.....

.....

.....

.....[2]

(ii) Suggest why the students included some physical and human attractions from which tourists could choose.

.....

.....

.....

.....[2]

(iii) The answers to Question 1 (*Which continent do you come from?*) are shown in Table 4 below.

Table 4

Answers to Question 1

Continent	Number of tourists
Asia	26
Africa	4
Europe	14
Oceania	8
North America	12
South America	6
Total	70

What conclusions can you make from Table 4 about the origin of tourists visiting Thailand?

.....

.....

.....

.....[2]

(iv) The answers to Question 2 (*What are the main physical attractions you are visiting whilst in Chiang Mai?*) and Question 3 (*What are the main human attractions you are visiting whilst in Chiang Mai?*) are shown in Table 5 (Insert).

Use this data to complete the bar graphs in Fig. 15 on page 25 (opposite). Draw the bars to show the number of visits made to the Botanical Gardens and the Buddhist temples. [2]

Tourist attractions

For Examiner's Use

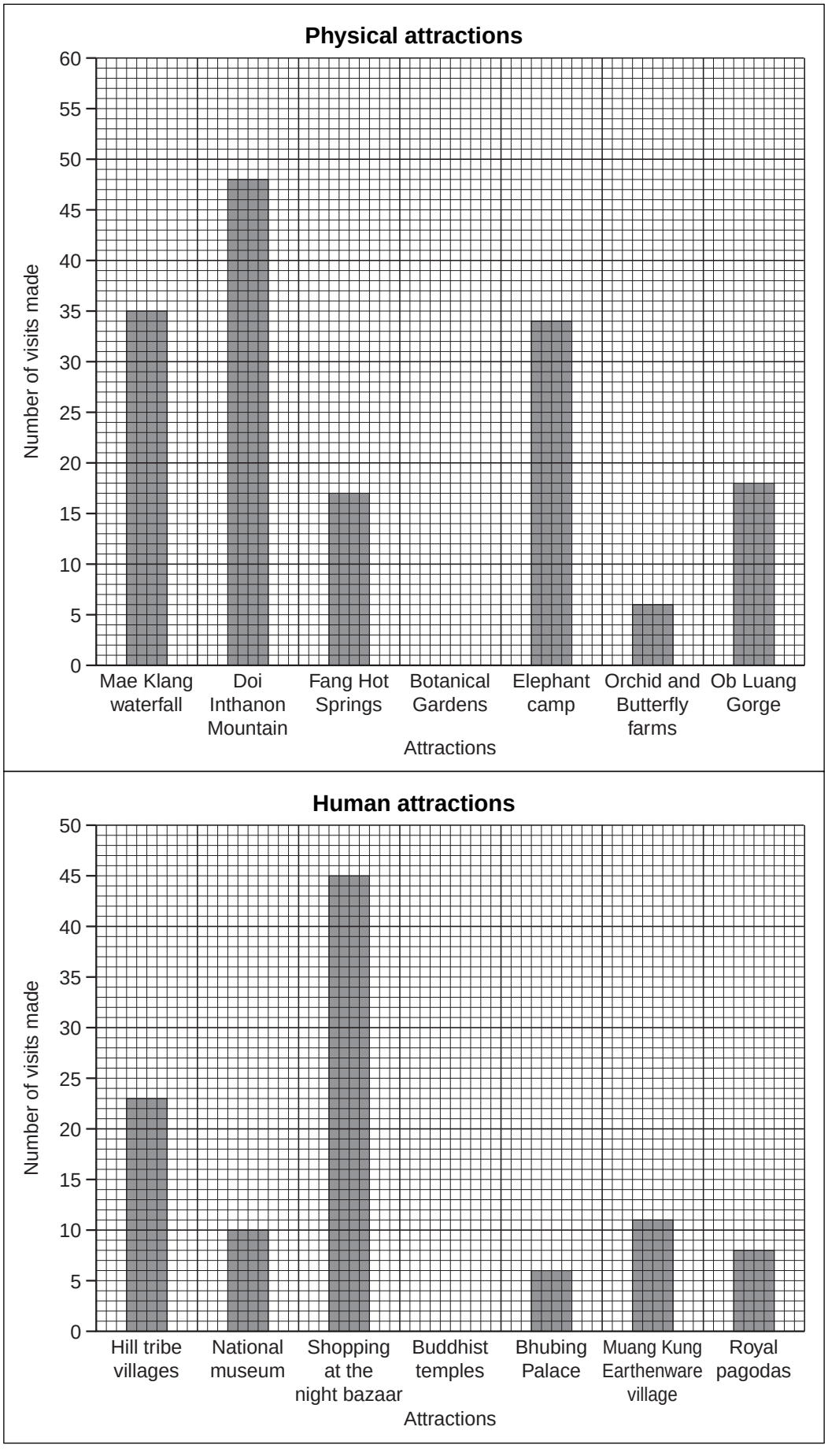

Fig. 15

(v) In the space below draw and label a different type of graph that could be used to show the answers from Question 4 (*Overall which attracted you most to Chiang Mai?*) which are also shown in Table 5 (Insert). [3]

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For Examiner's Use

(vi) The students reached the conclusion that **Hypothesis 1:** *Physical attractions brought more tourists to Chiang Mai than human attractions* was false. Do you agree with them? Support your decision with evidence from Table 5 (Insert).

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.....[4]

(b) The students used a different questionnaire to investigate the impact of tourism on people who lived in Chiang Mai. The questionnaire is shown in Fig. 16 (Insert).

(i) The students used a systematic sampling technique to obtain answers to their questionnaire. Suggest how they might have done this.

.....

.....[1]

(ii) Do you think that it was a good idea to ask people for their first and second choices? Explain your decision.

.....

.....

.....

.....[2]

(c) The answers to Question 2 (*What do you think are the main positive impacts of tourism in Chiang Mai?*) and Question 3 (*What do you think are the main negative impacts of tourism in Chiang Mai?*) are shown in Table 6 (Insert).
The students devised this simple formula to work out which impacts were most important.

For Examiner's Use

Positive impact:	More jobs and income
1st choice	27 × 2 = 54
2nd choice	15 × 1 = 15
Total score	69

(i) Use this formula to work out the total score for air pollution. [2]

Negative impact:	Air Pollution
1st choice	
2nd choice	
Total score	

Using the results calculated by their formula the students drew the graphs, Figs 17A and 17B, below.

For Examiner's Use

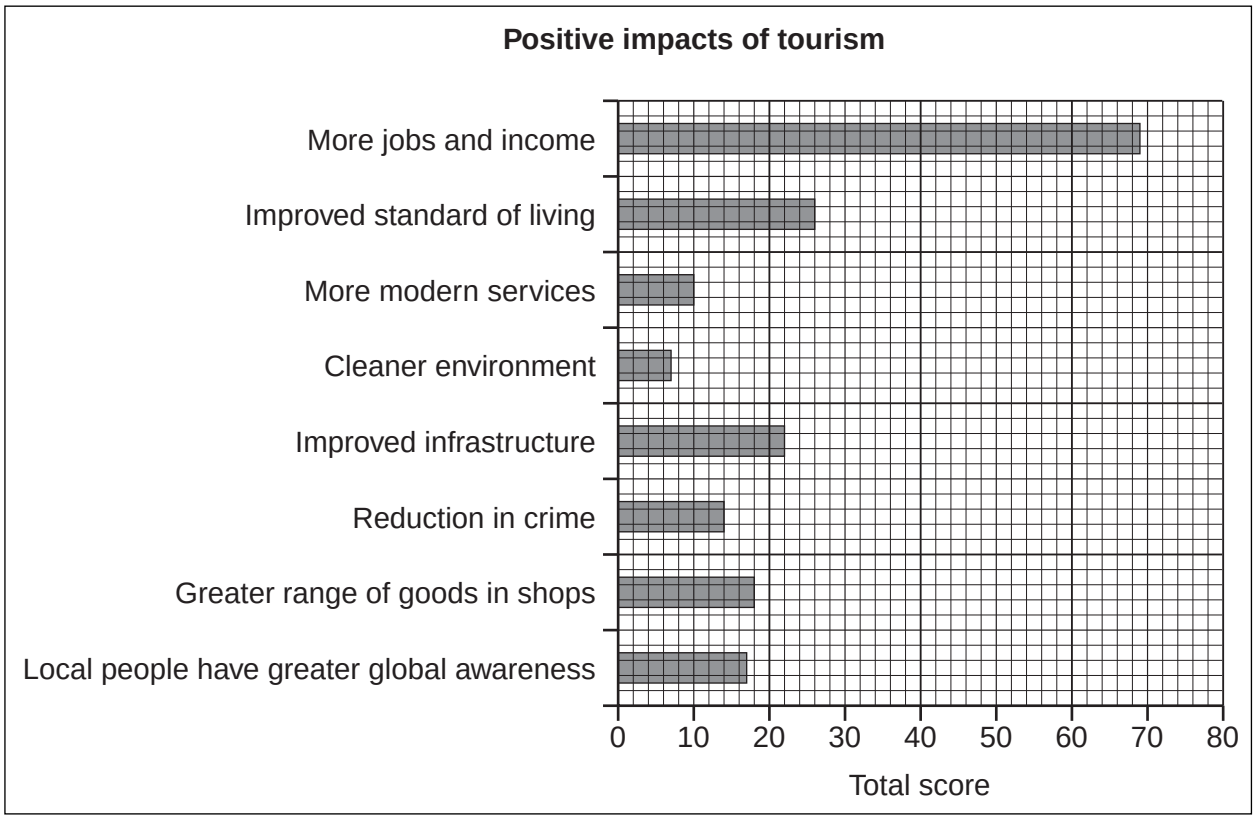

Fig. 17A

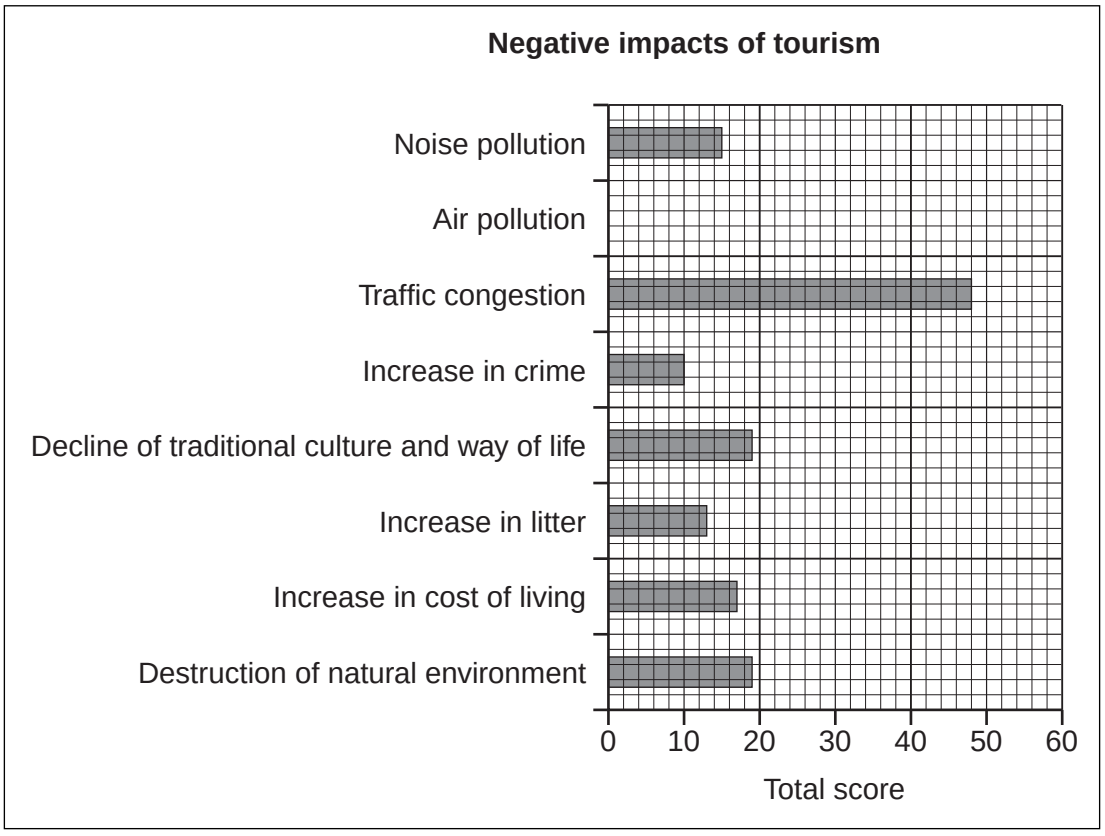

Fig. 17B

(ii) Plot on Fig. 17B the result of your calculation for air pollution in **(c)(i)**. [1]

For Examiner's Use

(iii) What conclusion can you make about **Hypothesis 2:** *Tourism has a positive rather than negative impact on people who live in Chiang Mai*? Support your decision with evidence from Table 6 (Insert) and Figs 17A and 17B.

.....

.....

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.....

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.....[4]

(iv) Local people identified air pollution and traffic congestion as the main negative impacts of tourism. Why do you think they identified these?

.....

.....

.....

.....[2]

(d) Describe how the students could carry out fieldwork to investigate the impact of traffic congestion.

.....

.....

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.....

.....

.....[3]

[Total: 30 marks]

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