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Cambridge IGCSE

Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

2604646273

GEOGRAPHY **0460/42**

Paper 4 Alternative to Coursework **May/June 2019**

1 hour 30 minutes

Candidates answer on the Question Paper.

Additional Materials: Ruler
Calculator

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 an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Write your answer to each question in the space provided.
If additional space is required, you should use the lined pages at the end of this booklet. The question number(s) must be clearly shown.

Answer **all** questions.

The Insert contains Figs. 1.1, 1.2 and 1.5 for Question 1, and Tables 2.1, 2.2 and 2.3 for Question 2.
The Insert is **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.

This syllabus is regulated for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **15** printed pages, **1** blank page and **1** Insert.

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1 Students in South Korea investigated differences in temperatures around their school. They chose 10 sites at which to measure temperature, 5 in a built-up area and 5 in a rural area. The 10 sites are shown on Fig. 1.1 (Insert).

The students investigated the following hypotheses:

Hypothesis 1: *Temperatures are higher in the built-up area than in the rural area.*

Hypothesis 2: *Daily temperatures differ more in the built-up area than in the rural area.*

(a) To measure the temperature the students used a digital thermometer. This is shown in Fig. 1.2 (Insert).

(i) Give **three** advantages of using a digital thermometer such as the one shown in Fig. 1.2.

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3 .....

..... [3]

(ii) Suggest **two** ways that the students could check that their temperature measurements were correct.

1 .....

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2 .....

..... [2]

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(b) The students measured the temperature in the morning and afternoon at each of the 10 sites. Their results are shown in Table 1.1 below.

Table 1.1

Students' results

Measuring site location	Morning temperature (°C)	Afternoon temperature (°C)	Average temperature (°C)	Difference between morning and afternoon temperature (°C)
Sites in built-up area				
Pathway next to the canteen	19.2	26.8	23.0	7.6
Centre of the school buildings	18.9	30.3	24.6	11.4
Driveway leading to the school	22.1	39.8	31.0	17.7
Artificial grass next to the sports hall	**17.8**	**27.9**	22.9	10.1
Residential area for students	25.2	32.7	**29.0**	7.5
Sites in rural area				
Tea plantation	21.5	22.5	22.0	1.0
Small open woodland	17.1	18.7	17.9	1.6
Grassland	16.9	25.6	21.3	8.7
Large dense woodland	16.4	16.9	**16.7**	0.5
Large car park	17.5	38.7		

(i) Calculate the average temperature and the difference in temperature between morning and afternoon at the large car park. **Write your answers in Table 1.1.** [2]

(ii) The students decided **not** to use the results from the car park. Look again at Table 1.1 and Fig. 1.1 and suggest why they made this decision.

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[Turn over

(iii) Use the results in Table 1.1 **to complete Fig. 1.3 below by plotting the average temperatures** of the sites in the residential area for students and the large dense woodland. [2]

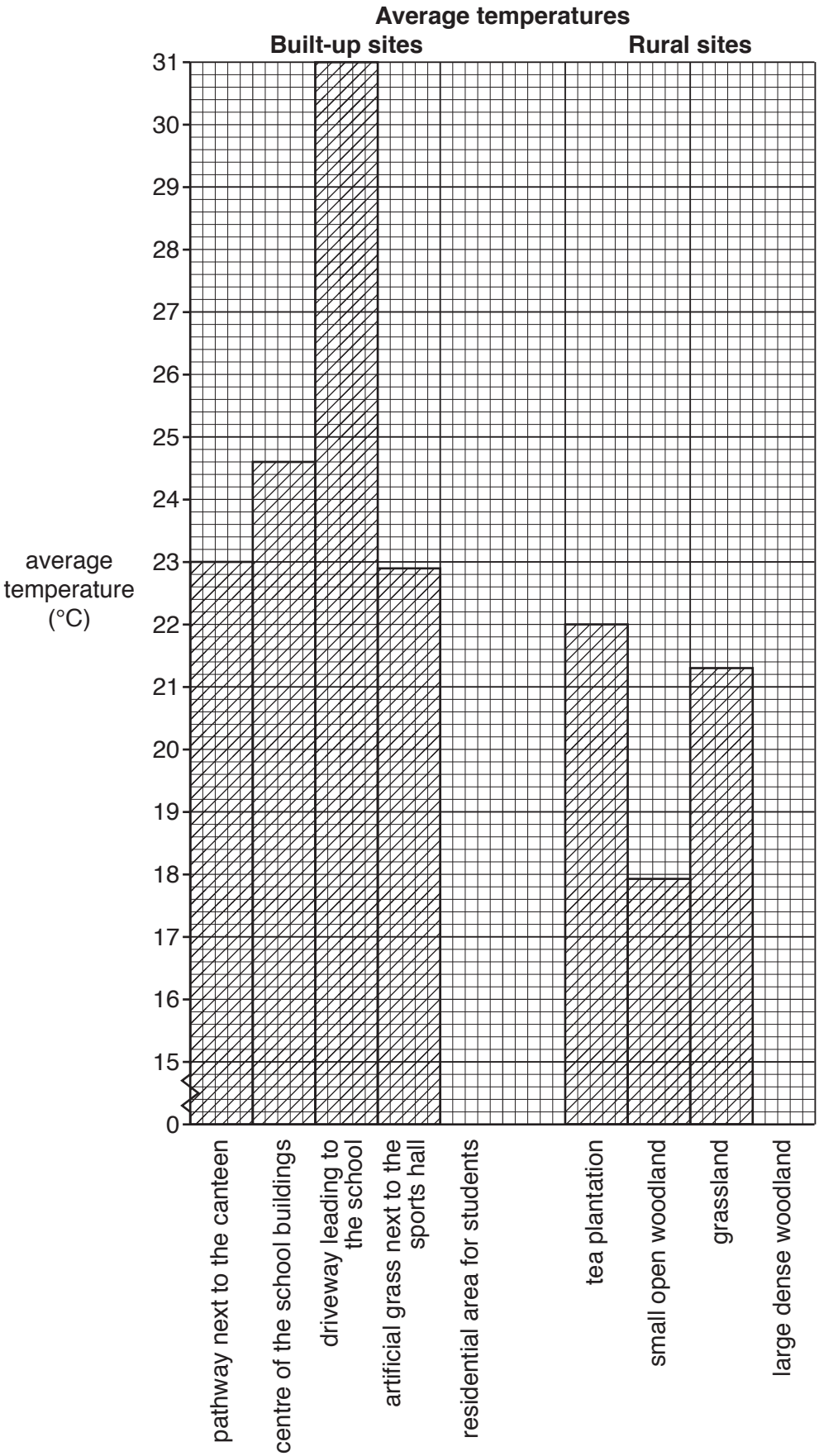

Fig. 1.3

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(iv) What is your conclusion to **Hypothesis 1:** *Temperatures are higher in the built-up area than in the rural area*? Support your decision with evidence from Fig. 1.3 and Table 1.1. Do **not** refer to results from the car park in your answer.

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..... [3]

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[Turn over

(c) To investigate **Hypothesis 2:** *Daily temperatures differ more in the built-up area than in the rural area*, the students studied the results of their morning and afternoon measurements (not including the car park).

(i) Use the results in Table 1.1 to **plot on Fig. 1.4** below the temperatures of the site on artificial grass next to the sports hall. [2]

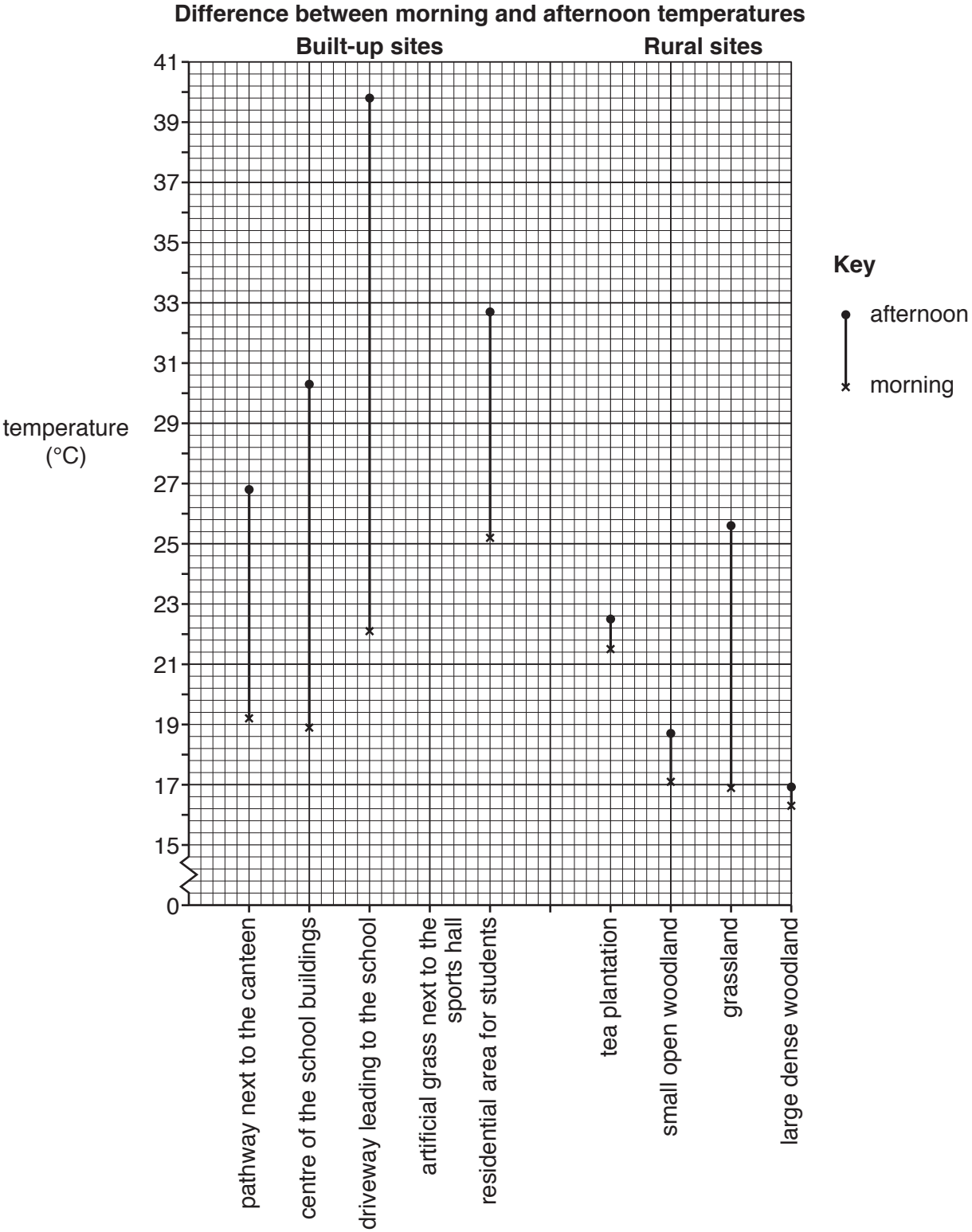

Fig. 1.4

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(ii) Which conclusion to **Hypothesis 2:** *Daily temperatures differ more in the built-up area than in the rural area* is most accurate? Tick your decision and support your answer with data from Fig. 1.4 and Table 1.1. Do **not** refer to results from the car park in your answer.

Conclusion	Tick (✓)
Hypothesis 2 is completely true.	
Hypothesis 2 is partially true.	
Hypothesis 2 is not true.	

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..... [3]

(iii) Suggest reasons for the difference in temperatures between built-up and rural areas shown in Fig. 1.4 and Table 1.1.

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..... [4]

(d) Explain how and why an increase in the amount of cloud cover might affect daytime temperatures in the area around the school.

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..... [2]

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[Turn over

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(e) Whilst measuring the temperatures at different sites the students realised that wind speed varied. An instrument to measure wind speed is shown in Fig. 1.5 (Insert).

(i) What is the instrument used to measure wind speed called?

..... [1]

(ii) Explain how this instrument measures wind speed.

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..... [3]

[Total: 30]

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2 Students from a popular tourist town in England wanted to find out how tourism affected traffic in the town. They decided to do a traffic survey to investigate this issue. Each student chose different hypotheses to investigate.

One student tested the following hypotheses:

Hypothesis 1: *Cars are the main category (type) of vehicle in the town throughout the day.*

Hypothesis 2: *The percentage of tourist coaches varies during the day.*

(a) To investigate the hypotheses the students did a traffic survey at four sites around the town centre.

The table below shows different features of a reliable traffic survey. **Complete the table** to explain how each feature makes a survey reliable. The first explanation has been done for you.

Feature	Explanation
Students must not stand too near the side of the road.	To make sure they are not in danger from traffic
Counting must start and finish at the same time at all counting sites.	....
At each site traffic must be counted moving past in both directions.	....
Students need to agree on the different categories in which to count vehicles.	....
A tally method is used to count and record vehicles.	....
A data recording sheet must be completed at each site.	....

[5]

(b) The students agreed to count the traffic in different parts of the town for 30 minutes at six times during the day. The results of the traffic counts between 08:30 and 09:00 and between 10:30 and 11:00 are shown in Tables 2.1 and 2.2 (Insert).

(i) Which category (type) of vehicle has the same total at both times?

..... [1]

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[Turn over

(ii) What do the results show about the number of cars counted between 08:30 and 09:00 and between 10:30 and 11:00?
Tick (✓) your answer below.

	Tick (✓)
The number of cars goes up.	
The number of cars is the same.	
The number of cars goes down.	

[1]

(iii) An example of the students' recording sheet is shown in Fig. 2.1 below. Use the data in Table 2.3 (Insert) to **complete the recording sheet**. [3]

Recording sheet

Site 1:		Time: 12:30 – 13:00
Vehicle category	Tally	Total
Car	𝍸 𝍸 𝍸 𝍸 IIII	24
Local bus/ minibus	IIII	4
Lorry/van	𝍸 𝍸 𝍸 𝍸 𝍸 II	27
Tourist coach	𝍸 IIII	9
Motorbike		
Taxi		
Bicycle		
Total of all vehicles		

Fig. 2.1

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(c) The students constructed divided bar graphs from the total results of their traffic survey. These are shown in Fig. 2.2 below.

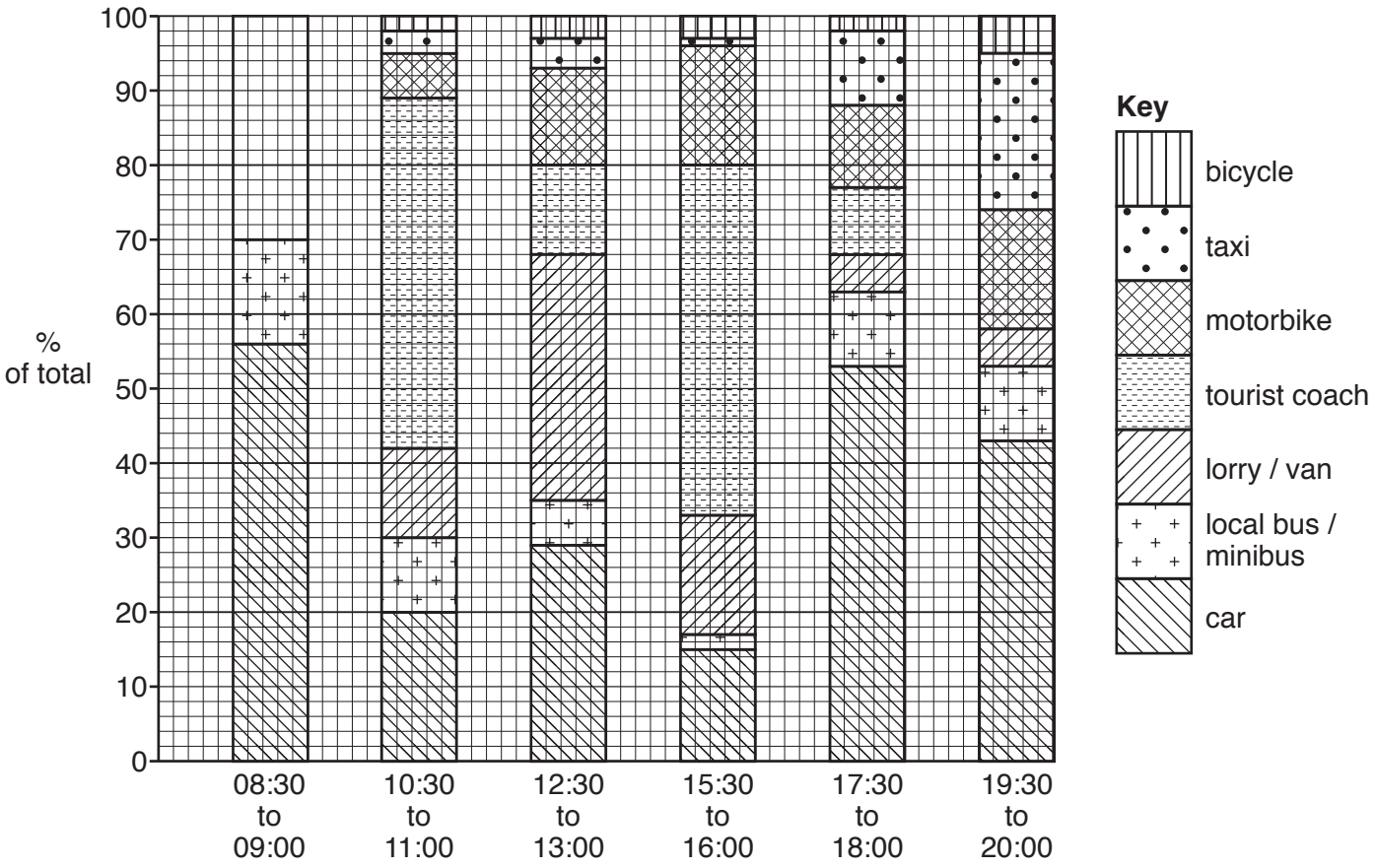

Fig. 2.2

(i) Use the results for the period 08:30 to 09:00 in Table 2.1 (Insert) to **complete the graph** in Fig. 2.2. [3]

(ii) At which survey time was the percentage of taxis greater than the percentage of motorbikes?

..... [1]

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(iii) What conclusion would you make about **Hypothesis 1:** *Cars are the main category (type) of vehicle in the town throughout the day*? Support your decision with evidence from Fig. 2.2.

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..... [4]

(iv) Suggest **different** reasons for the variation in the percentage of cars and lorries / vans during the day.

Cars

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Lorries / vans

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..... [2]

(d) The student decided that **Hypothesis 2:** *The percentage of tourist coaches varies during the day* was **true**. Use evidence from Fig. 2.2 to support this conclusion.

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..... [3]

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(e) To extend her fieldwork the student decided to use a questionnaire to find out what opinions people had about the traffic-free zone in the centre of the town.

(i) Name and describe a sampling method to use with the questionnaire.

Name of sampling method .....

Description of method

.....

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..... [3]

(ii) Give **two** advantages and **two** disadvantages of a traffic-free zone in a town centre.

Advantages

1 .....

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2 .....

.....

Disadvantages

1 .....

.....

2 .....

..... [4]

[Total: 30]

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Additional Pages

If you use the following lined pages to complete the answer(s) to any question(s), the question number(s) must be clearly shown.

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