Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

5326594092

GEOGRAPHY **2217/22**

Paper 2 **May/June 2014**

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 an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, 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, Photographs B, C and D and Table 2 for Question 7, and Fig. 14 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.

This document consists of **27** printed pages, **1** blank page and **1** Insert.

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Section A

Answer **all** questions in this section.

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

(a) **(i)** Give the four figure grid reference of the square that has the largest amount of surface water.

.....[1]

(ii) Give the six figure grid reference of the junction of the narrow tarred road with the wide tarred road.

.....[1]

(b) To which settlement does the railway go, if you travel east, beyond the edge of the map?

.....[1]

(c) Study grid square 5482. How does the natural vegetation change with height?

.....

.....[1]

(d) Find the bench marks, indicating the height of the road, at 545884 and 576899.

(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 **(d)(i)** to calculate the gradient of this section of road. Show your calculation.

.....

.....

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

(iii) What is the compass direction of the road from 545884 to 576899?

.....[1]

[Turn over

(e) Study Fig. 1, a cross section from 520910 to 550880.

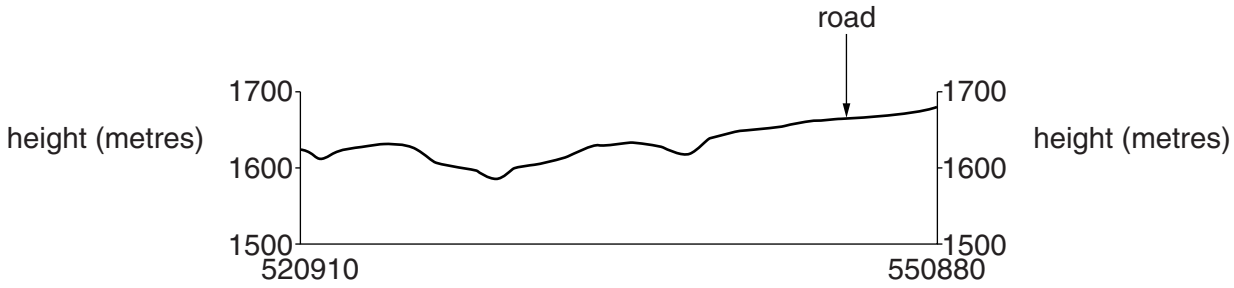

Fig. 1

On Fig. 1, use labelled arrows to show the position of the following features:

- a reservoir;
- the Nyakambiri River;
- the railway;
- **two** areas of cultivation. [5]

(f) Study the area indicated in Fig. 2.

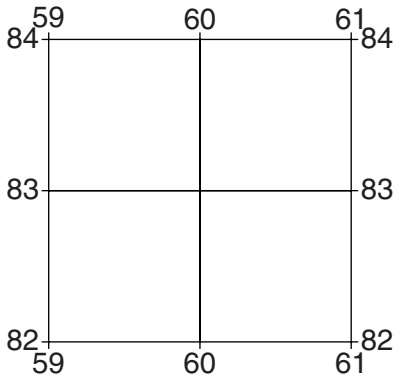

Fig. 2

(i) Describe the physical features in this area.

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.....

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.....

.....

.....[4]

(ii) Describe the human features in this area.

.....

.....

.....

.....[3]

[Total: 20 marks]

[Turn over

2 Study Fig. 3, which shows Britain's rainfall for January to June 2010, compared to average figures.

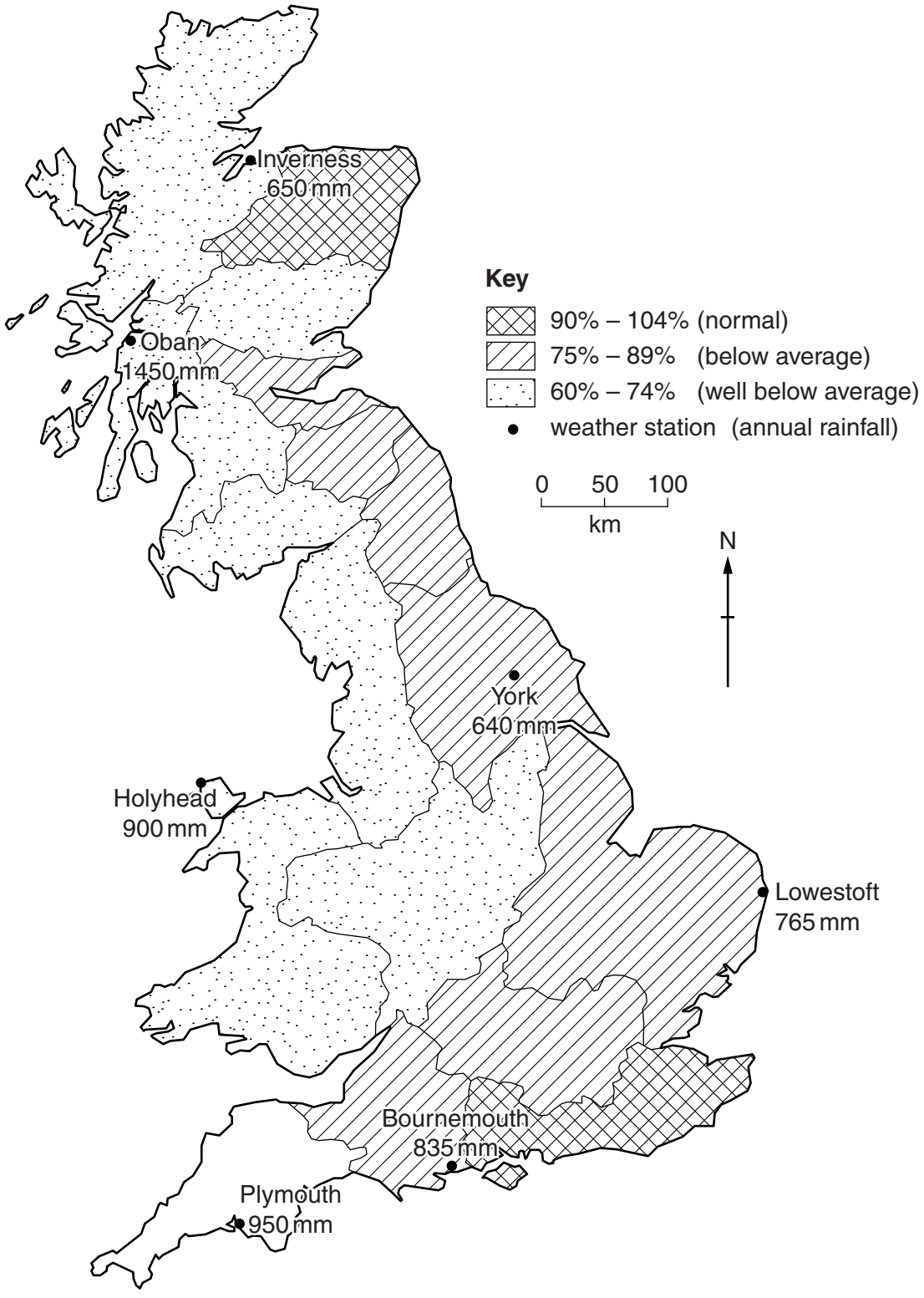

Fig. 3

(a) (i) Complete Fig. 3 to show rainfall at 73% of average in the south-west region. [1]

(ii) Describe the distribution of areas of well below average (60% to 74%) rainfall.

.....

.....

.....

.....[3]

(b) (i) Which weather station has the lowest annual rainfall?

.....[1]

(ii) Calculate the rainfall total for 2010 if Holyhead were to experience 60% of normal annual rainfall.

.....[1]

(c) Using information from Fig. 3 only, tick two correct statements.

	Tick (✓)
The west is usually drier than the east.	☐
The west is usually wetter than the east.	☐
Rainfall in the east was closer to normal than in the west.	☐
Rainfall in the west was closer to normal than in the east.	☐

[2]

[Total: 8 marks]

3 Study Fig. 4, information about nuclear power in Bangladesh.

Russia and Bangladesh have agreed to a joint project to install Bangladesh's first nuclear power station at Rooppur. Two modern nuclear reactors will be constructed, each with a capacity to generate 1000 MW.

Bangladesh is working with Russia due to its experience in the nuclear industry. Russia is fourth in the world for nuclear electricity generation, second for uranium reserves and fifth for uranium mining.

Bangladesh is diversifying its power station options to include nuclear power because only a small amount of uranium is needed and the price of it is more stable than that of oil, gas or coal. Russia is expected to supply the fuel for the reactor.

The new power station will go some way to easing the shortage of power in Bangladesh. On March 7, 2011, the total electricity demand was around 5000 MW but only 3850 MW was generated. The shortage is greater during the summer when temperatures exceed 30 °C.

Construction is expected to cost US$1.5 – 2.0 billion, with most finance coming from Russia.

Fig. 4

(a) (i) How many megawatts (MW) of electricity will be produced at the Rooppur power station?

.....[1]

(ii) Give an advantage, from Fig. 4, of uranium fuel over fossil fuel.

.....

.....[1]

(iii) Give **two** ways in which Russia is contributing to the power station project.

.....

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.....

.....[2]

(b) (i) By how much did electricity demand exceed supply, on March 7, 2011?

.....

.....[1]

(ii) Suggest why the shortage of electricity is greater during the summer.

.....

.....[1]

(iii) Due to the shortage of electricity there are times when there is no power available. Suggest **two** problems this causes in factories.

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.....[2]

[Total: 8 marks]

4 Study Fig. 5, which shows the climate in an area of tropical rainforest.

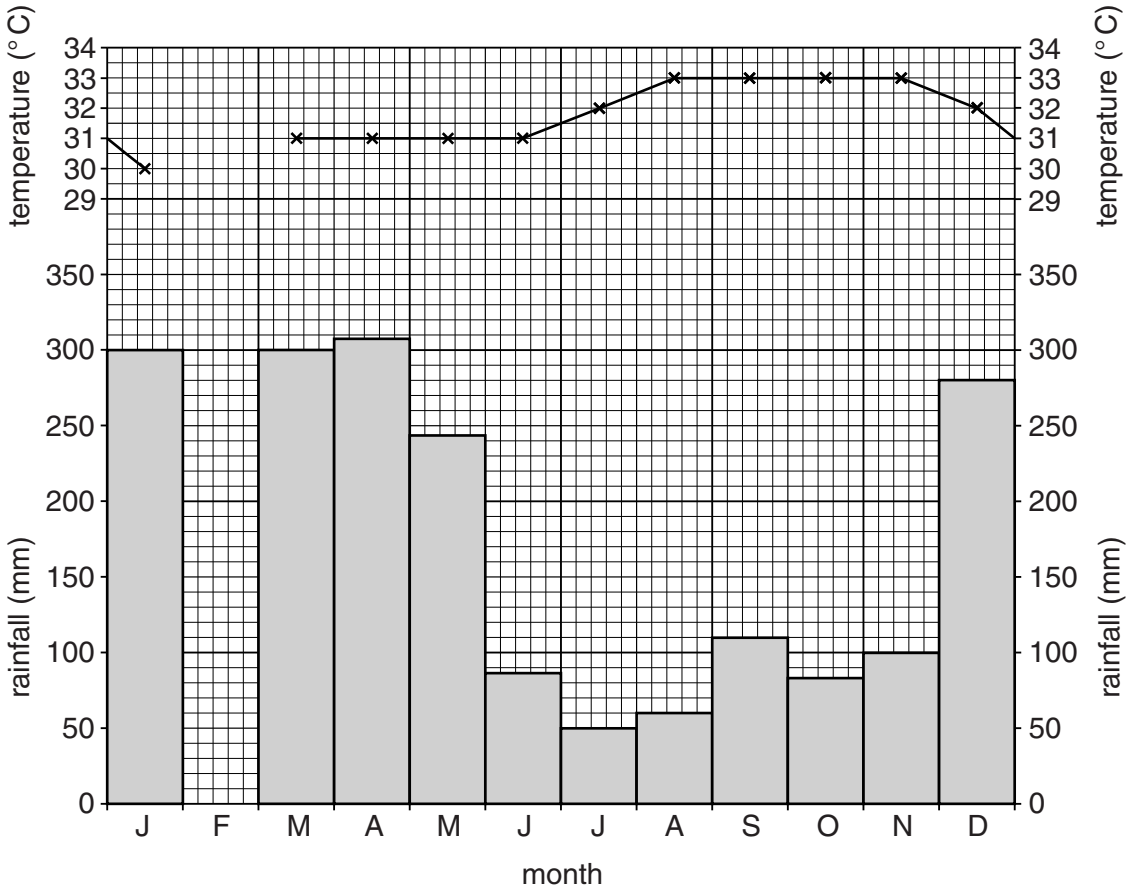

Fig. 5

(a) (i) Complete Fig. 5 to show 210 mm of rain and 31 °C in February. [2]

(ii) Which month has the highest rainfall?

.....[1]

(iii) What is the rainfall total for November?

.....[1]

(iv) State the annual temperature range.

.....[1]

(b) Study Fig. 6, which shows features of rainforest trees. Draw lines on Fig. 6 to match each feature with the explanation for it. One line has been done for you.

Feature	Explanation
	as no need to limit moisture loss
Drip tip leaves	
	to help plants reach the canopy
Thick buttress roots	
	to provide stability in shallow soil
Tall trees	
	to reach sunlight
Thin bark	
	to shed excess water
	to store plenty of water

Fig. 6

[3]

[Total: 8 marks]

5 Study Table 1, which shows zone of work for workers living in six zones in a city of an LEDC.

Table 1

Place of work

zone of residence: %	zone 1	zone 2	zone 3	zone 4	zone 5	zone 6	at home	other	total
zone 1	(76.0)	5.2	4.1	0.9	1.1	2.9	8.5	1.3	100%
zone 2	20.3	(60.4)	6.2	1.6	1.5	1.0	6.2	2.8	100%
zone 3	6.7	5.0	(73.1)	4.2	2.0	0.7	5.0	3.3	100%
zone 4	10.2	4.4	21.2	(47.8)	0.5	0.8	8.8	6.3	100%
zone 5	9.0	7.6	6.7	0.9	(54.6)	6.7	2.1	12.4	100%
zone 6	13.3	8.0	7.7	15.1	3.6	(37.6)	4.4	10.3	100%

Key

( ) = work and live in same zone

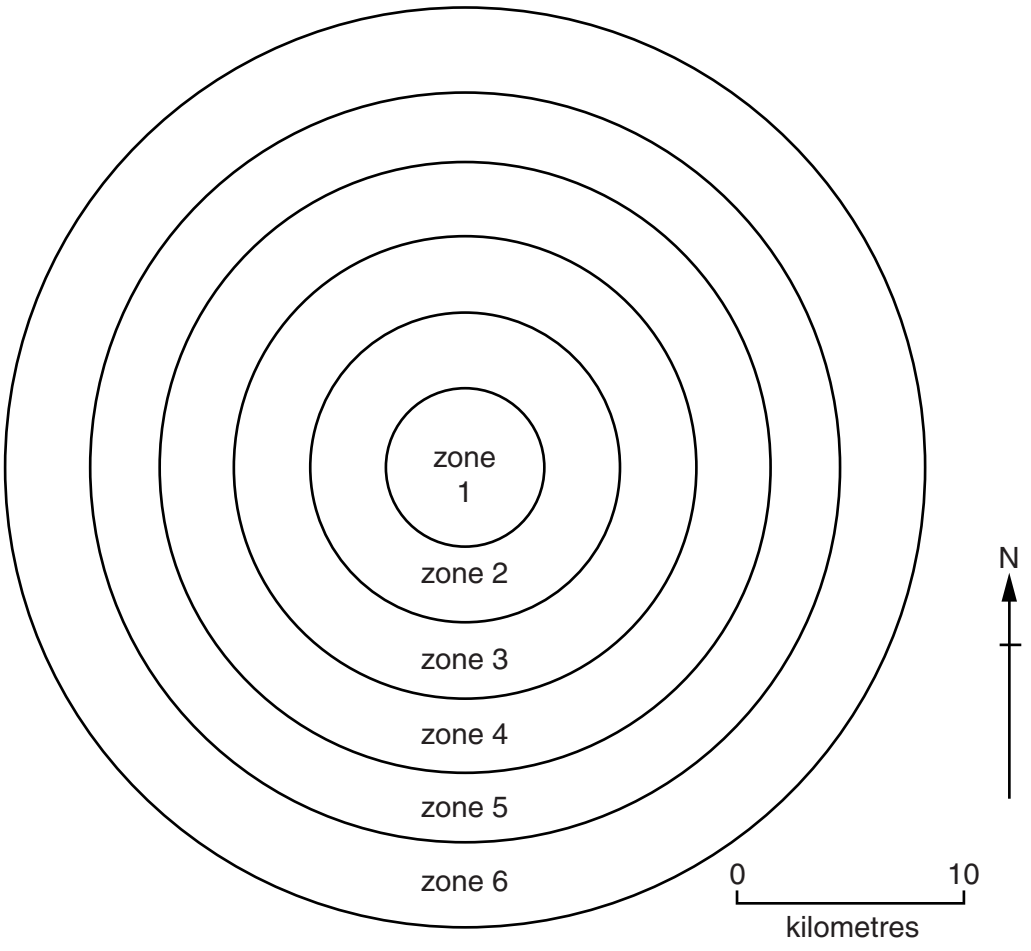

Fig. 7

(a) (i) Which zone has the highest percentage of people working at home?

.....[1]

(ii) What percentage of people resident in zone 3 commute to work in zone 1?

.....[1]

(iii) Which zone provides the largest percentage of commuters travelling into zone 1 for work?

.....[1]

(b) (i) Fig. 7 shows the position of the zones. With reference to Fig. 7 and Table 1, compare the number of workers who work and live in the same zone.

.....

.....[1]

(ii) Suggest **two** reasons for the differences.

.....

.....

.....

.....[2]

(c) Suggest why some workers would be classified in Table 1 as "other".

.....

.....

.....

.....[2]

[Total: 8 marks]

6 Study Photograph A (Insert), and Fig. 8, which show the location of a factory.

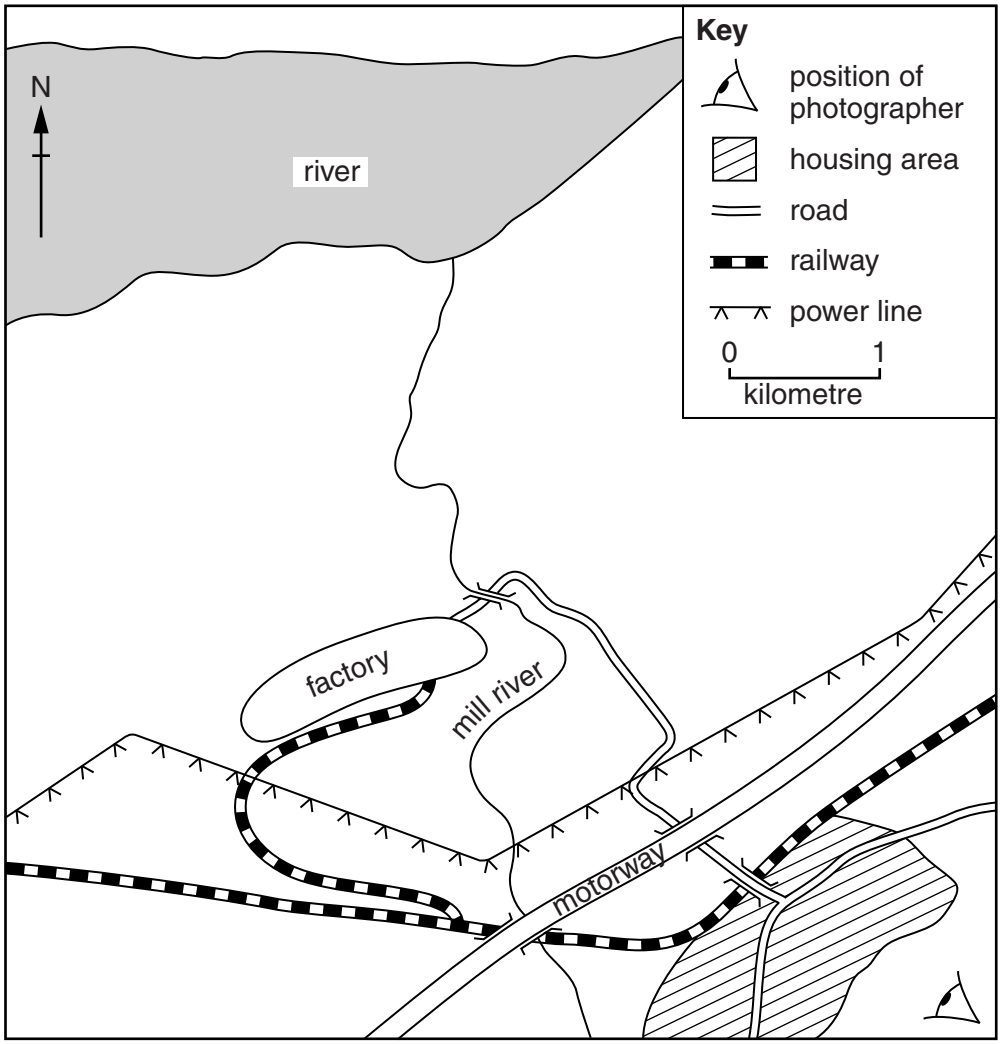

Fig. 8

(a) (i) On Fig. 8, label:

- the estuary;
- the floodplain. [2]

(ii) Draw a line on Fig. 8 to suggest the location of the line of trees in the foreground of Photograph A. [1]

(b) Using Fig. 8 and Photograph A only, suggest reasons for the location of this factory.

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.....[5]

[Total: 8 marks]

Section B

Answer **one** question in this section.

7 Three students wanted to investigate the effects of two different types of woodland on temperature and the amount of sunlight in the wooded areas. Photographs B and C (Insert) show the two types of woodland.

They decided to investigate the following hypotheses:

Hypothesis 1: *Temperature will be higher in the area of deciduous woodland than in the area of coniferous woodland.*

Hypothesis 2: *The amount of light at ground level will differ in the two areas of woodland.*

(a) To begin their investigation the students drew two transect lines (**X** and **Y**) on a map of the area. These are shown on Fig. 9 (Insert).

(i) Suggest **three** pieces of advice their teacher gave them to keep them safe whilst carrying out fieldwork in this area.

1 .....

.....

2 .....

.....

3 .....

.....[3]

(ii) Using Fig. 9, describe **two** similarities and **two** differences between transects **X** and **Y**.

Similarities

1 .....

.....

2 .....

.....

Differences

1 .....

.....

2 .....

.....[4]

(b) The three students decided to take measurements of temperature and light every 25 metres along each transect line. They worked along transect X in the morning and along transect Y in the afternoon.

(i) What is the name of the sampling method they used?

Circle your choice below.

random stratified systematic [1]

(ii) Suggest why they took measurements every 25 metres.

.....

.....

.....

.....[2]

(c) The results of the students' measurements are shown in Table 2 (Insert).

(i) To measure temperature they used the digital thermometer shown in Photograph D (Insert).

Give **two** advantages of using a digital thermometer for this task.

1 .....

.....

2 .....

.....[2]

(ii) To measure the amount of light at ground level the students made a measuring device to estimate the percentage of sky they could see. More sky means more light.

Their measuring device is shown in Fig. 10 (Insert) along with instructions on how it was used.

What percentage of sky is shown on Fig. 10?

.....% [2]

(iii) Use Table 2 (Insert) to give the most common temperature recorded in the **grassland** area.

..... °C [1]

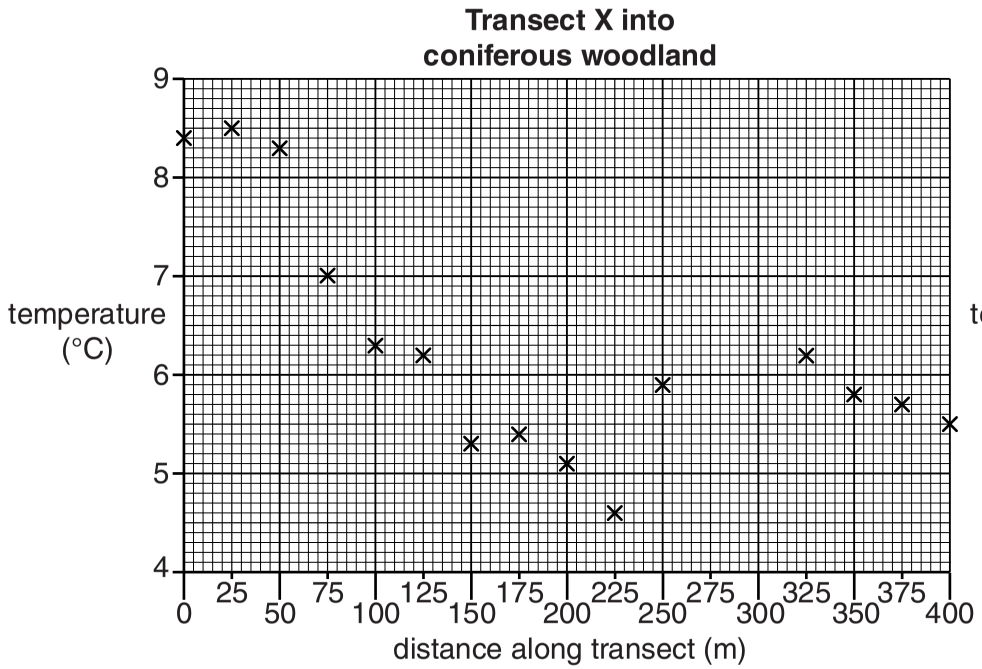
(iv) The students used their results in Table 2 (Insert) to plot the graphs in Fig. 11 opposite. Use the results shown in Table 2 to plot the temperatures at 275 m and 300 m along transect X. [2]

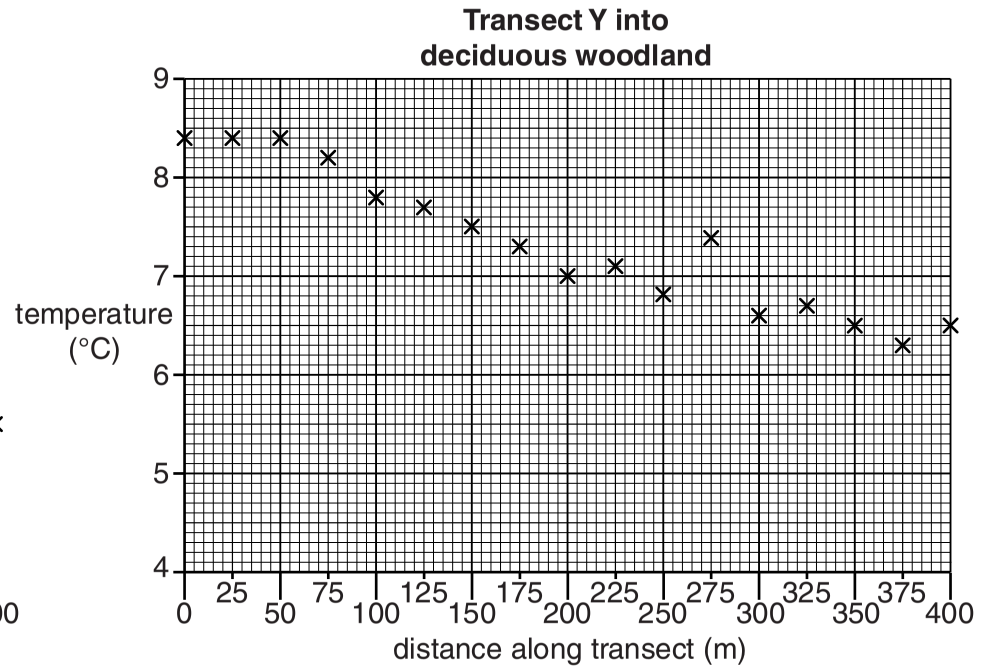
(v) Use the results in Table 2 to plot the percentage of sky measured at 150 m and 300 m along transect Y. [2]

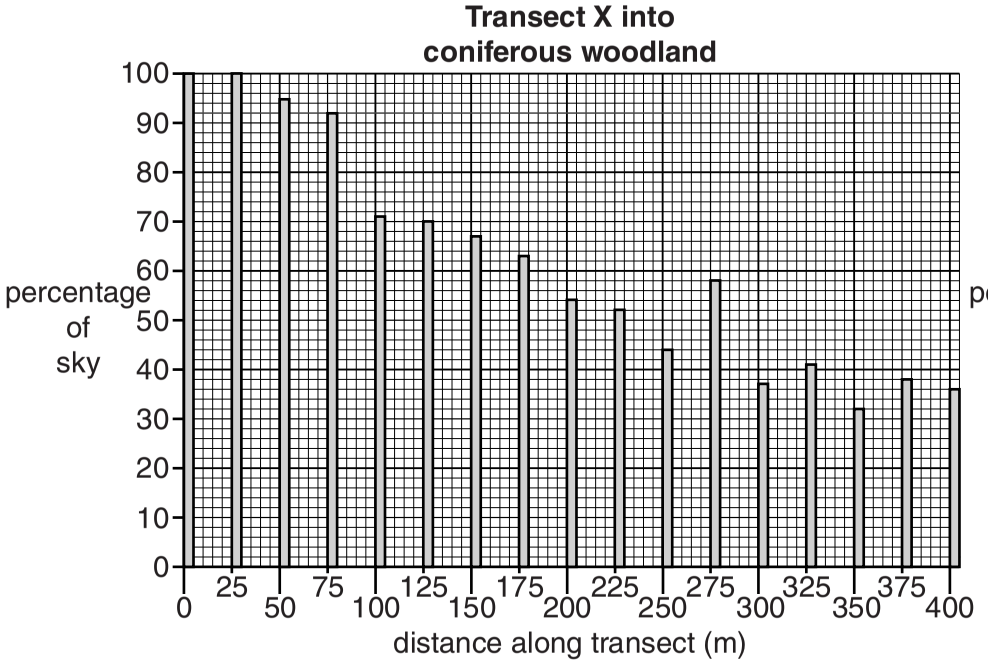
(vi) How does the percentage of sky measured differ between the grassland and woodland in both transects?

.....

.....[1]







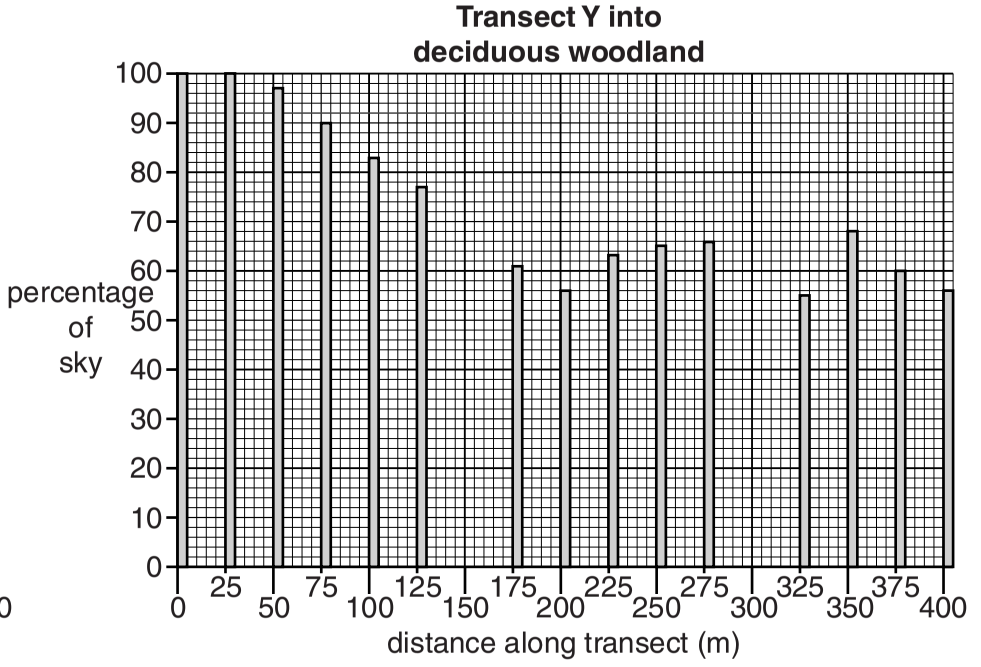


Fig. 11

(d) (i) What conclusion would the students make about **Hypothesis 1:** *Temperature will be higher in the area of deciduous woodland than in the area of coniferous woodland?*

Support your decision with evidence from Fig. 11.

.....

.....

.....

.....

.....

.....[3]

(ii) The students agreed that **Hypothesis 2:** *The amount of light at ground level will differ in the two areas of woodland* was correct.

Give **two** pieces of evidence from Fig. 11 to support their decision.

1 .....

.....

2 .....

.....[2]

(iii) Using Photographs B and C (Insert), suggest why temperature and the percentage of sky measured are different in the two areas.

.....

.....

.....

.....[2]

(e) Having completed their investigation the students considered how they could have improved the reliability of their results. Suggest **three** ways they might have done this.

1 .....

.....

2 .....

.....

3 .....

.....[3]

[Total: 30 marks]

TURN PAGE FOR QUESTION 8

8 Students were studying different residential areas of cities in MEDCs. They decided to do some fieldwork to compare different types of housing area in the 'inner city'. They chose to study three areas:

- Area A: an area of houses which were built around 1850
- Area B: an area of terraced houses which were built around 1920
- Area C: an area of houses and apartment blocks which were built when the area was redeveloped around 1990

The students investigated the following hypotheses:

Hypothesis 1: *The newer the housing area the better the environment.*

Hypothesis 2: *Parking and traffic are problems for people living in all three inner city areas.*

(a) In order to investigate **Hypothesis 1** the students did an environmental quality survey on roads in each housing area. Their recording sheet is shown in Fig. 12 below.

Environmental quality recording sheet

Environmental quality survey									
Location: Area A/B/C (circle the area)									
Feature	**Negative description**	**–3**	**–2**	**–1**	**0**	**+1**	**+2**	**+3**	**Positive description**
Housing layout and design	Poor, identical and low quality								Varied, well spaced out and high quality
Building care and condition	Poorly maintained and unattractive								Well maintained and attractive
Pavements	No pavement or poorly maintained								Well maintained and safe to walk on
Gardens	No private gardens and poorly maintained								Individual gardens and well maintained
Public open space	None, unattractive natural environment								Plenty, and attractive natural environment
Noise	Very noisy from different sources								Quiet, and causes no inconvenience
Air pollution	High level of pollution from different sources								Low level of pollution
Vandalism and graffiti	Found everywhere								No vandalism and graffiti

Fig. 12

(i) First the students did a pilot survey in a road near their school.

Suggest **two** reasons why they did a pilot survey.

1 .....

.....

2 .....

.....[2]

(ii) Describe how the students used the recording sheet shown in Fig. 12.

.....

.....

.....

.....[2]

(iii) Suggest **two** ways that the students could have organised themselves to make sure that their results were reliable.

Give a reason for each way you suggest.

Suggestion 1 .....

.....

Reason .....

.....

Suggestion 2 .....

.....

Reason .....

.....[4]

(b) When the students had completed their environmental quality survey they calculated the average results of the roads they had surveyed in each of the three areas.

These results are shown in Table 3 below.

Table 3

Average results of the environmental quality survey (to the nearest whole number)

Feature	Roads in area A	Roads in area B	Roads in area C
Housing layout and design	+1	–3	+3
Building care and condition	+3	–1	+2
Pavements	–1	–2	+2
Gardens	–2	–3	+1
Public open space	+1	–2	+2
Noise	+1	–1	+1
Air pollution	+1	–1	+1
Vandalism and graffiti	+2	–1	–1
Total score	**+6**	**–14**	

(i) Complete Table 3 by adding the total score for the roads in area C. [1]

(ii) Use the results for 'Housing layout and design' to complete the graphs for the roads in areas A and B in Fig. 13 opposite. [2]

(iii) The students decided that **Hypothesis 1:** *The newer the housing area the better the environment*, was partly true. Use data from Table 3 and Fig. 13 to support their conclusion.

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.....[4]

Results of environmental quality survey

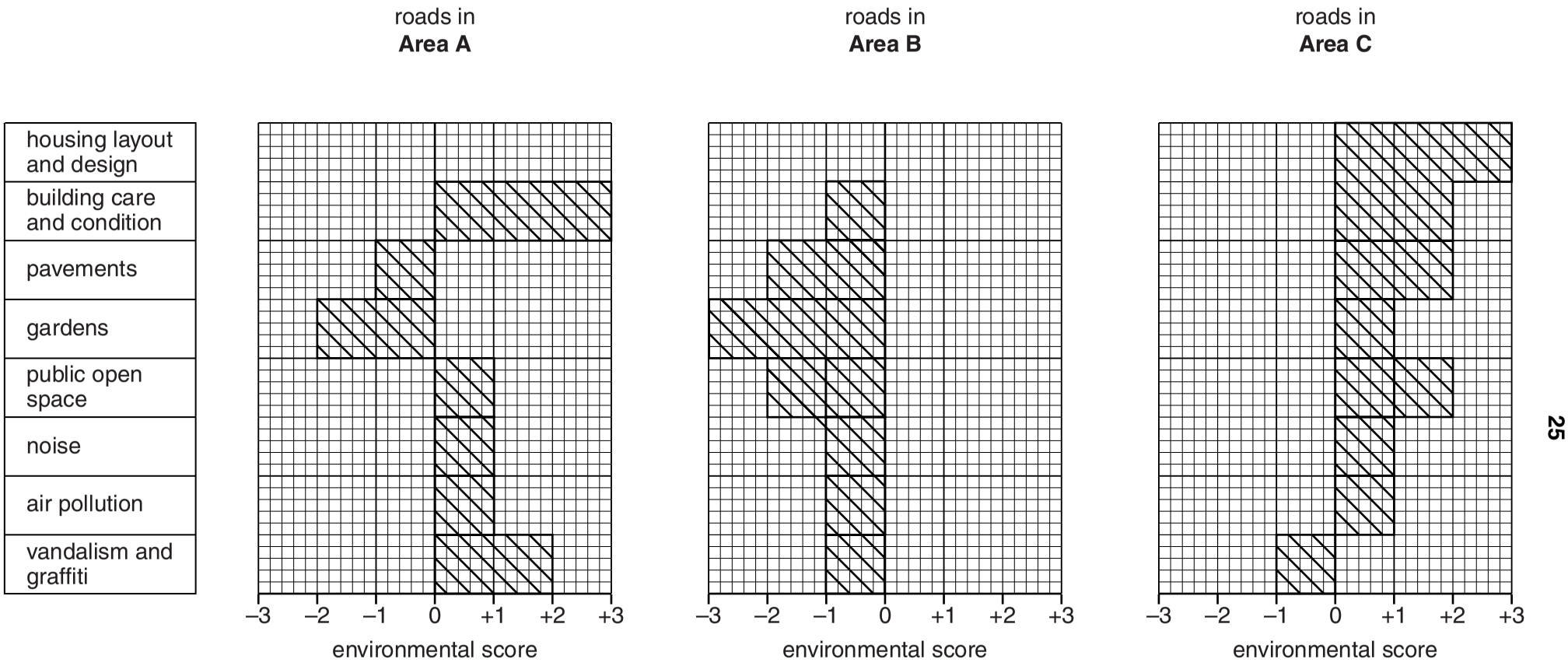

Fig. 13

[Turn over

(c) To investigate **Hypothesis 2:** *Parking and traffic are problems for people living in all three inner city areas,* the students used a questionnaire with residents in each of the three areas. This is shown in Fig. 14 (Insert).

(i) Name a sampling method the students could use to get a representative sample of people to take part in their survey.

Name of sampling method .....

Give **two** reasons for your choice.

1 .....

.....

2 .....

.....[3]

(ii) When they had completed their questionnaires the students devised a scoring system to use with the results. The points they awarded for each answer are shown in Table 4 below.

Table 4

Answer	Points awarded
Strongly agree	4
Agree	3
Disagree	2
Strongly disagree	1

The students then calculated the average number of points awarded in each area. These are shown in Table 5 below.

Table 5

Average points awarded in each area

	Area A	Area B	Area C
Car parking is difficult in the area where I live	3.8	3.3	1.8
Traffic is a problem in the area where I live	2.9	3.7	1.5

What was the students' conclusion about **Hypothesis 2:** *Parking and traffic are problems for people living in all three inner city areas*? Support your decision with evidence from Table 5.

.....

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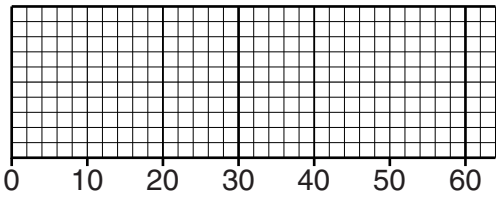
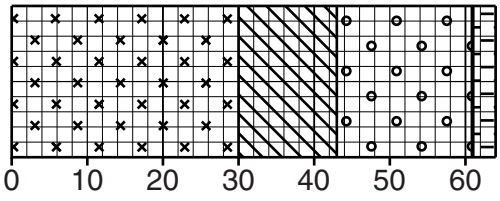
.....[4]

(iii) The main reasons why people thought that parking and traffic were problems are shown in Table 6 (Insert). Use this information to complete Fig. 15 below for parking. [2]

Why parking is difficult



Why traffic is a problem



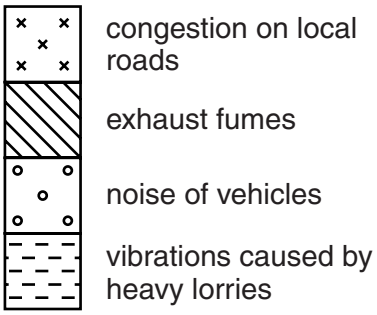


Fig. 15

(iv) Suggest a different way to improve each of the following in inner city areas.

Parking .....

.....

Traffic problems .....

.....[2]

(d) To extend their fieldwork the students wanted to investigate another possible difference between the three housing areas. Suggest an investigation and describe a method you would use.

Investigation .....

.....

Fieldwork method .....

.....

.....

.....

.....

.....[4]

[Total: 30 marks]