Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

8267696354

GEOGRAPHY **0460/43**

Paper 4 Alternative to Coursework **May/June 2014**

1 hour 30 minutes

Candidates answer on the Question Paper.

Additional Materials: Calculator
Ruler
Protractor

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.

Answer **all** questions.

The Insert contains Photograph A, Figs 1, 2 and 3 and Tables 1 and 2 for Question 1, and Tables 3 and 4 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.

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

This document consists of **14** printed pages, **2** blank pages and **1** Insert.

CAMBRIDGE International Examinations

[Turn over

1 Students at two schools in South Africa planned an investigation using weather stations. The two schools are in Pretoria and Cape Town which are located on Fig. 1 (Insert).

(a) Students in Pretoria used traditional instruments to measure and record weather and the students in Cape Town used digital instruments.

(i) Give **two** advantages of using digital instruments rather than traditional instruments.

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2 .....

.....[2]

(ii) The students in Pretoria used a Stevenson Screen in their weather station. Photograph A (Insert) shows a Stevenson Screen.
Describe **three** features of a Stevenson Screen and explain why each is important.

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(iii) Which **one** of the following measuring instruments would the students put inside a Stevenson Screen? Circle your answer. [1]

Anemometer Rain gauge Thermometer Wind vane

(iv) Students in Pretoria collected data on the following weather elements:

maximum temperature, minimum temperature, precipitation, relative humidity, atmospheric pressure.

Name **one** other weather element the students could have measured.

.....[1]

(v) What traditional instrument did they use to measure:

A relative humidity; .....

B atmospheric pressure? .....[2]

(b) Study Figs 2 and 3 (Insert), which show a maximum-minimum thermometer and a rain gauge.

(i) Explain how the thermometer is used to measure maximum and minimum temperatures.

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(ii) Explain how rainfall is measured using the rain gauge shown in Fig. 3.

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[Turn over

The students collected data about different elements of weather during July. They then decided individually on two hypotheses to test. One student in Cape Town chose the following hypotheses:

Hypothesis 1: *The diurnal variation in temperature is greater in Pretoria than in Cape Town.*
The diurnal variation in temperature is the difference between the highest temperature and the lowest temperature in a day.

Hypothesis 2: *In Cape Town rainfall increases as the maximum temperature increases.*

(c) The results which the student used to test **Hypothesis 1** are shown in Table 1 (Insert).

(i) Use these results to complete the minimum temperature line for Pretoria on 30th and 31st July in Fig. 4 below. [2]

Temperatures in Pretoria and Cape Town

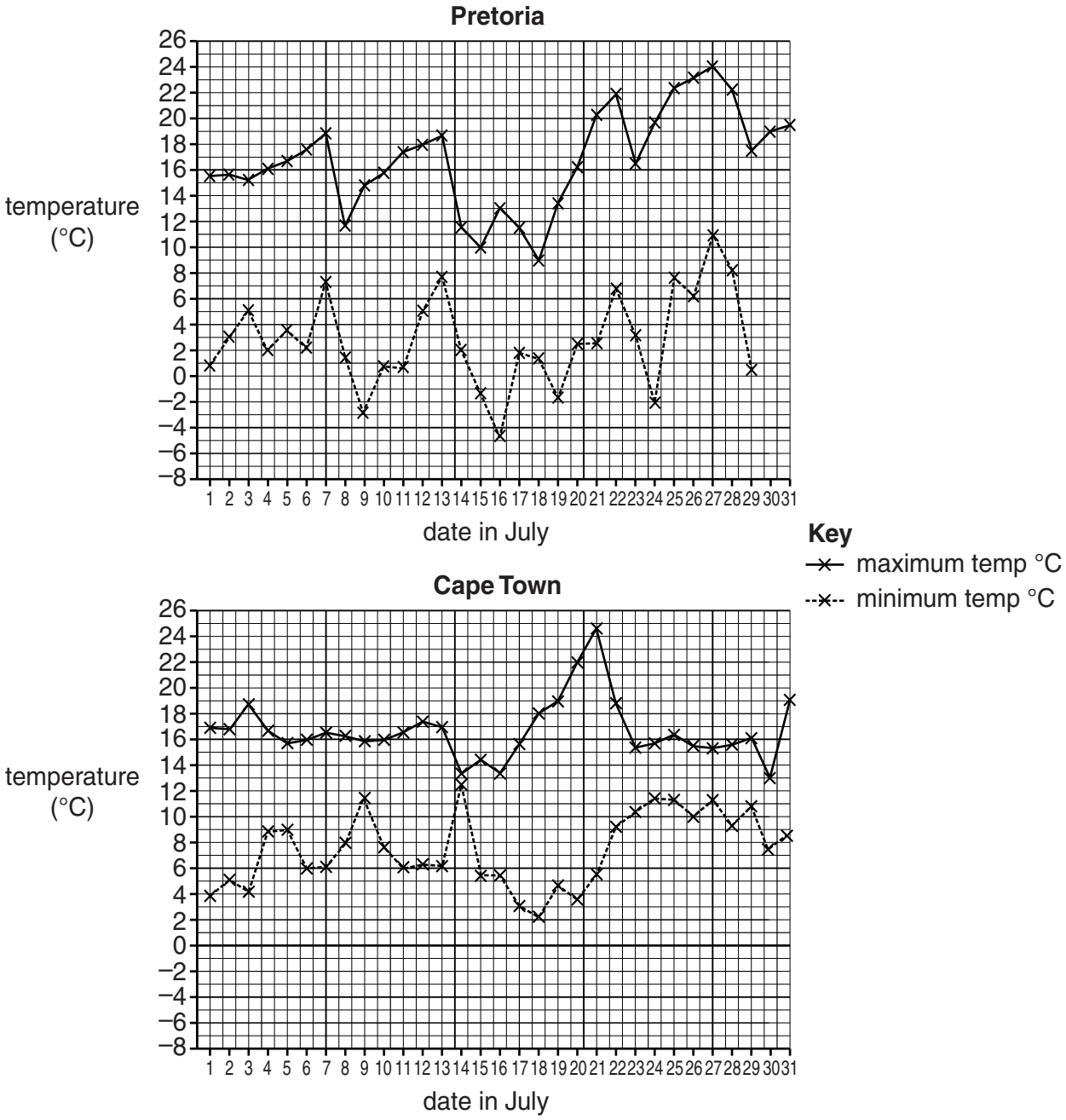

Fig. 4

(ii) What conclusion did the student come to about **Hypothesis 1:** *The diurnal variation in temperature is greater in Pretoria than in Cape Town?*
Support your conclusion with evidence from Table 1 and Fig. 4.

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(d) The results which the student used to test **Hypothesis 2:** *In Cape Town rainfall increases as the maximum temperature increases*, are shown in Table 2 (Insert).

(i) Use these results to complete the rainfall bars for 28th and 29th July on Fig. 5 below. [2]

Maximum temperature and daily rainfall for July in Cape Town

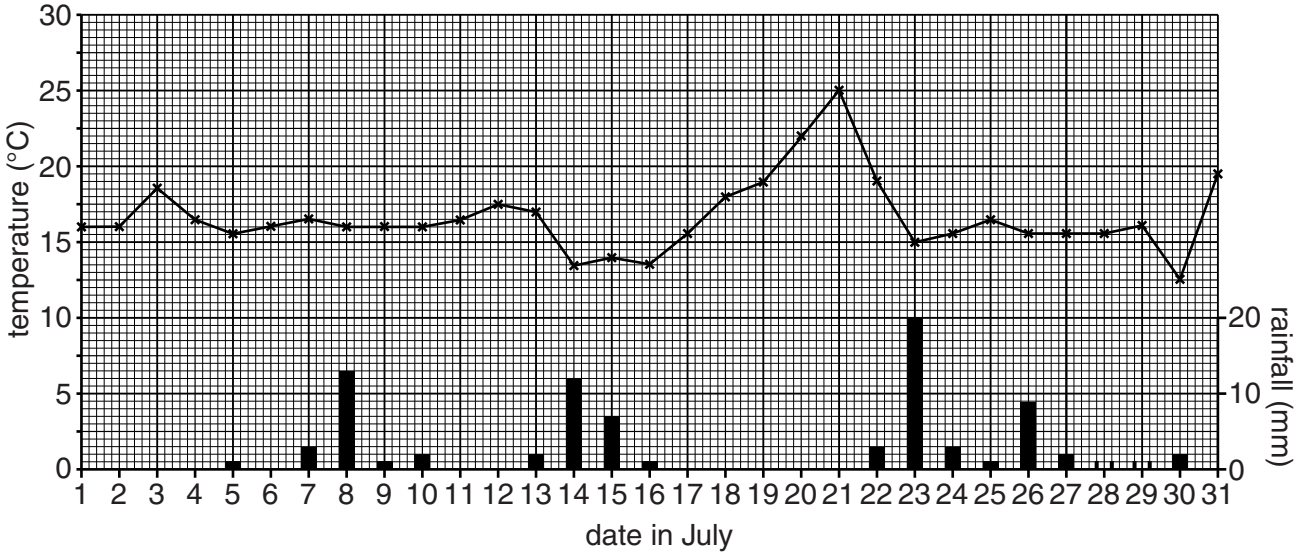

Fig. 5

(ii) What conclusion would the student come to about **Hypothesis 2:** *In Cape Town rainfall increases as the maximum temperature increases*? Support your answer with evidence from Table 2 and Fig. 5.

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[Total: 30 marks]

2 Students in Gaborone, the capital city of Botswana, were studying land-use in urban areas. They did fieldwork to examine differences between land-use in the CBD (Central Business District) and other parts of the city. They wanted to test the following hypotheses:

Hypothesis 1: *The height of buildings decreases as distance from the CBD increases.*

Hypothesis 2: *The land-use in the CBD is different from that in the rest of the city.*

To collect data the students were divided into four groups. Each group followed a different transect from the city centre outwards. The transect routes went north, east, south and west of the CBD.

(a) At selected distances along each transect the students counted the number of storeys of six different buildings. They then calculated the average number of storeys. Their results are shown in Table 3 (Insert).

(i) Suggest why the four groups got different results in the CBD.

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.....[2]

(ii) The students plotted their results on the diagram shown in Fig. 6 below.
Use the data in Table 3 to complete the results of the West and North transects in Fig. 6.
[2]

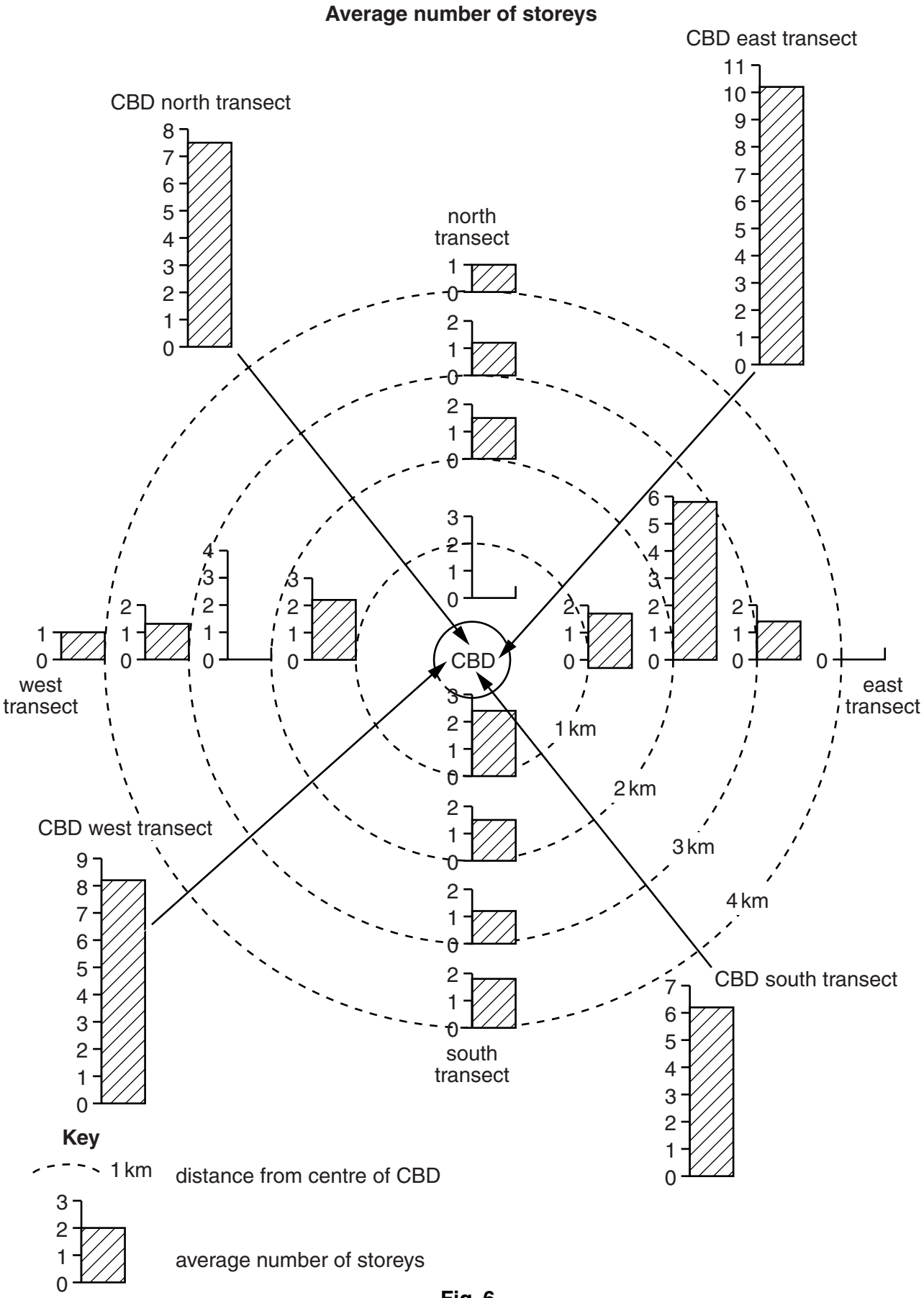

Fig. 6

(iii) To what extent is **Hypothesis 1:** *The height of buildings decreases as distance from the CBD increases* true? Explain your answer with data from Table 3 and Fig. 6.

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(iv) Explain why building height varies in different areas of a city.

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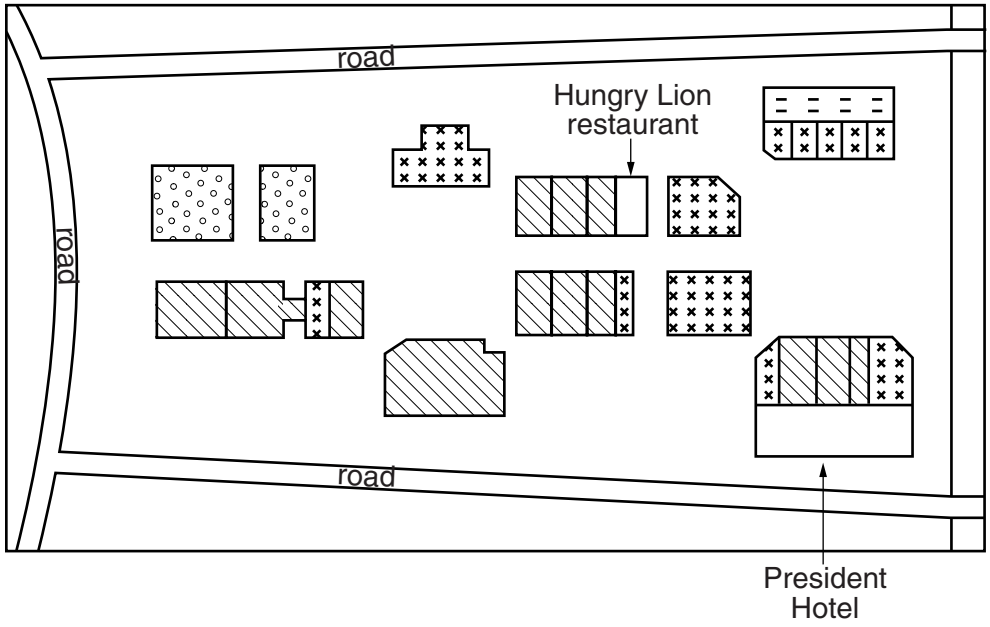
(b) To investigate **Hypothesis 2:** *The land-use in the CBD is different from that in the rest of the city*, the students recorded the ground floor land-use of buildings in the CBD and along the four transect lines. One group's land-use map of part of the CBD is shown in Fig. 7 below.

Sketch map of land use in part of the CBD



Key

residential
(apartments + houses)

commercial
(shops + restaurants)

offices
(including banks)

services
(including hotels,
sport venues
+ religious buildings)

Fig. 7

(i) Use the key to shade in the Hungry Lion restaurant and the President Hotel in Fig. 7 above. [2]

(ii) How many offices are shown in the map shown in Fig. 7?

..... [1]

(iii) Suggest why the students only recorded the ground floor land-use of buildings.

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.....[1]

(iv) In order to compare the different areas of the city the students calculated percentage figures of different types of land-use. These results are shown in Table 4 (Insert).
Use the data in Table 4 to complete the pie chart for the CBD in Fig. 8 below. [3]

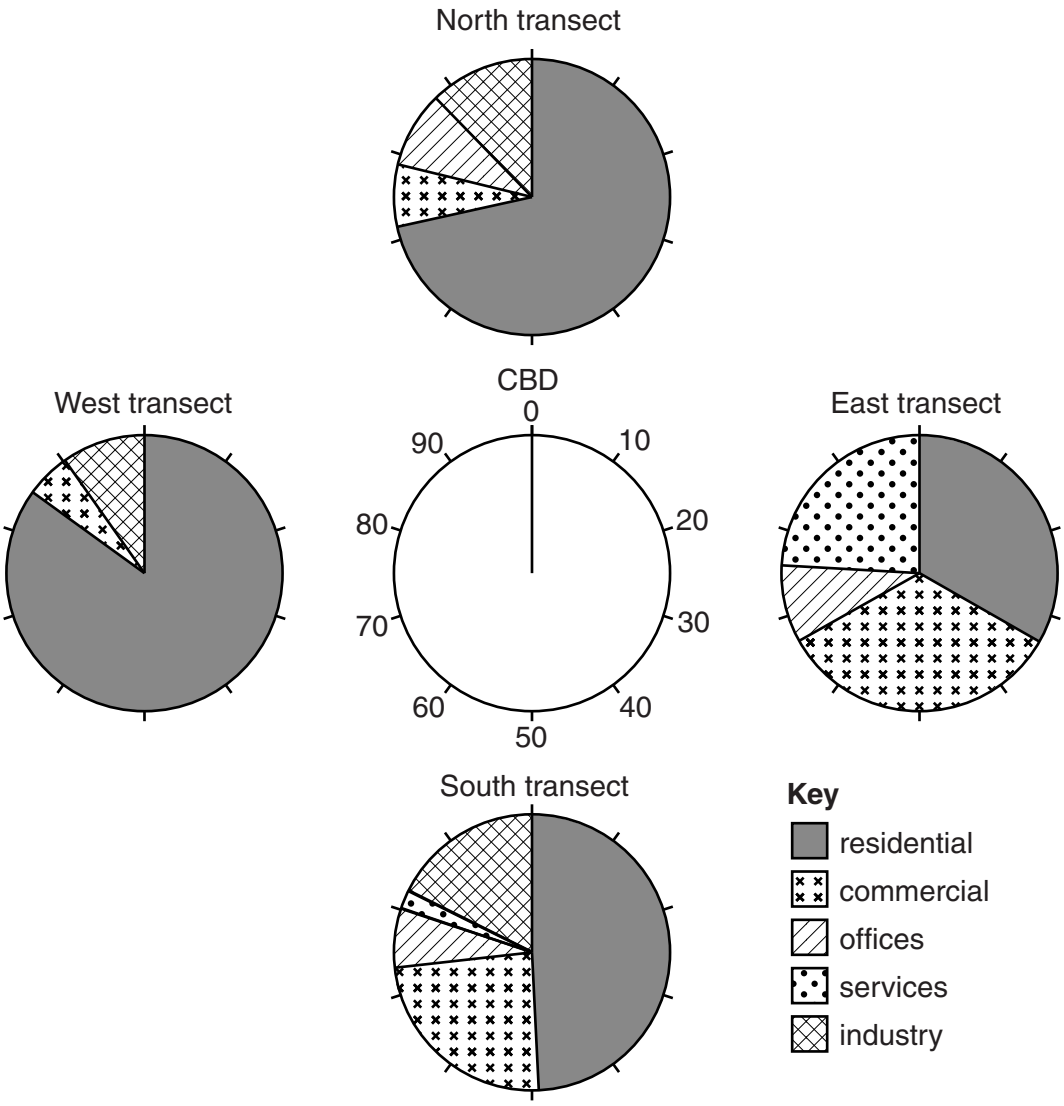

Fig. 8

(v) Describe one **major** difference in land-use between each of the following pairs of transects shown on Fig. 8.

north transect and south transect

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east transect and west transect

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.....[2]

(vi) What conclusion would the students come to about **Hypothesis 2:** *The land-use in the CBD is different from that in the rest of the city*? Use evidence from Table 4 and Fig. 8 to support your decision.

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(c) Why does land-use vary in different parts of a city?

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(d) When the students returned to school they discussed with their teacher how they could improve their data collection methods. Suggest **three** improvements they could have made.

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[Total: 30 marks]

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