



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER



**GEOGRAPHY**

**0460/21**

Paper 2

**May/June 2013**

**1 hour 30 minutes**

Candidates answer on the Question Paper.

- Additional Materials:      Ruler  
   Protractor  
   Plain paper  
   Calculator

1:25 000 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 ON ANY BARCODES.**

Answer **all** questions.

The Insert contains Photographs A, B and C for Question 3.  
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>Q1</b>          |  |
| <b>Q2</b>          |  |
| <b>Q3</b>          |  |
| <b>Q4</b>          |  |
| <b>Q5</b>          |  |
| <b>Q6</b>          |  |
| <b>Total</b>       |  |

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



1 Study the map extract for Petite Rivière, Mauritius. The scale is 1:25 000.

(a) Fig. 1 shows some of the features in the south east part of the map extract. Study Fig. 1 and the map extract, and answer the questions below.

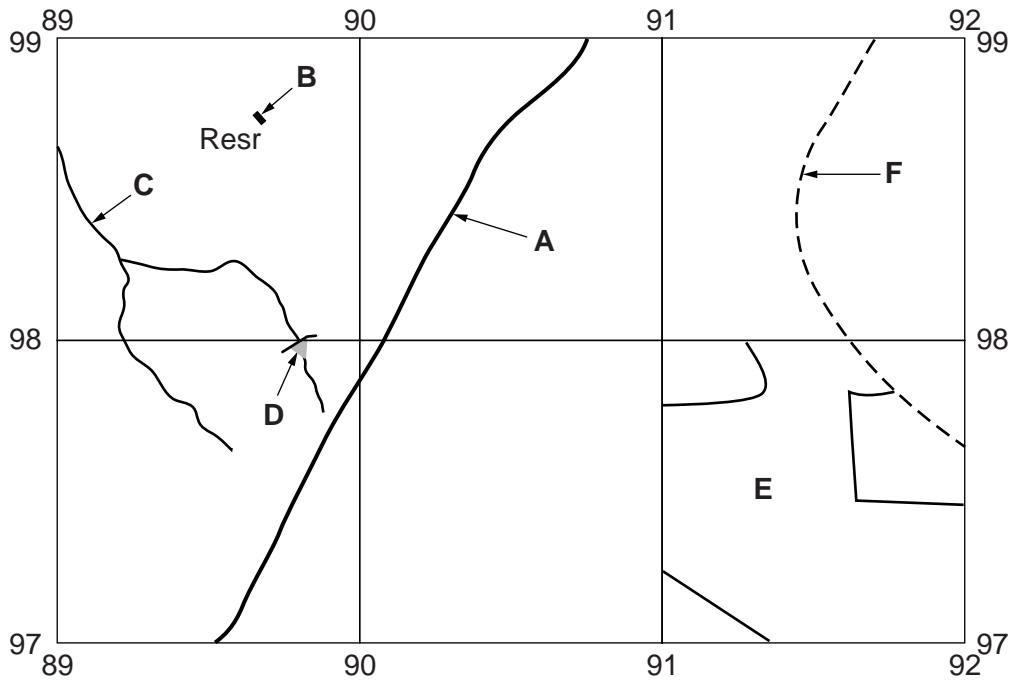


Fig. 1

Using the map extract, identify the following features shown on Fig. 1:

- (i) the type of road at **A**;  
.....[1]
- (ii) feature **B**;  
.....[1]
- (iii) the name of river **C**;  
.....[1]
- (iv) feature **D**;  
.....[1]
- (v) the land use at **E**;  
.....[1]
- (vi) feature **F**.  
.....[1]

(b) Fig. 2 shows the location of two grid squares in the north of the map extract. These are grid squares 9002 at Petit Verger and 9100 at Petite Rivière. Study the two grid squares and answer the question below.

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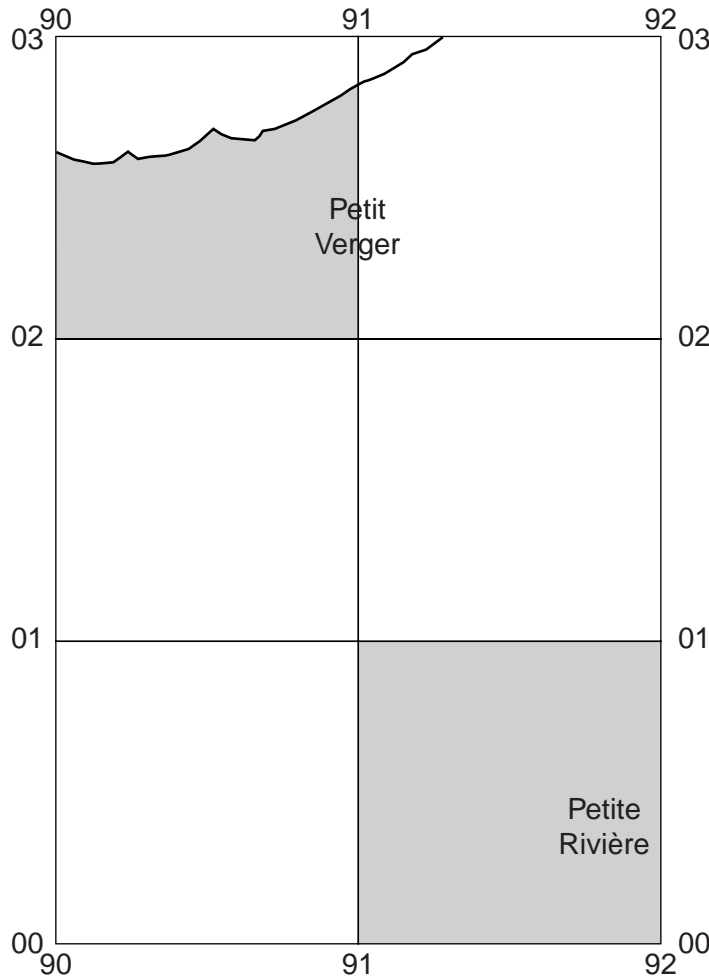


Fig. 2

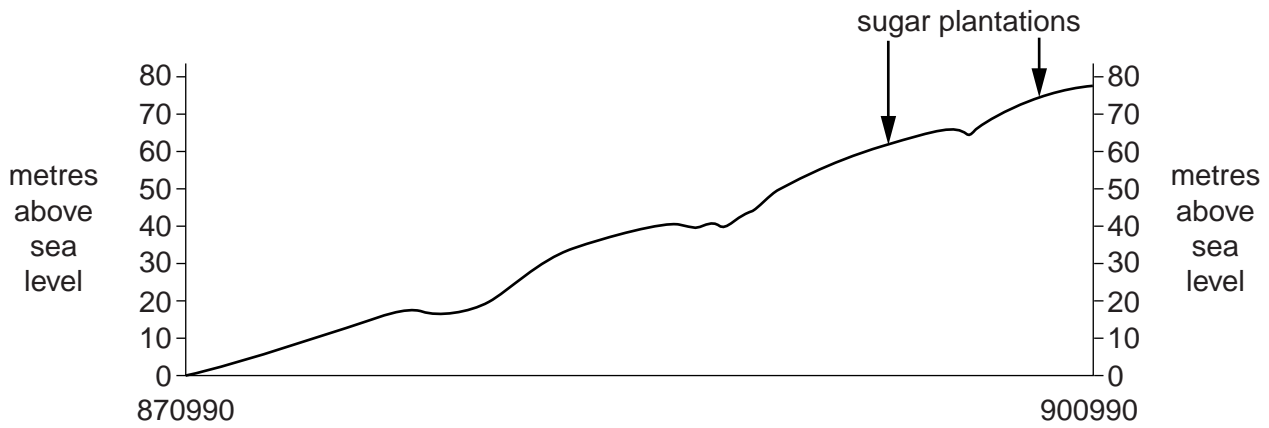
The table below compares the features of the two grid squares. Complete the table by putting ticks in the correct **five** boxes. Use only **one** tick for each row.

|  | Petit Verger<br>(9002) | Petite Rivière<br>(9100) | Both these<br>areas | Neither of<br>these areas |
|--|------------------------|--------------------------|---------------------|---------------------------|
| Example:<br>sugar plantation           |                        |                          | ✓                   |                           |
| a temple                               |                        |                          |                     |                           |
| scattered trees or scrub               |                        |                          |                     |                           |
| linear settlement                      |                        |                          |                     |                           |
| nucleated settlement                   |                        |                          |                     |                           |
| land over 50 metres<br>above sea level |                        |                          |                     |                           |

[5]

(c) Fig. 3 is a cross section along northing 99 from the coast at 870990 to 900990.

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**Fig. 3**

On Fig. 3, using labelled arrows, mark the positions of:

- (i) the Belle Eau river; [1]
- (ii) the B78 Albion Road; [1]
- (iii) the Feeder des Cocos river. [1]

(d) Look at the straight Simonet Road between Camp Créole Belle Eau (882989) and the road junction at Canot (896973).

(i) Measure the distance along this part of the road. Give your answer in metres. [1]  
 ..... metres

(ii) What is the compass direction along the road from Camp Créole Belle Eau to Canot? [1]  
 .....

(iii) Look at the heights above sea level of the two places. How much lower is Camp Créole Belle Eau than Canot? Tick **one** answer below.

|      | Tick (✓) |
|------|----------|
| 20m  |          |
| 40m  |          |
| 80m  |          |
| 120m |          |

[1]

(e) Suggest advantages and disadvantages that the area has for the development of a tourist industry. In each case, state map evidence.

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Advantages .....

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

Disadvantages .....

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

[Total: 20 marks]

2 Table 1 shows the weather for Buenos Aires, Argentina, for four days in May 2011.

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Use

**Table 1**

| Day                   | Maximum temperature (°C) | Minimum temperature (°C) | Wind direction | Wind speed (km/hr) | Relative humidity (%) | Cloud cover (oktas) |
|-----------------------|--------------------------|--------------------------|----------------|--------------------|-----------------------|---------------------|
| Wed 18 <sup>th</sup>  | 20                       | 13                       | SW             | 9                  | 76                    | 3                   |
| Thur 19 <sup>th</sup> | 21                       | 15                       | S              | 12                 | 71                    | 0                   |
| Fri 20 <sup>th</sup>  | 18                       | 16                       | SE             | 9                  | 88                    | 8                   |
| Sat 21 <sup>st</sup>  | 19                       | 16                       | SW             | 8                  | 73                    | 8                   |

(a) Name the weather instruments used to measure the following:

- (i) wind direction; ..... [1]
- (ii) wind speed; ..... [1]
- (iii) humidity. .... [1]

(b) (i) On which of the four days was the daily (diurnal) temperature range largest?

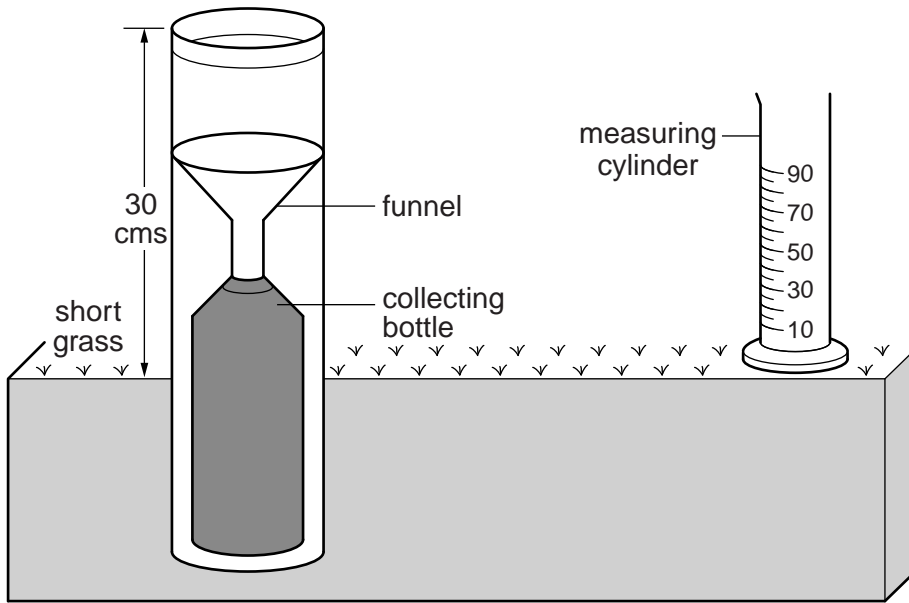
..... [1]

(ii) Describe the relationship between maximum temperatures and cloud cover shown in Table 1.

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

- (c) Rainfall data is not shown in Table 1. Rainfall data can be collected using the instrument shown in Fig. 4 below.

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**Fig. 4**

Explain how the design of the instrument shown in Fig. 4 stops the following errors occurring:

- (i) raindrops splashing into the instrument making the readings too high;

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

- (ii) water evaporating in the instrument making the readings too low.

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

[Total: 8 marks]

- 3 Photographs A, B and C (Insert) show the agriculture of three areas in Africa with low rainfall. For each of A, B and C, describe the features of the agriculture seen in the photograph.

For  
Examiner's  
Use

Photograph A

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Photograph B

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Photograph C

*For  
Examiner's  
Use*

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..... [8]

[Total: 8 marks]

- 4 (a) Fig. 5 is a map showing the intensity (strength) of a weak earthquake in England, in April 2007. Table 2 shows the effects of earthquakes of different intensities.

For  
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Use

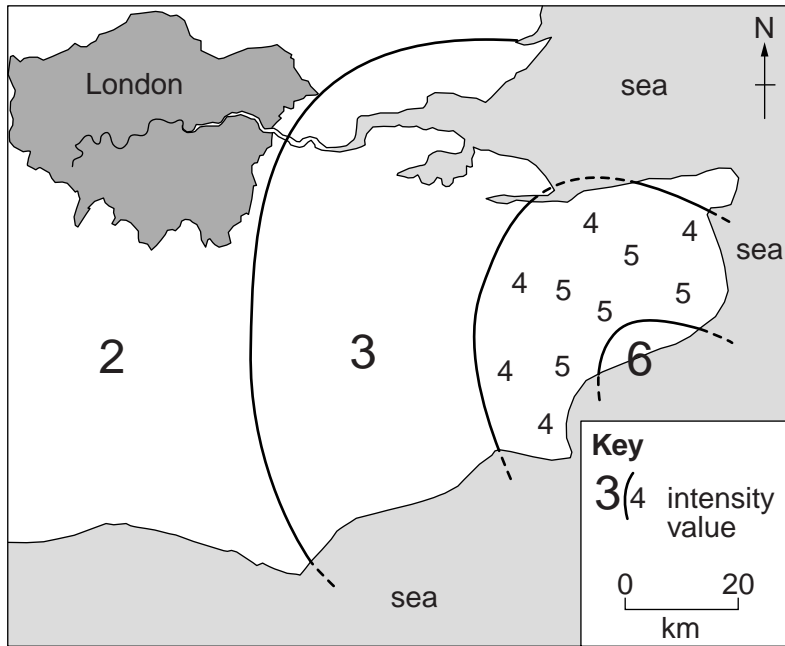


Fig. 5

Table 2

| Intensity value | Description of effects   |
|-----------------|--|
| 1               | Not normally felt. Birds and animals uneasy                        |
| 2               | Felt only by a few people at rest                                  |
| 3               | Vibrations like a large truck passing. Felt by most people at rest |
| 4               | Felt by people moving. Cars rock                                   |
| 5               | Sleepers wakened. Some windows broken. Furniture moves             |
| 6               | Small bells ring. Trees sway. Loose objects fall                   |
| 7               | Difficult to stand up. People run outdoors. Walls crack            |
| 8               | Partial collapse of buildings. Chimneys fall                       |

- (i) On Fig. 5, label the likely position of the epicentre of the earthquake with the letter **E**. [1]
- (ii) On Fig. 5, draw a line to show the boundary between the area of intensity 4 and the area of intensity 5. [1]
- (iii) State **one** likely effect of the earthquake in London.

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

- (b) Earthquakes stronger than the one in England in 2007 can have intensities of 9, 10, 11 and 12. Their effects are described below but the table is not in the correct order. Complete the table by adding the intensity values. Use **one** number (9, 10, 11 or 12) for each row.

| Description of effects                                     | Intensity value |
|--|-----------------|
| Bridges destroyed. Many buildings destroyed                |                 |
| Total destruction. Ground surface rises and falls in waves |                 |
| Ground cracks. Buildings move slightly. Pipes break        |                 |
| Landslides. Some buildings destroyed                       |                 |

[2]

- (c) (i) Which **one** of the following will increase the damage caused by an earthquake? Tick **one** box below.

|   | Tick (✓) |
|---|----------|
| The focus of the earthquake is deep beneath the surface |          |
| The earthquake releases a small amount of energy        |          |
| Buildings are on hard rock like granite                 |          |
| Buildings are on sand and clay                          |          |

[1]

- (ii) Which **one** of the following will increase the number of deaths caused by an earthquake? Tick **one** box below.

|  | Tick (✓) |
|--|----------|
| Population density is low                                  |          |
| Buildings have been designed to withstand earthquakes      |          |
| Schools have regular earthquake drills                     |          |
| The country has had few previous earthquakes to learn from |          |

[1]

- (iii) One possible effect of an earthquake is a tsunami. Which **one** of the following best describes a tsunami? Tick **one** box below.

|   | Tick (✓) |
|---|----------|
| A tsunami is a giant ocean wave which is caused by tides                                  |          |
| A tsunami gets smaller as it travels into shallower water                                 |          |
| A tsunami can take hours to travel across an ocean and it is possible to provide warnings |          |
| A tsunami does not affect lowlands next to the coast                                      |          |

[1]

[Total: 8 marks]

- 5 Fig. 6 compares the production of nuclear energy in Asia and Australasia with world production.

For  
Examiner's  
Use

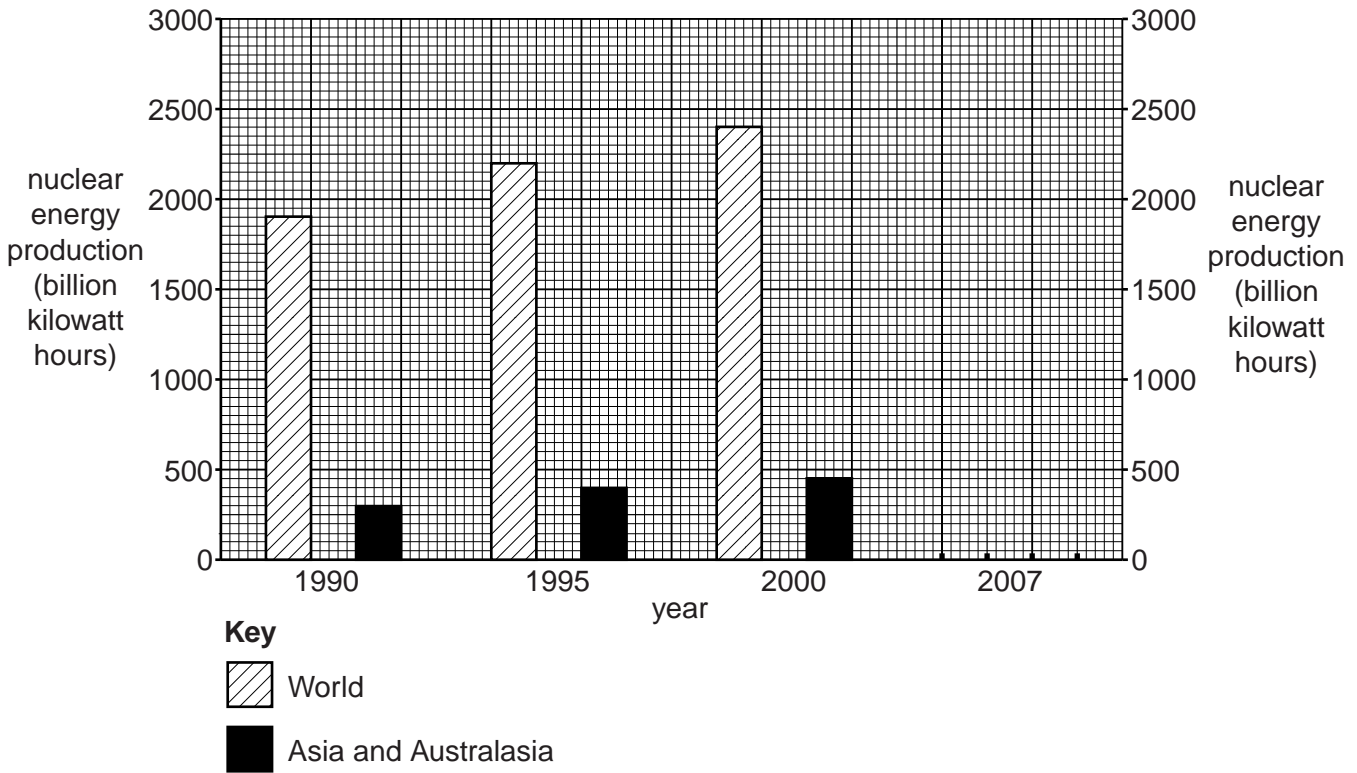


Fig. 6

- (a) In 2007, the world produced 2600 billion kilowatt hours of nuclear energy and Asia and Australasia produced 500 billion kilowatt hours. Plot this information on Fig. 6. [2]
- (b) Fig. 7 shows the production of nuclear energy in some countries in Asia and Australasia.

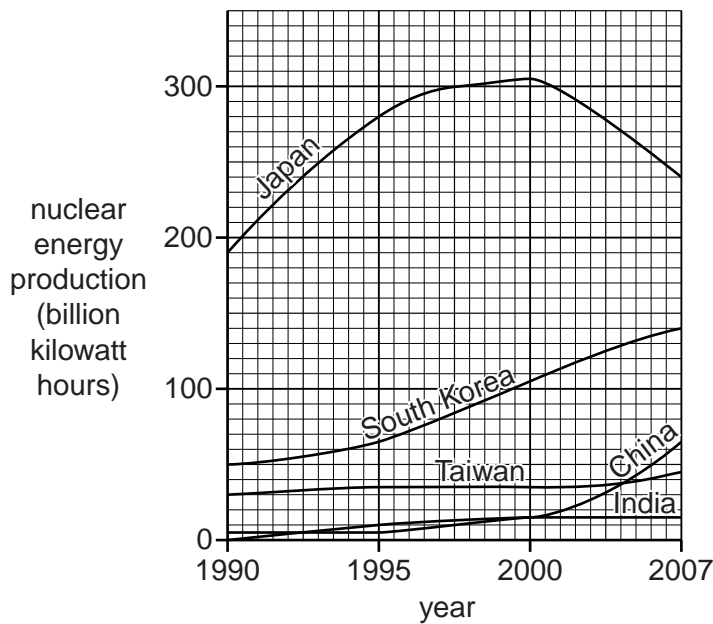


Fig. 7

Which country:

(i) decreased its production of nuclear energy between 2000 and 2007; ..... [1]

(ii) produced least since 1995; ..... [1]

(iii) had the greatest increase in production between 2000 and 2007?  
..... [1]

(c) Nuclear power is a controversial topic. Fig. 8 describes some of the reasons why.

**Nuclear power stations**

The radioactive waste from nuclear power stations remains a health hazard for hundreds of thousands of years, requires careful storage and is difficult to dispose of safely. The raw material used is uranium ore. This will not run out for hundreds or even thousands of years and it does not produce carbon dioxide or acid rain.

The cost of building nuclear power stations and shutting down old ones is very high. Very small amounts of uranium are needed to produce large amounts of energy.

There have been serious incidents at nuclear power stations, leading to leaks of radioactivity. Radioactivity is a known cause of serious diseases. The Sendai earthquake in Japan in March 2011 caused an explosion and leakage of radioactive material at the Fukushima nuclear plant. This raised questions about the safety of nuclear plants in earthquake zones. However, the safety record of nuclear power stations has improved and the industry is highly regulated in most countries.

Nuclear power stations produce material which can be used as the raw material for nuclear weapons.

**Fig. 8**

Using information from Fig. 8 **only**, explain why a country might choose to develop nuclear power.

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

[Total: 8 marks]

- 6 New Zealand has 16 regions, 9 on North Island and 7 on South Island. Fig. 9 shows the changes in population caused by migration between these regions.

For  
Examiner's  
Use

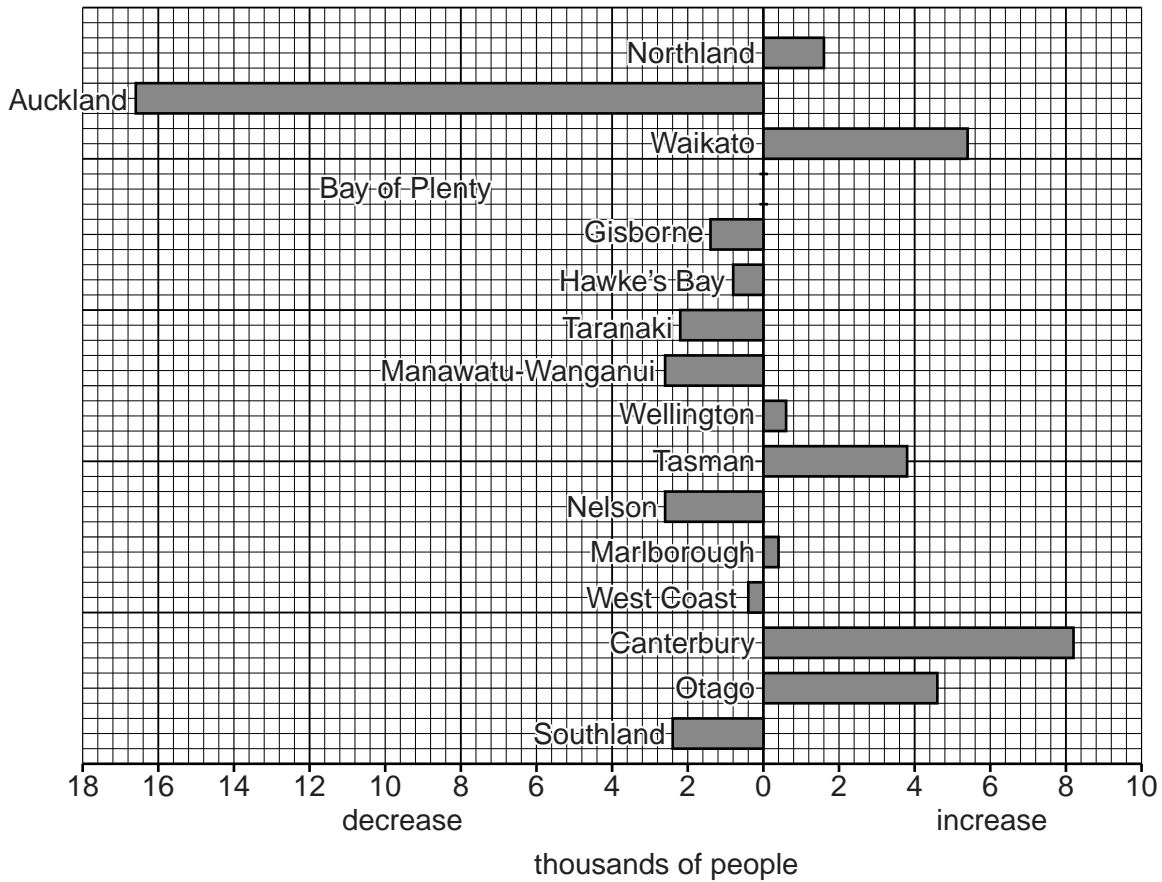


Fig. 9

- (a) (i) State the number of regions with a decrease in population caused by migration.

.....[1]

- (ii) The Bay of Plenty Region had an increase in population caused by migration of 6000. Plot this information on Fig. 9. [1]

- (b) Fig. 10 (opposite) shows the location of the 16 regions on the north and south islands of New Zealand and Tables 3A and 3B (opposite) give information about population migration between the regions.

Using this information, describe the population migration in the following areas of **South Island**.

- (i) The west coast .....
- .....
- (ii) The east coast .....
- .....

(iii) The north coast .....

.....

.....

.....[4]

**Population migration: North Island**

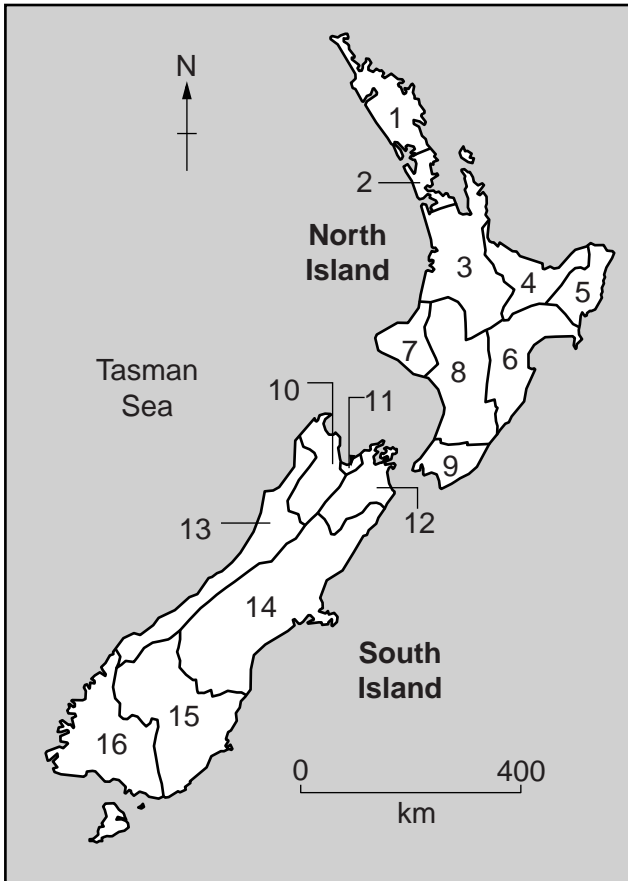
**Table 3A**

| Region              | Decrease caused by migration (thousands) | Increase caused by migration (thousands) |
|---------------------|--|--|
| 1 Northland         |  | 1.5                                      |
| 2 Auckland          | 16.7                                     |  |
| 3 Waikato           |  | 5.4                                      |
| 4 Bay of Plenty     |  | 6.0                                      |
| 5 Gisborne          | 1.5                                      |  |
| 6 Hawke's Bay       | 0.8                                      |  |
| 7 Taranaki          | 2.2                                      |  |
| 8 Manawatu-Wanganui | 2.7                                      |  |
| 9 Wellington        |  | 0.6                                      |
| Total               | 23.9                                     | 13.5                                     |

**Population migration: South Island**

**Table 3B**

| Region         | Decrease caused by migration (thousands) | Increase caused by migration (thousands) |
|----------------|--|--|
| 10 Tasman      |  | 3.8                                      |
| 11 Nelson      | 2.6                                      |  |
| 12 Marlborough |  | 0.4                                      |
| 13 West Coast  | 0.4                                      |  |
| 14 Canterbury  |  | 8.1                                      |
| 15 Otago       |  | 4.5                                      |
| 16 Southland   | 2.4                                      |  |
| Total          | 5.4                                      | 16.8                                     |



**Fig. 10**

(c) Has there been an overall movement of population from South Island to North Island? Give evidence from Tables 3A and 3B to support your answer.

.....

.....

.....

..... [2]

[Total: 8 marks]

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*Copyright Acknowledgements:*

|                                 |   |
|---------------------------------|---|
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| Question 4 Fig. 5               | © <a href="http://www.bgs.ac.uk/earthquakes">www.bgs.ac.uk/earthquakes</a>              |
| Question 5 Figs 6 & 7           | © <a href="http://www.eia.gov/nuclear/data.cfm">http://www.eia.gov/nuclear/data.cfm</a> |
| Question 6 Figs 9 & 10          | © <a href="http://www.stats.govt.nz">www.stats.govt.nz</a>                              |

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