South Australian
Certificate of Education

Geography
2018

Question booklet

- **Section 1** (Questions 1 and 2) 30 marks
- **Section 2** (Questions 3 and 4) 30 marks
- Answer ***all*** questions
- Write your answers in this question booklet
- You may write on page 20 if you need more space

Download these resources to complete the examination

- Map sheet A3
- Map sheet A4

Examination information

Materials

- Question booklet
- Map sheet
- SACE registration number label

Reading time

- 10 minutes
- You may begin writing during this time
- You may begin using an approved calculator during this time

Writing time

- 2 hours
- Use black or blue pen
- Approved calculators may be used

Total marks 60

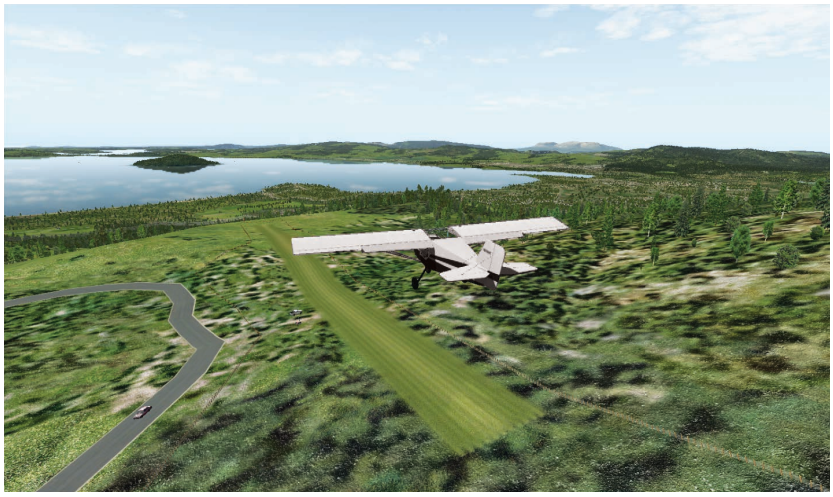
Government of South Australia

Attach your SACE registration number label here

SECTION 1 (Questions 1 and 2)
(30 marks)

1. *Refer to the topographic map ROTORUA, scale 1:50 000, on the separate map sheet.*

(a) *Refer to the following image and the topographic map:*



Source: Adapted from Vampire_T11, 'Airstrip, New Zealand 1.1', viewed 24 April 2018, forums.x-plane.org; photo from Land Information New Zealand, used under CC BY 3.0 NZ

(i) The airstrip in the image above is at which one of the following locations? Tick the appropriate box.

Location **A** (grid reference 776738) ☐

Location **B** (grid reference 806768) ☐

Location **C** (grid reference 809723) ☐

Location **D** (grid reference 902732) ☐ (1 mark)

(ii) Locations **A**, **B**, **C**, and **D** have some features in common that make them suitable for an airstrip.

Identify *one* of these common features, and state why it makes these locations suitable for an airstrip.

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_____ (2 marks)

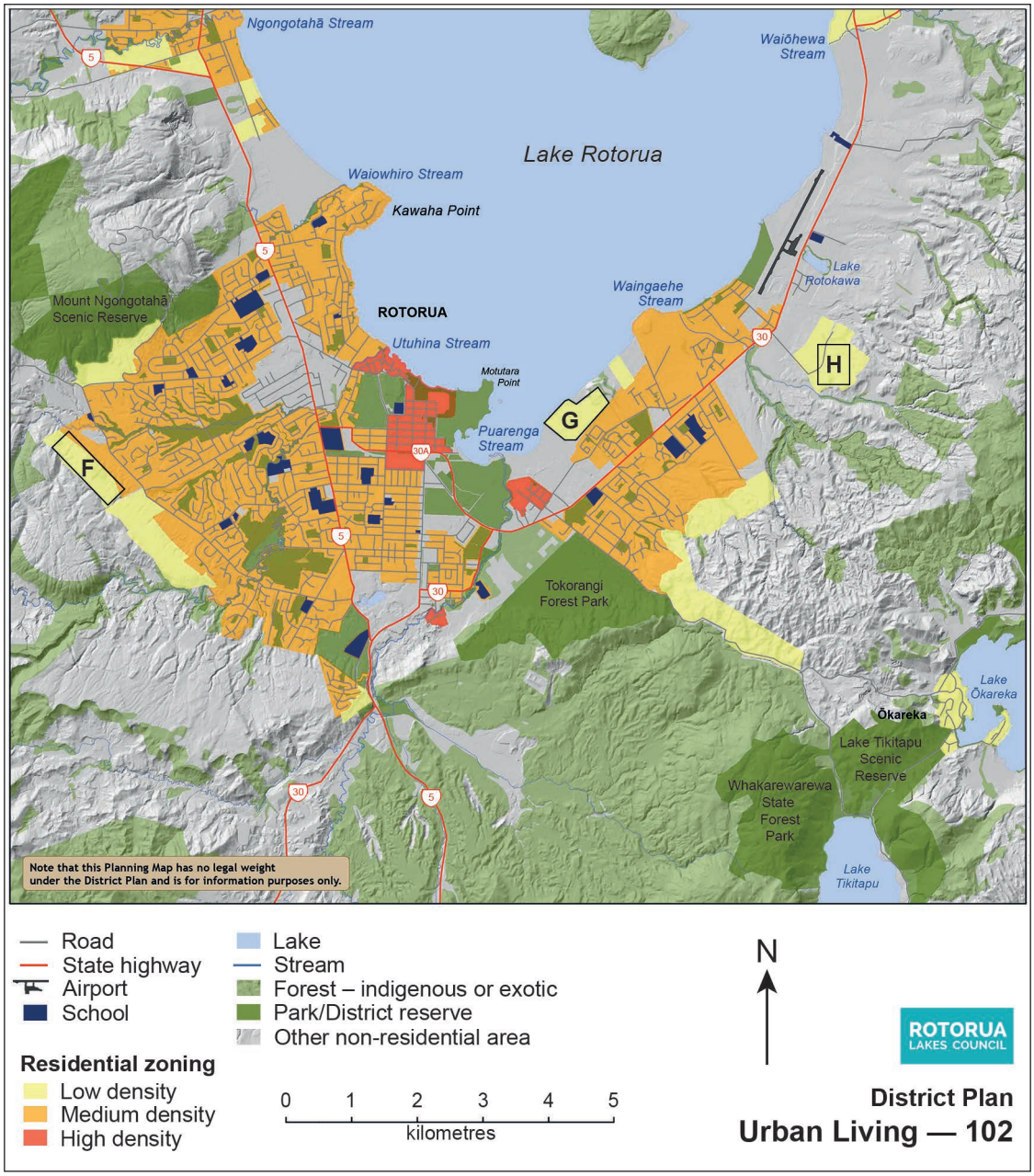
(b) *Refer to the topographic map.*

Create walking notes for a hike that follows the stream from its source at point **S** (grid reference 793728) to its mouth at point **M** (grid reference 846753).

In your notes describe significant changes in direction, elevation, and land cover.

(5 marks)

(c) *Refer to the district planning map below and the topographic map on the separate map sheet:*



Source: Adapted from Rotorua Lakes Council, 'District plan maps: 102 urban living RF', cadastral data obtained under LINZ licence agreement April 2016, viewed 24 April 2018, www.rotorualakescouncil.nz

A builder plans to construct a low-density housing development at *one* of the sites indicated on the map above: **F**, **G**, or **H**.

Decide which site you think is most suitable for this low-density housing development. Justify your decision.

Your answer should include a discussion of the advantages and disadvantages of each site, and refer to the physical and human features that influenced your decision. Provide detailed evidence from both maps to support your answer.

Site chosen: **F** ☐ **G** ☐ **H** ☐

(6 marks)

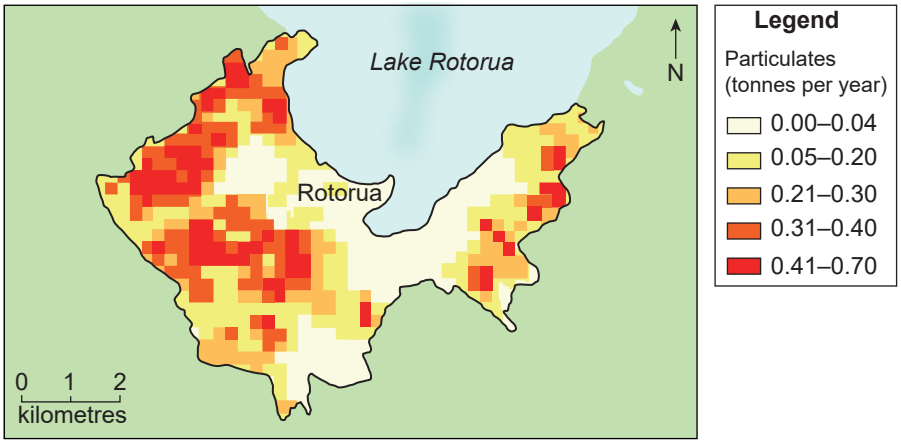
(d) *Refer to the maps below and the topographic map:*

Rotorua local air management area

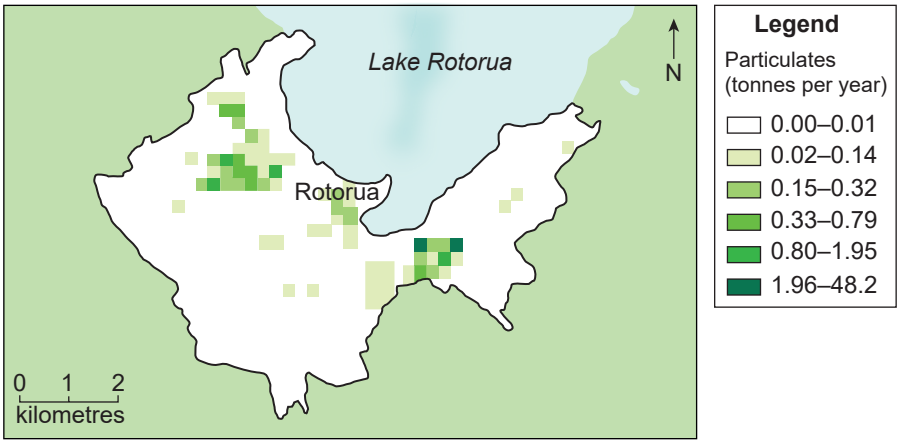
Estimated particulate emissions* from three main sources

*Small particles of dust, smoke, etc.

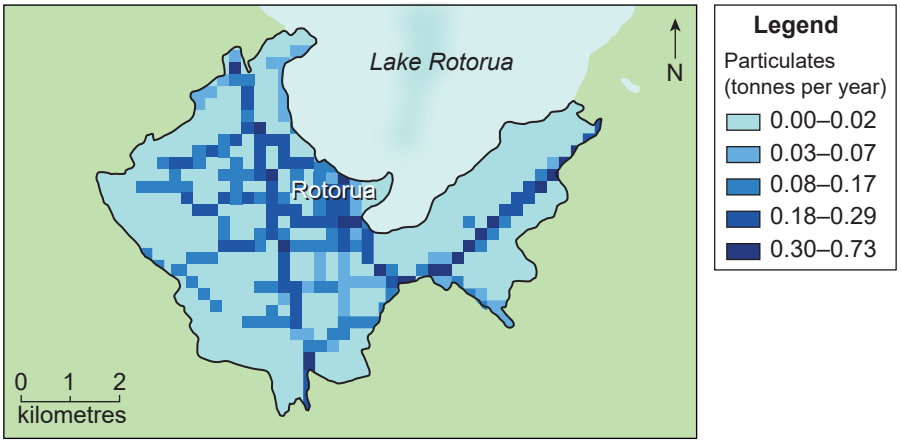
Map 1



Map 2



Map 3: Transport



Source: Adapted from Iremonger, S & Graham, B 2007, *Rotorua air emissions inventory 2005*, Environment Bay of Plenty Regional Council, figure 17

Each map opposite shows the pattern of particulate emissions from one of the following sources: industrial, residential, or transport.

(i) Determine which one of **Map 1** and **Map 2** shows the pattern of particulate emissions from residential sources, and which one shows the pattern of particulate emissions from industrial sources.

Support your answer with evidence from the topographic map.

(3 marks)

(ii) **Map 3** shows the pattern of particulate emissions from transport sources.

Using evidence from the topographic map, give *three* reasons for the pattern shown in **Map 3**.

(3 marks)

No further questions refer to the topographic map on the separate map sheet.

2. *Refer to the following information:*

A group of geography students investigated the relationship between environmental factors and vegetation in a sand dune system.

They collected data from the dune system, as shown in Figure 1 and Table 1 below.

The wind speed measurements were collected at 2 pm on the same day, at seven different sites, which are shown in Figure 1. The wind speed measurements are shown in Table 1 below.

Figure 1: Dune profile and vegetation

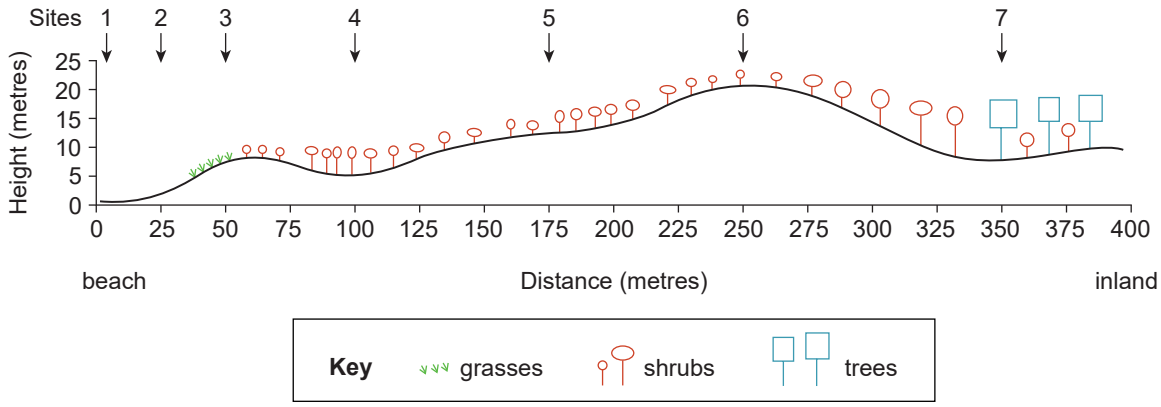


Table 1: Wind speed (kilometres per hour) at different heights above the ground at 2 pm

Height above ground (cm)	*Site 1*	*Site 2*	*Site 3*	*Site 4*	*Site 5*	*Site 6*	*Site 7*
10	18	4	16	0	5	10	2
50	20	15	20	0	10	16	2
100	20	20	27	5	11	25	5
150	32	30	30	8	20	30	8

(a) What is the relationship between 'wind speed' and 'height above the ground', shown in Table 1?

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_____

_____ (1 mark)

(b) The dune profile in Figure 1 is drawn with different scales on the horizontal and vertical axes.

Explain why this is usual for profiles and cross-sections.

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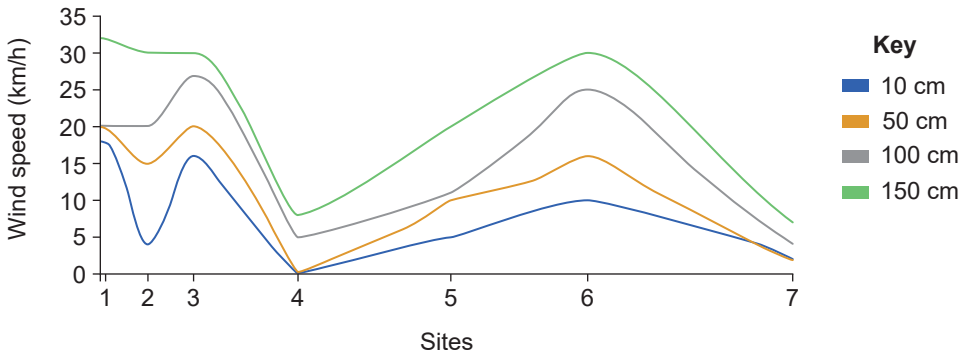
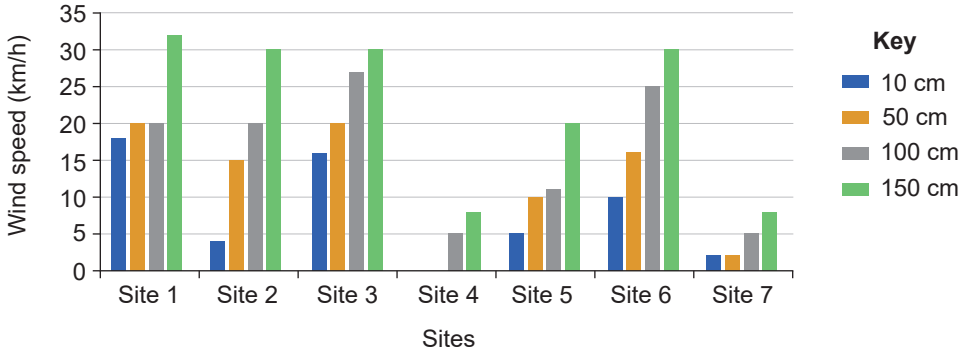
_____ (2 marks)

(c) *Refer to the following graphs:*

Graph A: Line graph of wind speed at different heights above the ground



Graph B: Bar graph of wind speed at different heights above the ground



Graphs A and B display the data from Table 1 in two different ways.

Outline the advantage(s) and/or disadvantage(s) of these different ways of presenting the data.

(3 marks)

(d) When investigating a dune system, why is it important to collect data from several different locations and at different times of the day?

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_____ (2 marks)

(e) Besides wind speed, state *one* other type of fieldwork data that the students could collect, and explain why this would give a better understanding of the characteristics of the dune system.

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_____ (2 marks)

Section 2 begins on page 12.

SECTION 2 (Questions 3 and 4)
(30 marks)

3. (a) *Refer to the following table:*

Selected data for six countries

	Gross national income (GNI) per capita (US$) 2016	*Percentage of urban population (%)* 2017	*Forest cover as share of land area (%)* 2015	*Ecological footprint per capita (gha*)* 2014	*Biocapacity per capita (gha*)* 2014
Australia	54 130	89.7	16.2	6.9	13.3
France	38 780	80.0	31.0	4.7	2.7
United Kingdom	42 370	83.1	13.0	4.8	1.2
Malaysia	9 860	76.0	67.6	4.4	2.4
Indonesia	3 410	55.2	50.2	1.6	1.3
Democratic Republic of Congo	460	43.5	67.3	0.8	2.7

*gha = global hectares

Source: Data drawn from World Bank & OECD 2017, 'GNI per capita, Atlas method (current US$)', viewed 14 August 2018, data.worldbank.org; CIA 2018, *The World Factbook*, www.cia.gov; Knoema 2018, *World Data Atlas*, knoema.com; and Global Footprint Network 2018, footprintnetwork.org; all viewed 7 May 2018

(i) Identify and outline the relationship between *two* columns of data in the table.

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_____ (2 marks)

(ii) Identify and outline a different relationship between *two* columns of data in the table.

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_____ (2 marks)

(b) Identify *one* ecosystem that you have studied, and explain the different services that it provides.

Ecosystem:_____

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_____ (4 marks)

(c) Identify and explain *one* environmental impact of land use changing from a natural ecosystem to agricultural production.

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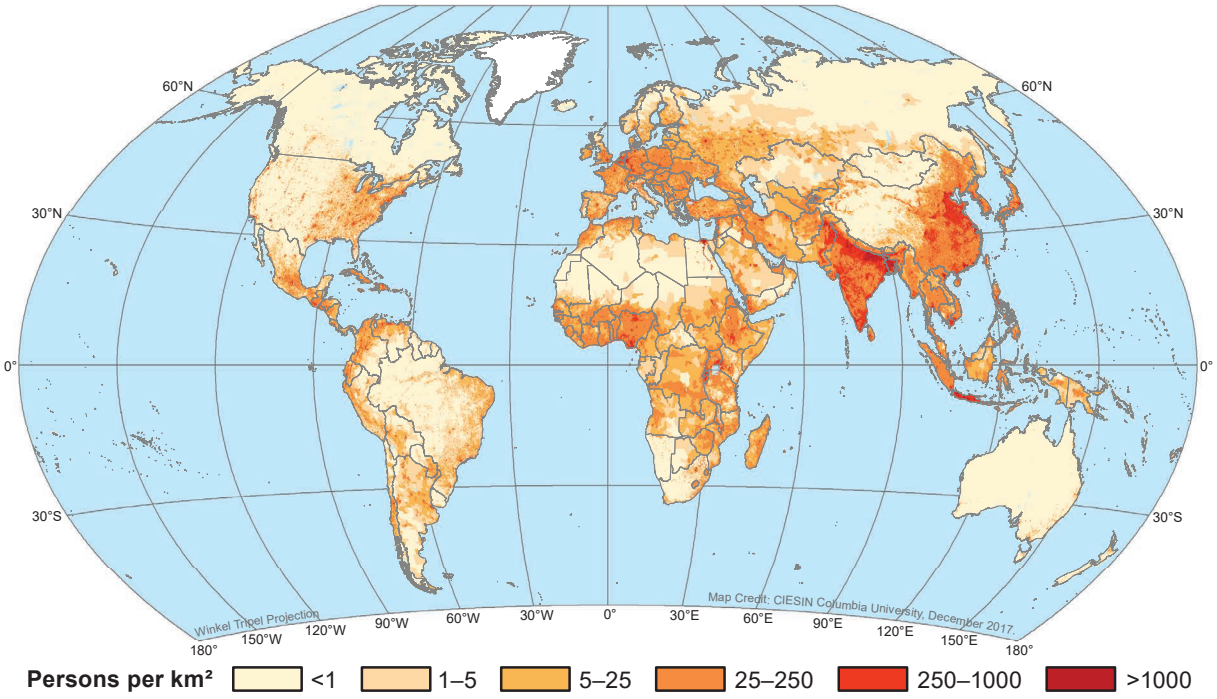
_____ (2 marks)

(d) Identify and explain strategies for improving the sustainability of ecosystems.

(4 marks)

4. (a) *Refer to the following map:*

Global population density

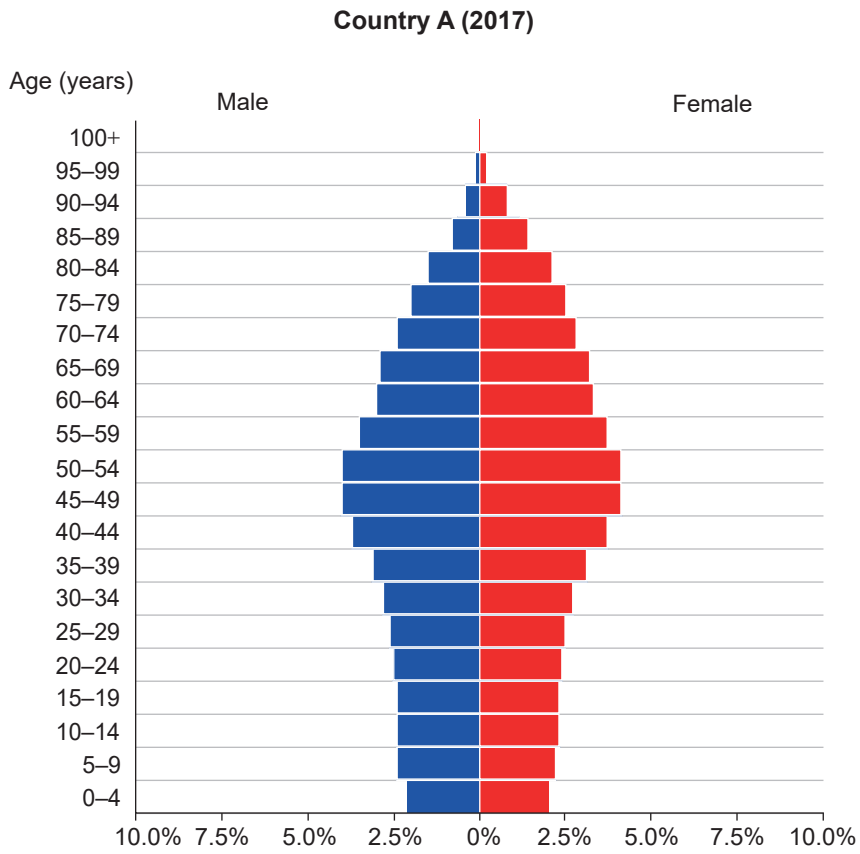


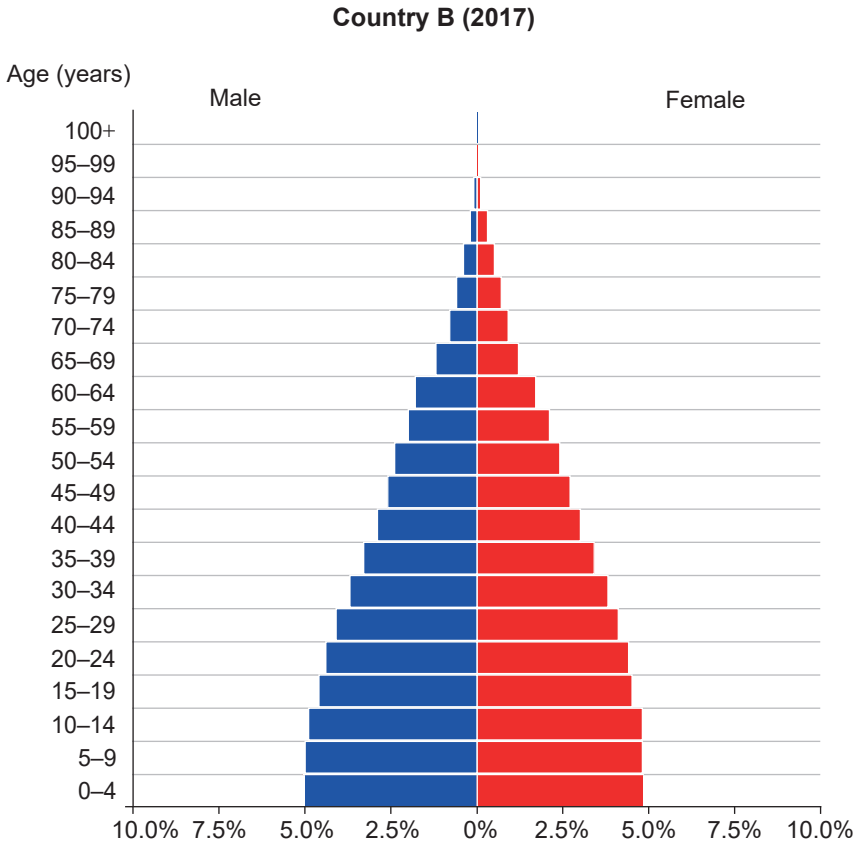
Source: Adapted from Center for International Earth Science Information Network - CIESIN - Columbia University 2017, Gridded population of the world, Version 4 (GPWv4), Socioeconomic Data and Applications Center (SEDAC), viewed 26 July 2018, sedac.ciesin.columbia.edu, used under CC BY 4.0

Explain *three* characteristics of global population density shown on the map above.

(3 marks)

(b) *Refer to the following population pyramids:*





Source: Adapted from Population Pyramids of the World from 1950 to 2100, viewed 7 May 2018, www.populationpyramid.net

Select the population pyramid for *either* Country A *or* Country B. Explain the likely consequences of the country's changing population structure over the next 50 years.

Country A ☐ Country B ☐

(5 marks)

(c) (i) Outline the causes of a population movement that you have studied.

(2 marks)

(ii) *Refer to the same or another population movement that you have studied.*

Analyse and evaluate the impacts of this population movement on a destination country or region.

Your answer should include a discussion of the advantages and disadvantages for the destination country or region.

(ii) *continued*

(6 marks)

You may write on this page if you need more space to finish your answers. Make sure that you label each answer carefully (e.g. 1(d)(ii) continued).