Question Booklet

2015 australian geography competition

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Fill in your name, school code (your teacher will give you this), school's postcode, your gender and age. You must fill in the ovals, not just write the letters and numbers, as the computer only reads the ovals. For example, a filled-in postcode (for some other school) would look like the sample on the right. Also fill in an oval in the school assigned column if instructed to do so by your teacher. Otherwise leave it blank.

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2 If you are 13 years or under on 31 August 2015 complete Questions 1-30.

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- If you are 14 or 15 years old on 31 August 2015 complete Questions 1-40.
- 4 If you are 16 to 18 years old on 31 August 2015 complete Questions 16-50.
- 5 Answer all questions by filling in **only one** oval on the answer sheet corresponding to the most appropriate answer for each question. If you change your mind, you must **erase** the wrong answer so that only one oval is filled in for each question.
- 6 You have 35 minutes to answer the questions. The time to fill in the preliminary information is extra.
 - Do not mark the front or back of the answer sheet in any other way as this can lead to errors in the computerised marking, or to your not getting a result.



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Figure 1. Australia's average annual rainfall



1 From Figure 1, what is Darwin's average annual rainfall?

- A between 600 and 1000 mm
- B between 1000 and 1500 mm
- C between 1500 and 2000 mm
- D between 2000 and 3000 mm
- E above 3000 mm
- 2 From Figure 1, which state or territory has the driest climate overall?
 - A New South Wales
 - **B** Northern Territory
 - C Queensland
 - D South Australia
 - E Western Australia



Figure 2. Rainfall at Horsham Airport, westernVictoria, for 2014Source: Bureau of Meteorology

- 3 From Figure 2, when did Horsham receive the most rain in 2014?
 - A autumn and winter
 - B spring and summer
 - C summer and autumn
 - D summer and winter
 - E winter and spring

© Commonwealth of Australia

4 Using Figures 1 and 2, was Horsham's 2014 rainfall:

- A about average
- B above average
- C below average
- D more than 400 mm above average
- E more than 400 mm below average



Figure 3. Kurnell Plant, Sydney

© SDP Pty Ltd

- 5 One benefit of the process shown in Figure 3 is that it uses:
 - A fresh water
 - B ground water
 - C melted ice
 - D salt water
 - E water vapour
- 6 What do some protesters see as a disadvantage of the process shown in Figure 3?
 - A It affects the marine environment at the waste outlet.
 - B It does not produce water suitable for drinking.
 - C It takes unsustainable amounts of water from aquifers.
 - D Its production is greatly reduced in times of drought.
 - E all of the above

7 Why does Dubai, in the United Arab Emirates, rely on the technology in Figure 3 for nearly 99% of its water supply?

- A Dubai needs less water as tourist numbers are falling.
- B Dubai's average annual rainfall is less than 100 mm.
- C It is cheaper than taking water from rivers.
- D It uses a lot of energy.
- E Rising sea levels flooded Dubai's dams.

8 Which of these is a primary source of data that could be used in a liveability study?

- A census website
- B climate graph
- C interviews with local residents
- D newspaper article on local crime
- E population pyramid

European settlement started in the east of the country and spread overland to the west. The country's two most populous cities are on its east coast and its west coast.

Figure 4. Settlement pattern

9 The text in Figure 4 describes the settlement of:

- A Australia
- B Canada
- C Mexico
- D New Zealand
- E United States of America

10 Which of these farming practices reduces soil erosion?

- A leaving paddocks bare between crops
- B ploughing down the slope of hills
- C removing vegetation beside watercourses
- D retaining stubble after harvest
- E tilling the soil to remove weeds
- 11 The consumption of coffee, tea and chocolate in Australia has contributed to the clearing of which type of vegetation in other countries?
 - A grassland
 - B rainforest
 - C savannah
 - D tundra
 - E woodland





12 The area shown in Figure 5 is representative of which type of landscape?

- A arid
- B coastal
- C karst
- D mountain
- E volcanic

13 What runs along the eastern boundary of Banksia Beach S.S. (B3 Figure 5)?

- A 4WD track
- B high voltage transmission line
- C local road
- D major road tunnel
- E walking trail

14 In which direction is the marina (A6) from the Fire Station (C5)?

- A ENE
- B NE
- C SW
- D W
- E WSW

15 What is the distance across the water spanned by Bribie Bridge (B6)?

- A 330 m
- B 740 m
- C 830 m
- D 1.4 km
- E 3.3 km

Start at Question 16 if you are **16** to **18 years** old on 31 August 2015. If you are younger, continue answering questions.

16 What is the scale of the map in Figure 5?

- A 1:2,500
- B 1:10,000
- C 1:25,000
- D 1:50,000
- E 1:100,000
- 17 What is located at grid reference 152064 in Figure 5?
 - A lake
 - B national park
 - C police station
 - D waterfront
 - E Welsby Parade



Figure 6. Terrain and land-use sketches

- 18 Which sketch in Figure 6 best represents the terrain and land-use between points X and Y in Figure 5?
 - A sketch A
 - B sketch B
 - C sketch C
 - D sketch D
 - E sketch E



Figure 7. Landsat-5 satellite false colour composite image of southern Bribie Island, 1994 © United States Geological Survey

19 Using Figures 5 and 7, what is located at 'R' on the Landsat image?

- A Banksia Beach S.S.
- B Cosmos Park
- C major commercial centre
- D marina
- E police station

20 What is the land cover at 'Q' in Figure 7 likely to be?

- A airport
- B beach
- C built-up area
- D national park
- E swamp
- 21 Compare the area in B4-C4 (Figure 5) with the same area in the 1994 image (Figure 7). Which of these statements is correct?
 - A The area is a good example of habitat protection.
 - B Fewer people now live in the area.
 - C The mangrove community now occupies more area.
 - D There is an increased nursery area for aquatic species.
 - E Urban development has replaced the wetland ecosystem.

Table 1. Effects of nitrogen fertiliser on yield of canola in the Victorian Wimmera

Source: R. Norton & N. Wachsmann

Fertiliser applied (kg/ha)	Grain yield (t/ha)	
0	1.6	
70	2.5	
140	2.5	
210	2.8	

22 Which statement best fits the statistics in Table 1?

- A Applying fertiliser above the optimum rate is wasteful.
- B Applying fertiliser does not increase the yield.
- C Canola needs fertiliser to grow.
- D Yield decreases at the same rate as fertiliser is applied.
- E Yield increases at the same rate as fertiliser is applied.



Figure 8. Modelled transport of material underBribie BridgeSource: Moreton Bay Regional Council

23 From Figure 8, when is there likely to be the smallest NET transport of material under Bribie Bridge?

- A autumn
- B spring
- C summer
- D summer and spring are equal
- E winter

24 Given the longshore drift shown in Figure 8, which of these is most likely to form?

- A a fringing coral reef around Bribie Island
- B a sea cave at the northern end of Bribie Island
- C a sea cave at the southern end of Bribie Island
- D a spit at the northern end of Bribie Island
- E a spit at the southern end of Bribie Island
- 25 The reasons why people migrate can be classified as push or pull factors. Which of these is a PUSH factor for people moving from rural to urban areas in China?
 - A Cities are centres of culture and tradition.
 - B Cities have higher-priced housing.
 - C Rural areas have cleaner environments.
 - D Rural areas have limited employment opportunities.
 - E Urban areas are drivers of economic development.



Figure 9.

© FreeBigPictures.com

26 The vegetation shown in Figure 9 is most typical of areas with which climate?

- A hot and wet all year
- B long hot summer, mild winter
- C short summer, very cold winter
- D warm dry summer, mild wet winter
- E warm wet summer, dry winter

Our island's environment is facing serious degradation due to over-exploitation by the label industry, according to activists. Garbage, water scarcity, massive land conversions and traffic jams have increased due to the island's inability to manage of the label of the series of the

Wayan Suardana, of the Indonesia Environmental Forum, said the problems had resulted from massive development in the industry since the 1990s that had changed from 'cultural' to 'mass industry'.

The island's limited natural resources have often led to conflict, he said. "We used to be able to achieve self-sufficiency in agriculture, but no longer."

Figure 10. Stop over-exploiting environment Source: adapted from Jakarta Post, 2 September 2011

27 In Figure 10, which industry's name has been blocked out?

- A agriculture
- B manufacturing
- C mining
- D retail
- E tourism

28 With which country does Australia have the most two-way trade?

- A China
- B Japan
- C Singapore
- D South Korea
- E United States of America



Figure 11. Estimated and projected populations for Australia's larger capital cities

Source: Australian Bureau of Statistics

29 From Figure 11, which city is projected to have the highest growth RATE between 1973 and 2053?

- A Adelaide
- B Brisbane
- C Melbourne
- D Perth
- E Sydney

30 Governments need to manage rapid urban growth to:

- A keep people connected through efficient transport links
- B maintain the environmental quality of the city's air and water
- C preserve parts of the natural landscape for its recreational and spiritual values
- D reduce differences in accessibility to services in inner and outer areas
- E all of the above

If you are **under 14 years** old on 31 August 2015 stop at Question 30. If you are older, continue answering questions.

- 31 The Balinese worldview, *Tri Hita Karana,* focuses on living in harmonious balance with people, nature and the gods. Which geographical concept does this best illustrate?
 - A change
 - B place
 - C scale
 - D space
 - E sustainability

Table 2. Australians' life expectancy at birth, 2010-12

Source: Australian Bureau of Statistics

Population group	Cities and inner regional	Outer regional and remote			
Males					
Indigenous*	68.0	67.3			
Non-Indigenous	79.9	78.5			
Females					
Indigenous*	73.1	72.3			
Non-Indigenous	83.0	82.5			

* Aboriginal and Torres Strait Islander

32 From Table 2, in which population group is the gap between Indigenous and non-Indigenous life expectancy greatest?

- A females living in cities and inner regional areas
- B females living in outer regional and remote areas
- C males living in cities and inner regional areas
- D males living in outer regional and remote areas
- E there is no discernible gap

33 Which statement about influences on life expectancy is correct, based on the data in Table 2?

- A People's indigenousness has more influence than where they live.
- B People's indigenousness has no influence.
- C Where people live has more influence than their gender.
- D Where people live has more influence than their indigenousness.
- E Where people live has no influence.

34 The data in Table 2 includes an example of:

- A an anomaly
- B random distribution
- C relative location
- D spatial association
- E a trend

35 The most likely reason that people living in cities and inner regional areas can expect to live longer is because they:

- A are more likely to have office jobs
- B have better access to medical services
- C lead more active lifestyles
- D live in environments with less air pollution
- E none of the above



Figure 12. Network models

Source: adapted from J. Willbanks

36 The three networks illustrated in Figure 12 are, from 1 to 3:

- A centralised, decentralised, distributed
- B decentralised, centralised, grid
- C distributed, grid, random
- D radial, random, centralised
- E random, radial, distributed

37 Which of these is a quantitative indicator of human wellbeing?

- A community vitality
- B cultural resilience
- C good governance
- D life satisfaction
- E years of schooling
- 38 The serious outbreak of ebola in West Africa in 2014 has severely affected Guinea, Liberia and:
 - A Kenya
 - B Morocco
 - C Namibia
 - D Sierra Leone
 - E Tunisia
- 39 Which international organisation is coordinating the response to the ebola outbreak?
 - A IMF
 - **B** UNESCO
 - C UNHCR
 - D WHO
 - E WMO
- 40 Which of these was NOT a factor in the seriousness of the ebola outbreak?
 - A The disease spread to densely populated cities.
 - B Ebola is very infectious as it is an air-borne disease.
 - C The health infrastructure in the three countries is very weak.
 - D Local cultural practices ensured physical contact with the dead and dying.
 - E Tracking of cases across the three countries was poorly coordinated.

If you are **under 16 years** old on 31 August 2015 stop at Question 40. If you are older, continue to the end of the questions.



Figure 13. Fire and regeneration

A © Scouts Australia/J. Elliott; B © N. Carson; C and D © CSIRO, Forest Phoenix

In Australia the McArthur Forest Fire Danger Index (FFDI) is widely used to forecast the influence of weather on fire behavior, and is a key tool for assessing fire danger. It is based on the temperature, wind speed and relative humidity at mid-afternoon, rainfall in the previous 24 hours, and the Drought Factor. The Drought Factor represents the influence of recent temperature and rainfall events on fuel availability.

Figure 14. McArthur Forest Fire Danger Index Source: adapted from Centre for Australian Weather and Climate Research



Figure 15. Time series of FFDI components at Canberra for the days around the Canberra bushfires on 18 January 2003 Source: Centre for Australian Weather and Climate Research



Figure 16. Synoptic chart for the Victorian Ash Wednesday bushfires, 16 February 1983 © Bureau of Meteorology

- 41 Which option puts the photos in Figure 13 into the shortest appropriate time sequence?
 - A A, D, C, B
 - B B, A, D, C
 - C C, A, D, B
 - D D, B, A, C
 - E D, C, A, B
- 42 Which type of vegetation is shown in Figure 13?
 - A alpine woodland
 - B closed scrub
 - C dry sclerophyll forest
 - D open woodland
 - E wet sclerophyll forest
- 43 Which feature shown on the synoptic chart (Figure 16) caused the very hot weather during the Ash Wednesday bushfires?
 - A high pressure system in the Tasman Sea
 - B low pressure system in the Coral Sea
 - C low pressure system in the Southern Ocean
 - D steep pressure gradient in the Southern Ocean
 - E trough extending from WA

44 What caused the subsequent wind shift that made the Ash Wednesday fires so dangerous?

- A cold front moving east
- B cold front moving west
- C Coral Sea low pressure system moving north
- D Coral Sea low pressure system moving south
- E high pressure system moving west

45 Study Figures 14 and 15. Which weather factors on 18 January 2003 contributed to the Canberra bushfires?

- A average rainfall, mild temperatures, low humidity, strong winds
- B low rainfall, high temperatures, high humidity, strong winds
- C low rainfall, low temperatures, low humidity, moderate winds
- D no rainfall, high temperatures, low humidity, strong winds
- E no rainfall, mild temperatures, low humidity, no wind
- 46 Which important factor in predicting fire behaviour is missing from the Forest Fire Danger Index (Figures 14 and 15)?
 - A fire-fighting personnel
 - B local government area
 - C population density
 - D soil type
 - E topography
- 47 Using Figures 14 and 15, which of these days had the most dangerous fire conditions?
 - A 24 December 2002
 - B 3 January 2003
 - C 14 January 2003
 - D 30 January 2003
 - E 5 February 2003
- 48 A major aim of prescribed burning is to mitigate the impacts of bushfires on life and property, mainly by:
 - A altering vegetation types
 - B maintaining biodiversity
 - C preventing fires from starting
 - D reducing fuel loads
 - E researching fire behaviour

Table 3. Ca	uses of bushfires in Victoria, 1976-77 to
1995-96	Source: Dept. of Sustainability and Environment

Fire cause	Average no. of fires per year	Average area burnt ha/yr
Lightning	149	53 096
Deliberate	145	15 649
Agricultural	96	7 799
Campfires	59	1 466
Cigarettes/matches	41	444
Cause unknown	37	2 974
Miscellaneous (a)	26	10 009
Machinery/exhausts	15	2 551
Prescribed burn escapes	9	5 274
Public utilities (b)	7	16 256
Total	584	115 518

(a) Includes causes like burning buildings and fireworks

(b) Includes ignitions from trains and power transmission

- 49 Which of these statements is supported by the data in Table 3 on bushfires in Victoria from 1976-77 to 1995-96?
 - A More fires were from accidental causes, than from natural or deliberate causes.
 - B More fires were from natural causes, than from accidental or deliberate causes.
 - C More fires were the result of arson, than from natural or accidental causes.
 - D Most fires were caused by farmers.
 - E Most fires were caused by tourists.
- 50 Using Table 3, an individual fire from which cause is statistically most likely to burn the greatest area?
 - A deliberate
 - B lightning
 - C miscellaneous (buildings, fireworks, etc)
 - D prescribed burn escapes
 - E public utilities

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Photo: Northwest coast, Tasmania © Redzaal; celebrating the International Year of Soils