

2013 GEOGRAPHY

ATTACH SACE REGISTRATION NUMBER LABEL
TO THIS BOX

Friday 8 November: 1.30 p.m.

Time: 2 hours

Pages: 21
Questions: 26

Core Topic: Population, Resources, and Development

Examination material: one 21-page question booklet
one two-sided sheet of additional material
one SACE registration number label

Approved dictionaries and calculators may be used.

Instructions to Students

1. You will have 10 minutes to read the paper. You must not write in your question booklet or use a calculator during this reading time but you may make notes on the scribbling paper provided.
2. This paper consists of twenty-six short-answer and extended-answer questions.
Answer ***all*** questions in the spaces provided in this booklet.
3. The total mark is 60.
4. Attach your SACE registration number label to the box at the top of this page.

**STUDENT'S DECLARATION ON THE USE OF
CALCULATORS**

By signing the examination attendance roll I declare that:

- my calculators have been cleared of all memory
- no external storage media are in use on these calculators.

I understand that if I do not comply with the above conditions for the use of calculators I will:

- be in breach of the rules
- have my results for the examination cancelled or amended
- be liable to such further penalty, whether by exclusion from future examinations or otherwise, as the SACE Board of South Australia determines.

Answer **all** the questions. Write your answers in the spaces provided after each question.

Refer to the topographic maps *ISLE OF MAN NORTH (Map A)*, scale 1:50 000, and *ISLE OF MAN SOUTH (Map B)*, scale 1:50 000, and the relief map of the *ISLE OF MAN (Map C)*, scale 1:400 000, on Side 1 of the separate sheet of additional material, where appropriate, when answering Questions 1 to 13.

Refer to Map A on Side 1 of the separate sheet when answering Questions 1 to 3.

1. Based on map evidence, which *one* of the following features would you find close to the road between Bride (grid reference 448012) and The Lhen (grid reference 391013)? Tick the appropriate box.

Coniferous woods

☐

A lighthouse

☐

Quarries

☐

Historical sites

☐

(1 mark)

2. Your car has broken down on the road at point **X** (grid reference 384957). Where is the nearest public telephone you can walk to by road to call for assistance?

(1 mark)

3. The watercourse **W** meets the Sulby River at grid reference 430949.

What evidence from the map suggests that flow in watercourse **W** and its tributaries is being managed so that the watercourse and its tributaries can be used as a water supply?

(1 mark)

4. Refer to Map A and Map B on Side 1 of the separate sheet.

Contrast the coast in the north of the Isle of Man (Map A) with that in the south (Map B) by describing *two* ways in which the coast or its features differ.

(a) _____

_____ (1 mark)

(b) _____

_____ (1 mark)

5. Refer to Map B on Side 1 of the separate sheet.

Suggest the most likely reason why the railway line does not take a direct route from Ballasalla (grid reference 282699) to Port Erin (grid reference 197689).

_____ (1 mark)

6. Refer to Box G on Map B on Side 1 of the separate sheet.

- (a) The average gradient of the slope labelled **m** to **n** in Box **G** is closest to which *one* of the following ratios? Tick the appropriate box.

1:5 ☐ 1:10 ☐ 1:50 ☐ 1:100 ☐ (1 mark)

- (b) The shape of the slope referred to in question (a) is best described by which *one* of the following terms? Tick the appropriate box.

Reflex ☐ Convex ☐ Uniform ☐ Parallel ☐ (1 mark)

7. Refer to the following photograph and to Map B on Side 1 of the separate sheet:



Source: 'Approach to Runway 08, Ronaldsway Airport, 2000', © Chris and licenced for reuse under a [Creative Commons Licence](http://www.geograph.org.uk/photo/3165289), <<http://www.geograph.org.uk/photo/3165289>>

The photograph shows the view straight ahead from an aircraft coming in to land at Ronaldsway Airport (grid reference 285685).

Which *one* of the following bearings is correct for the direction in which the aircraft was heading? Tick the appropriate box.

10° ☐ 80° ☐ 170° ☐ 260° ☐ (1 mark)

8. Refer to Cringle Plantation (grid reference 254747), Colby River (grid reference 230715), and Silver Burn (grid reference 275695) on Map B on Side 1 of the separate sheet.

Which *one* of the following statements correctly describes the location of Cringle Plantation? Tick the appropriate box.

Entirely within the Colby River catchment area	☐	
Entirely within the Silver Burn catchment area	☐	
In neither the Colby River nor the Silver Burn catchment areas	☐	
Partly in the Colby River catchment area and partly in the Silver Burn catchment area	☐	(1 mark)

Refer to the following satellite images, where appropriate, when answering Questions 9 to 11:

Satellite image 1: Isle of Man North



Source: Courtesy NASA/GSFC/METI/ERSDAC/JAROS and US/Japan ASTER Science Team, <<http://photojournal.jpl.nasa.gov/catalog/PIA15218>>, 10 January 2012

Satellite image 2: Area of Box S on Map A



Source: © 2010 Isle of Man Survey, Crown Copyright, Department of Local Government & the Environment, Isle of Man Government, MANNGIS online mapping facility, aerial imagery, <www.gov.im/MANNGIS/StreetMap/StreetMap.iom>

9. Refer to Satellite image 1 opposite and to Map A and Map C on Side 1 of the separate sheet. Describe the association between relief and cultivated land in the area of Satellite image 1.

(1 mark)

10. Refer to Satellite image 2 opposite and to Box S on Map A on Side 1 of the separate sheet. Give a six-figure grid reference for the feature labelled F in Satellite image 2.

(1 mark)

11. Refer to Map A and Map C on Side 1 of the separate sheet and to the satellite images opposite.

Which *one* of the maps or satellite images listed below has the largest scale? Tick the appropriate box.

Map A Isle of Man North

☐

Map C Relief of the Isle of Man

☐

Satellite image 1

☐

Satellite image 2

☐

(1 mark)

12. Sustainably managed forests have many environmental and socio-economic functions that are important at the global, national, and local scales. They play a vital role in sustainable development.

(a) What is meant by the term 'sustainable development'?

(1 mark)

(b) Suggest *one* environmental function of forests and plantations, such as those found on the Isle of Man, that is important globally.

(1 mark)

(c) Suggest *one* role of forests and plantations, such as those found on the Isle of Man, in local sustainable development.

(1 mark)

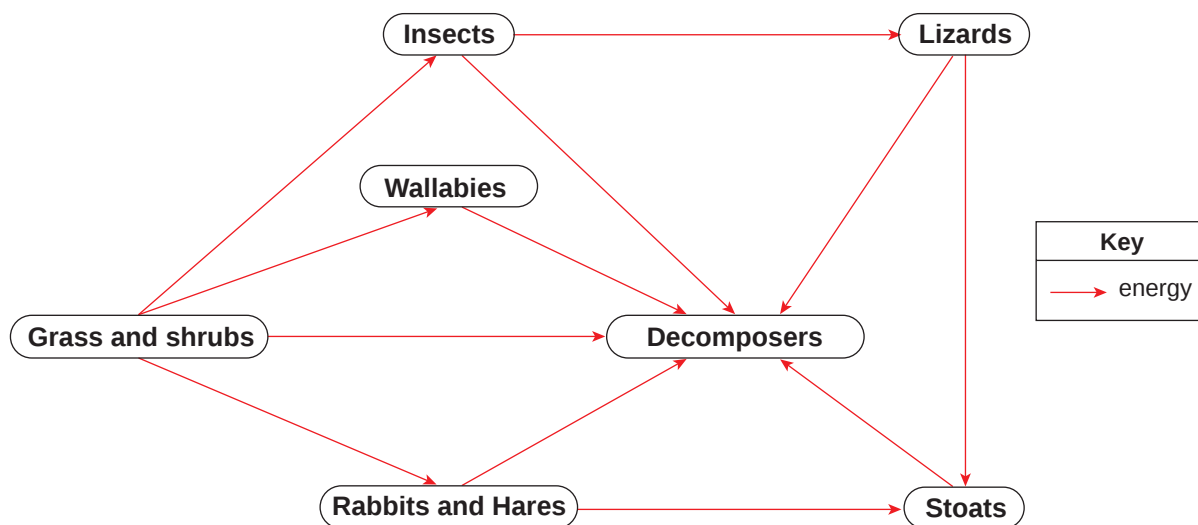
13. (a) Refer to Map C on Side 1 of the separate sheet and to the following information:

The Curraghs is an area of woods, meadows, and wetlands located in the north of the Isle of Man. In the 1970s, a pair of red-necked wallabies (introduced from Australia) escaped into The Curraghs (indicated on Map C) from a nearby wildlife park.

Which *one* of the following values is closest to the longitude for The Curraghs? Tick the appropriate box.

4° 32' west ☐ 4° 32' north ☐ 54° 20' west ☐ 54° 20' north ☐ (1 mark)

Refer to the following food web, which shows the relationship between selected organisms that can be found at The Curragh on the Isle of Man, when answering questions (b) and (c):



- (b) The number of red-necked wallabies at The Curragh is estimated to be about 100. Explain how the presence of wallabies at The Curragh could affect the population of stoats in the area.

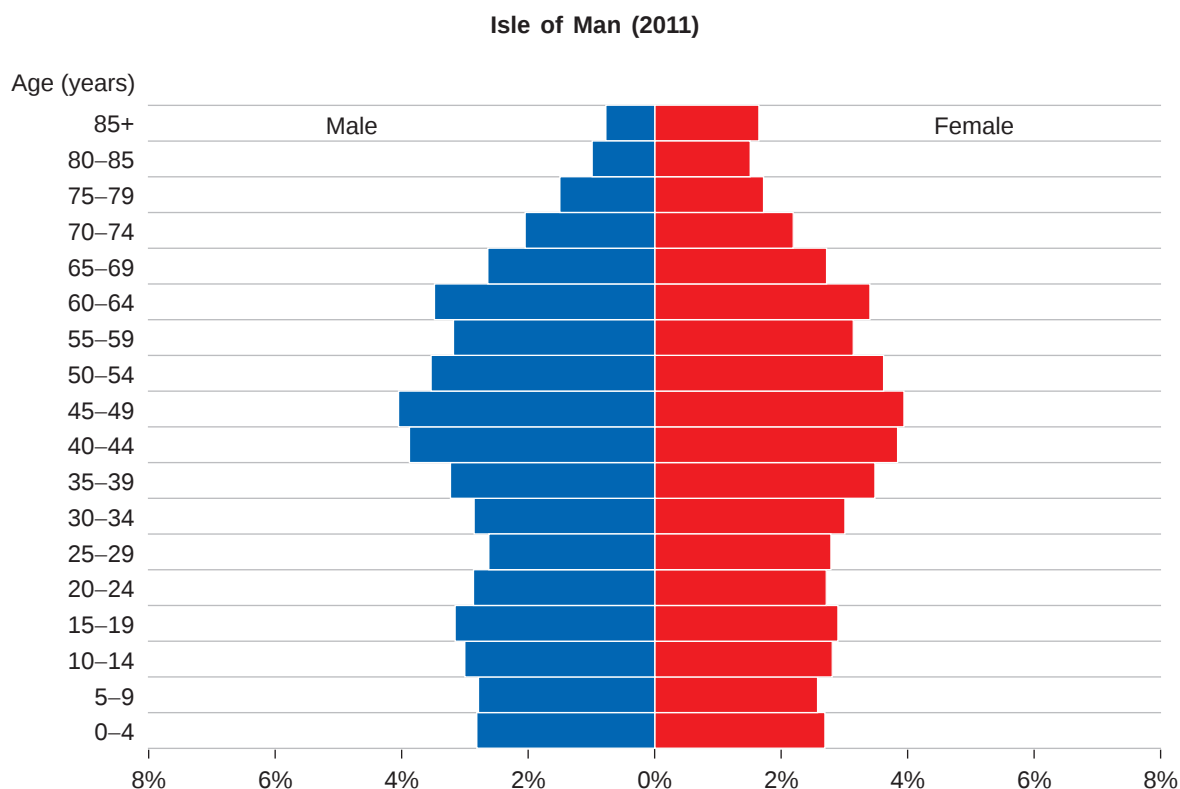
(2 marks)

- (c) Generally nutrients are cycled in a natural ecosystem, such as the one at The Curragh, whereas energy is not. Explain this difference with reference to the diagram.

(2 marks)

No further questions refer to Side 1 of the separate sheet of additional material.

14. Refer to the following population pyramid:



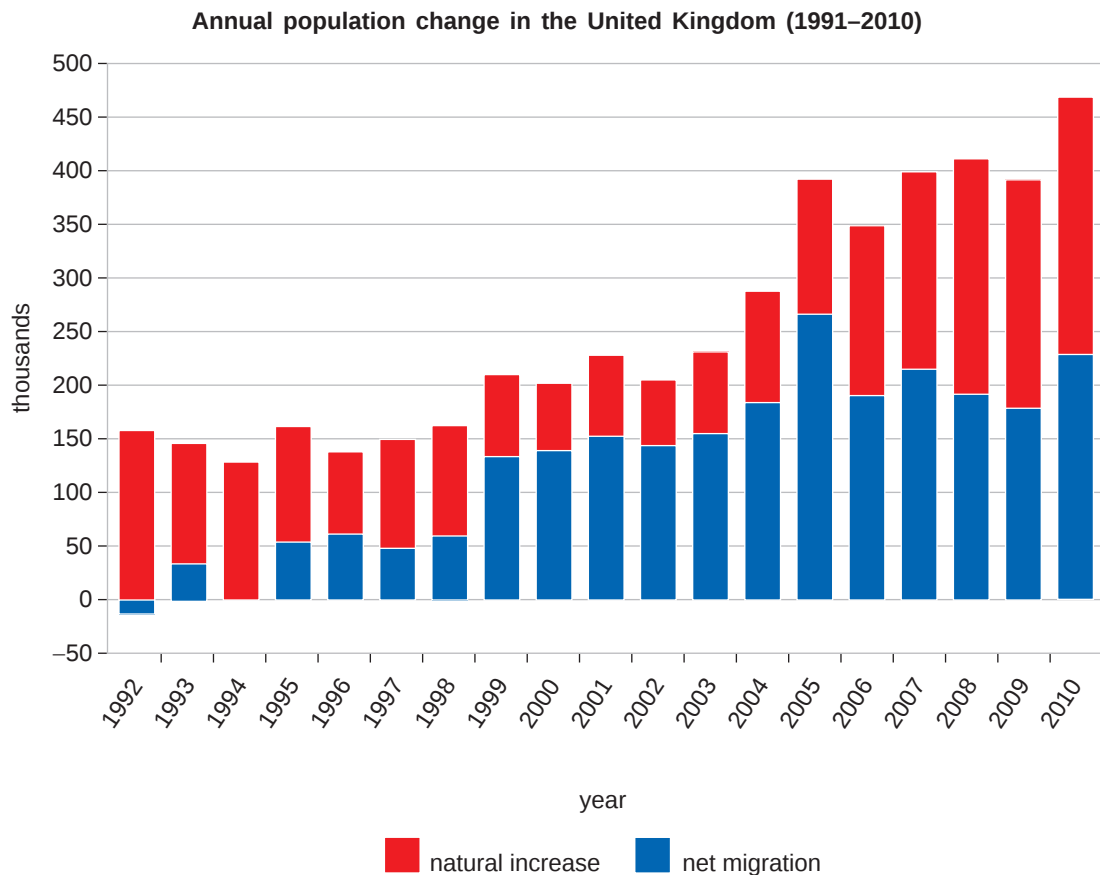
- (a) Clearly indicate on the population pyramid, using a bracket and a label, the sector of the population conventionally referred to as 'economically active'.

(1 mark)

- (b) Suggest *one* likely social issue that will be faced by the government of the Isle of Man in 20 years' time.

(1 mark)

15. Refer to the following graph when answering questions (a) and (b):



Source: Adapted from Cangiano, A. 2012, 'The Impact of Migration on UK Population Growth', Migration Observatory Briefing, COMPAS, University of Oxford, UK, p. 4

(a) Explain the term 'natural increase'.

(1 mark)

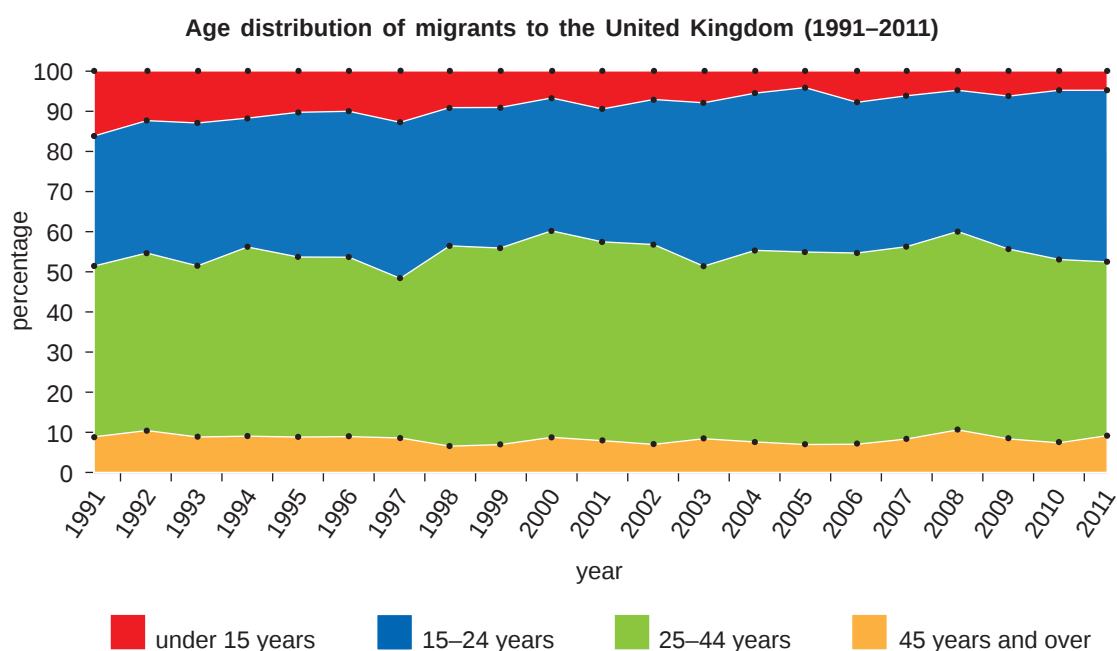
(b) During which year did net migration make the largest contribution to the annual population change in the United Kingdom?

(1 mark)

(c) State and explain *one* factor that could influence the rate of migration to a country like the United Kingdom.

(1 mark)

16. Refer to the following graph and table when answering questions (a) and (b):



Source: Adapted from Vargas-Silva, C. 2013, 'Geographical Distribution and Characteristics of Long-Term International Migration Flows to the UK', Migration Observatory Briefing, COMPAS, University of Oxford, UK, p. 4

Total fertility rate (TFR) in the United Kingdom (1980–2010)

Year	1980	1990	2000	2010
TFR	1.90	1.83	1.64	1.98

Source: Eurostat 2013, 'File: Total fertility rate, 1960–2011 (live births per woman).png', in *Statistics Explained*, viewed 4 September, <<http://epp.eurostat.ec.europa.eu>>

- (a) Describe the trend of the total fertility rate (TFR) in the United Kingdom from 1980 to 2010.

_____ (1 mark)

- (b) Which age group has provided the largest proportion of migrants to the United Kingdom between 1991 and 2011?

_____ (1 mark)

- (c) Explain how the population age structure of a migrant group might influence the TFR of a country.

_____ (1 mark)

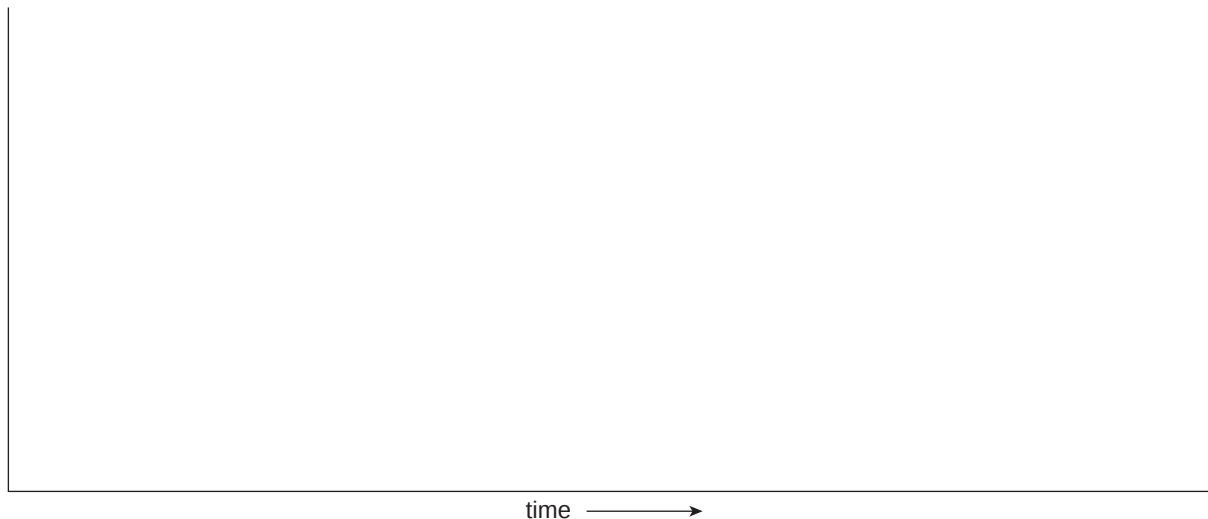
17. Refer to the following collage of newspaper headlines:



Use information from the headlines to explain both the push and the pull factors in migration.

(2 marks)

18. (a) In the space below draw a labelled diagram showing the stages of the Demographic Transition Model.



(4 marks)

- (b) Describe two limitations of the Demographic Transition Model.

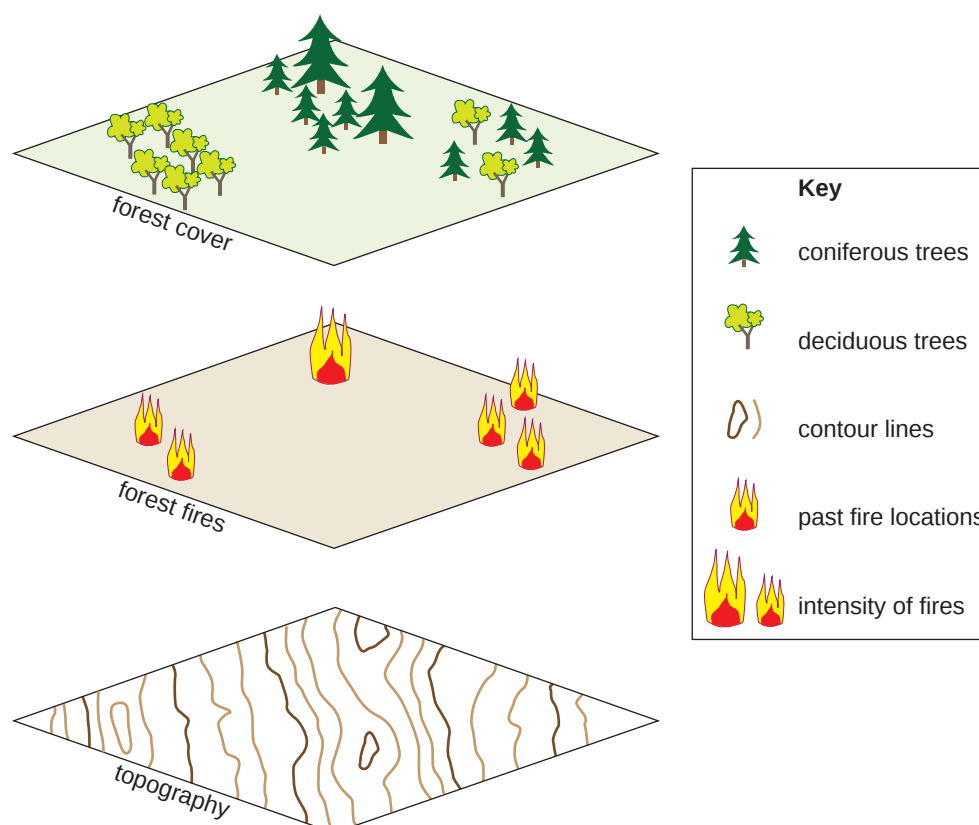
(i) _____

_____ (1 mark)

(ii) _____

_____ (1 mark)

19. Refer to the following simplified geographic information system, which shows the location of forest fires for a decade:



Source: Adapted from Virginia Department of Forestry, 2013, 'Geographic Information Systems', viewed 14 August, <<http://www.dof.virginia.gov/gis/>>

- (a) State *one* technique for identifying the locations of past forest fires.

_____ (1 mark)

- (b) Explain how this geographic information system could be used to help manage forest fires in this area during the next fire season.

_____ (1 mark)

Refer to Sources 1 to 8 on Side 2 of the separate sheet of additional material, where appropriate, when answering Questions 20 to 22.

20. (a) State why wind is considered a form of renewable energy.

(1 mark)

(b) Why does renewable energy have an ecological footprint?

(1 mark)

(c) Source 8 shows that wind power has a much smaller ecological footprint than fossil fuel. Explain why.

(1 mark)

21. What evidence is there that the Isle of Man may seek to export wind energy to other regions or countries?

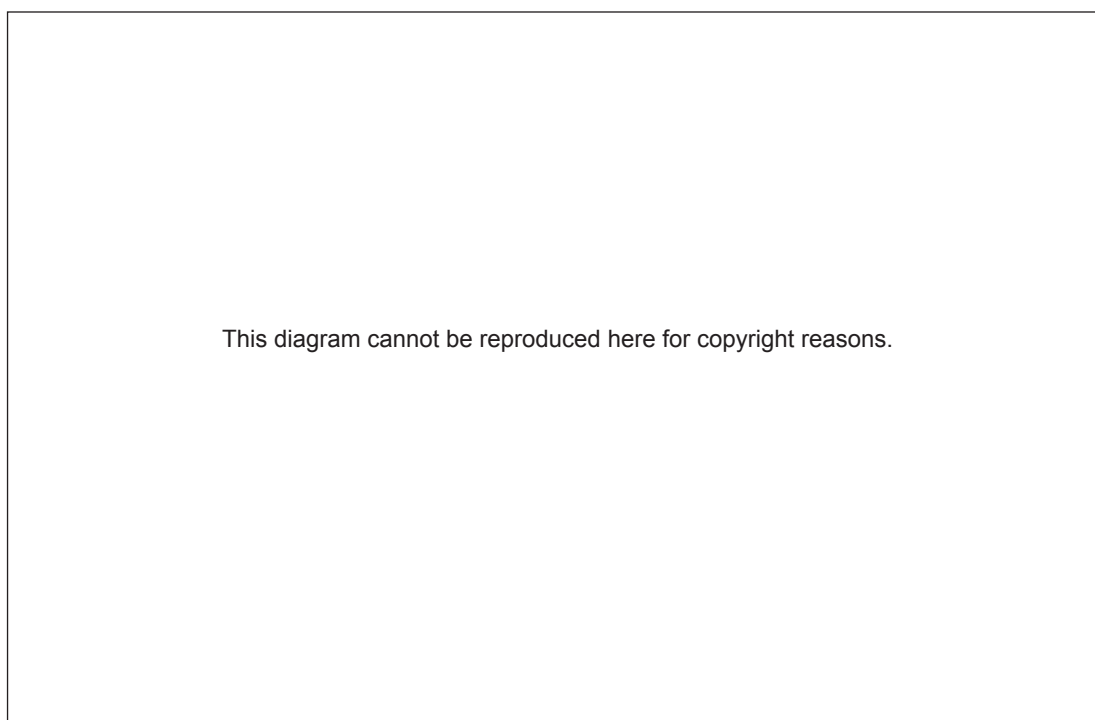
(1 mark)

- [illegible]

_____ (5 marks)

No further questions refer to Side 2 of the separate sheet of additional material.

23. Refer to the following map:



Source: Adapted from Global Energy Network Institute 2013, 'Renewable Energy Resource Maps: Solar radiation in Australia — Mean Annual Solar Radiation Levels', viewed 4 September , © CRES, ANU

Explain why Australia may struggle to take full advantage of its solar energy resources.

(1 mark)

24. Refer to the following photograph and information:



Standard evaporimeters, as pictured above, are used to collect evaporation data at meteorological recording stations worldwide. They are always placed away from structures such as buildings and where the surrounding vegetation is short grass.

Source: Adapted from en.wikipedia.org/wiki/File:Evaporation_Pan.jpg, © Wikimedia Commons user: Bidgee

With reference to the influence of any *two* factors on rates of evaporation, explain why evaporimeters need to be sited according to the rules given in the information.

[illegible]

_(3 marks)

25. Refer to the following news item, which was posted on the Isle of Man News website, on 3 January 2013:

Last year was the second-wettest on record, the Isle of Man Meteorological Office has confirmed.

The total rainfall recorded at Ronaldsway Airport during 2012 was 1114 mm, well ahead of the long-term average of 864 mm.

Since records began, only 2002 has been wetter, when 4.2 mm more fell.

With the exception of November last year, every month from June to December saw significantly more rain than usual.

The wettest day of 2012 was 22 June when 48.7 mm fell.

There were 11 days of hail observed at Ronaldsway Airport, 5 days of sleet, and 2 days with thunderstorms.

Source: Adapted from Manx Radio 2013, '2012 Second Wettest Ever', 3 January, Isle of Man News, viewed 14 August 2013, <isleofman.com/news/details/51950/2012-second-wettest-ever> © Manx Telecom Ltd

- (a) State whether the news item relates to annual rainfall variability or to the seasonality of rainfall on the Isle of Man. Explain how the information relates to the option you have chosen.

(1 mark)

- (b) Name *one* form of precipitation that occurs within the water cycle that is not mentioned in the news item.

(1 mark)

- (c) The rain recorded on 22 June 2012 resulted in some localised flooding in the south of the Isle of Man. Based on the news item, explain why the likelihood of more severe flooding in the same area progressively increased in the following months.

(1 mark)

-
- This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

 (5 marks)

GEOGRAPHY 2013

ACKNOWLEDGMENT

Question 24: The photo is covered under [Creative Commons Attribution 3.0 Unported Licence \(CC BY 3.0\)](#)

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