



EARTH AND ENVIRONMENTAL SCIENCE SAMPLE EXAMINATION

Section 7 of the *New WACE Manual: General Information 2006–2009* outlines the policy on WACE examinations.

Further information about the WACE Examinations policy can be accessed from the Curriculum Council website at http://newwace.curriculum.wa.edu.au/pages/about_wace_manual.asp.

The purpose for providing a sample examination is to provide teachers with an example of how the course will be examined. Further finetuning will be made to this sample in 2007 by the examination panel following consultation with teachers, measurement specialists and advice from the Assessment, Review and Moderation (ARM) panel.



**Sample Examination
Question/Answer Booklet**

**EARTH AND
ENVIRONMENTAL
SCIENCE**

Please place your student identification label in this box

Student Number: In figures

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In words

Time allowed for this paper

Reading/planning time before commencing work: Ten minutes

Working time for paper: Three hours

Material required/recommended for this paper

To be provided by the supervisor

This Question/Answer Booklet

To be provided by the candidate

Standard items: Pens, pencils, eraser or correction fluid, highlighter, ruler, printed English language dictionary and/or bilingual dictionary (non electronic and not a thesaurus)

Special Items: Calculators satisfying the conditions set by the Curriculum Council for this course.

Important note to candidates

No other items may be taken into the examination room. It is **your** responsibility to ensure that you do not have any unauthorised notes or other items of a non-personal nature in the examination room. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.

Structure of this paper

Section	Outcomes	Suggested working time	No. of questions available	No. of questions to be attempted
Section 1: Short Answer	1, 2, 3 and 4	110 minutes	8	8
Section 2: Extended Answer	1, 2 and 3	70 minutes	2	2

Instructions to candidates

1. The rules for the conduct of Curriculum Council examinations are detailed in the *Student Information Handbook*. Sitting this examination implies that you agree to abide by these rules.
2. Answer all questions by writing your answers in this booklet in the spaces provided.
3. You must be careful to confine your responses to the specific questions asked and to follow any instructions that are specific to a particular question.
4. Spare answer pages may be found at the end of this booklet. If you need to use them, indicate in the original answer space where the answer is continued (i.e. give the page number).

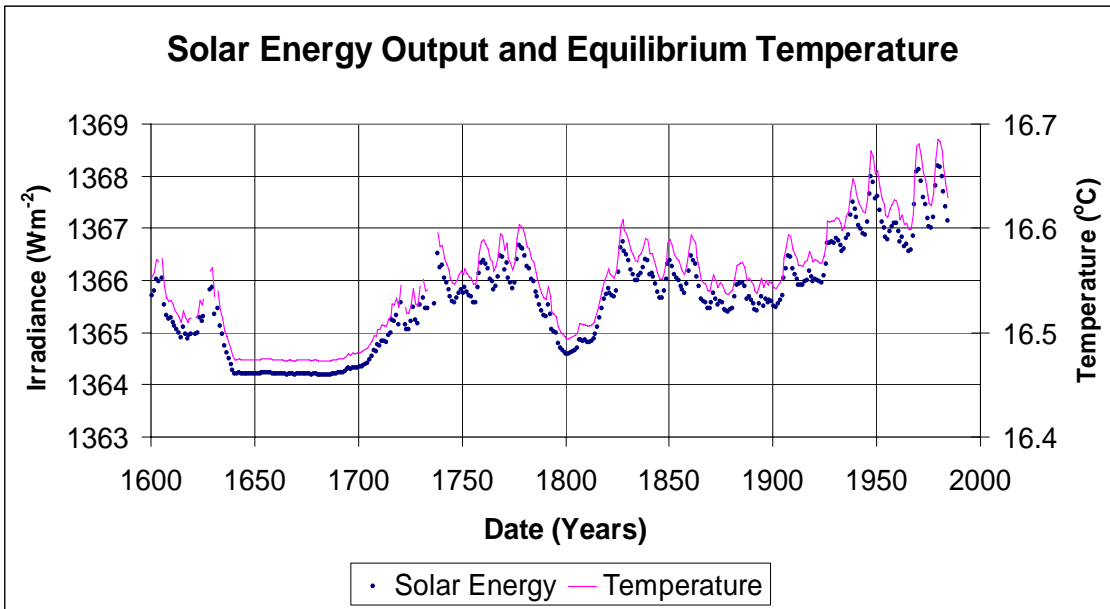
The purpose of this examination is to provide each candidate with the opportunity to demonstrate his/her level of achievement of the Earth and Environmental Science course outcomes. Some questions may provide candidates with the opportunity to demonstrate achievement at a restricted range of levels. Other questions may provide the opportunity to demonstrate achievement over the full range of levels.

SECTION 1: Short Answer

This section has 8 questions. Attempt all questions. Write your answers in the spaces provided.

Allow approximately 110 minutes for this section of the paper.

Questions 1(a) and 1(b) refer to the following graph.



Allow approximately 20 minutes to answer Question 1 (a, b and c).

1. (a) How does solar energy input (shown by the dark dots) vary with temperature (light dots) and time?

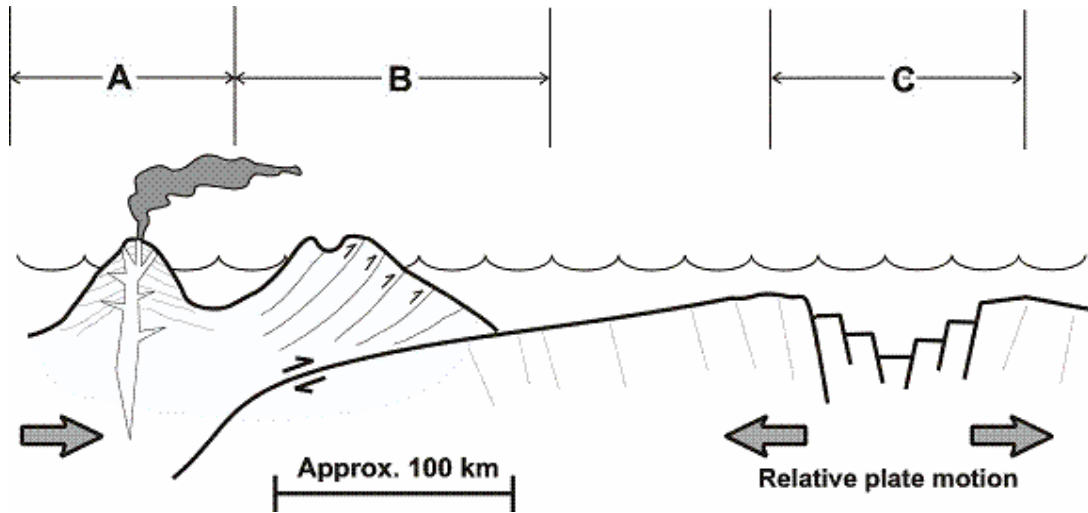
[5 marks]

Allow approximately 10 minutes to answer question 3 (a and b).

3. (a) The diagram below illustrates a cross-section of an active tectonic margin.

Name and describe the three tectonic environments (A, B & C) indicated in the diagram and give a predominant rock type found in each environment.

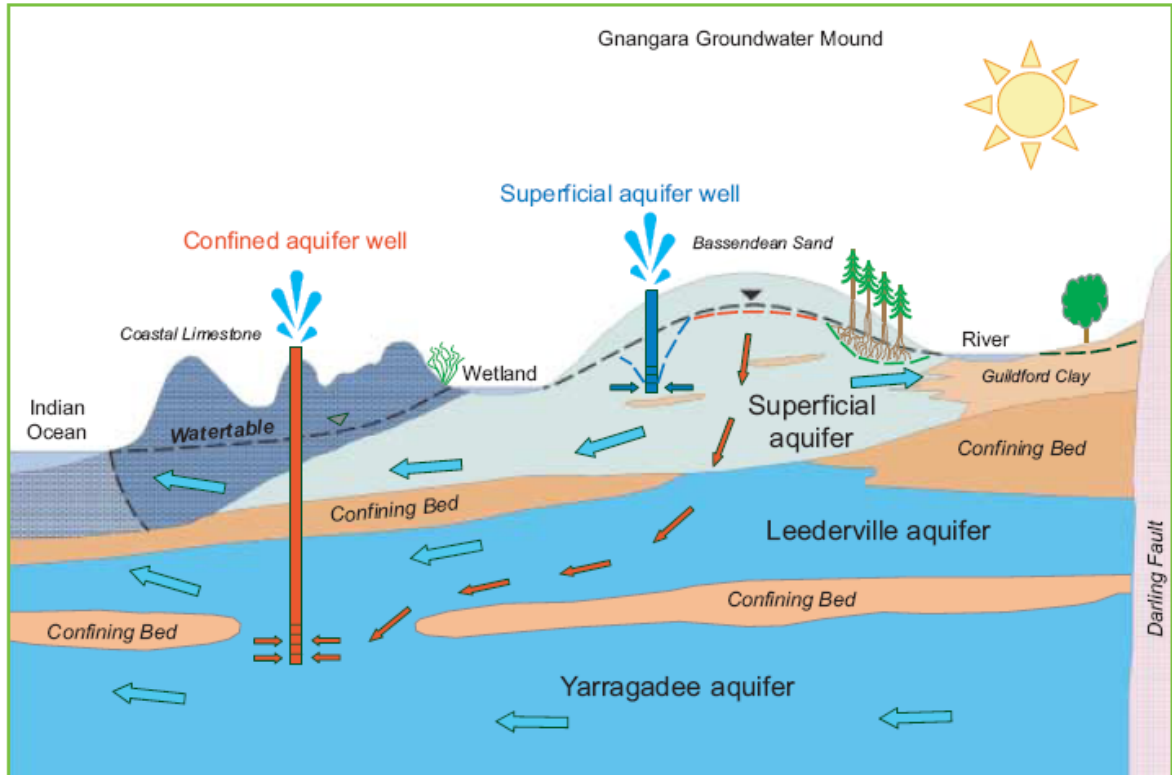
[6 marks]



	Description
A Tectonic environment	
A Predominant rock type	
B Tectonic environment	
B Predominant rock type	
C Tectonic environment	
C Predominant rock type	

Allow approximately 10 minutes to answer question 5.

Groundwater resources of the Swan coastal plain, Perth.



Source: Department of Environment

Answer question 5 with reference to the diagram and the contexts that you have studied.

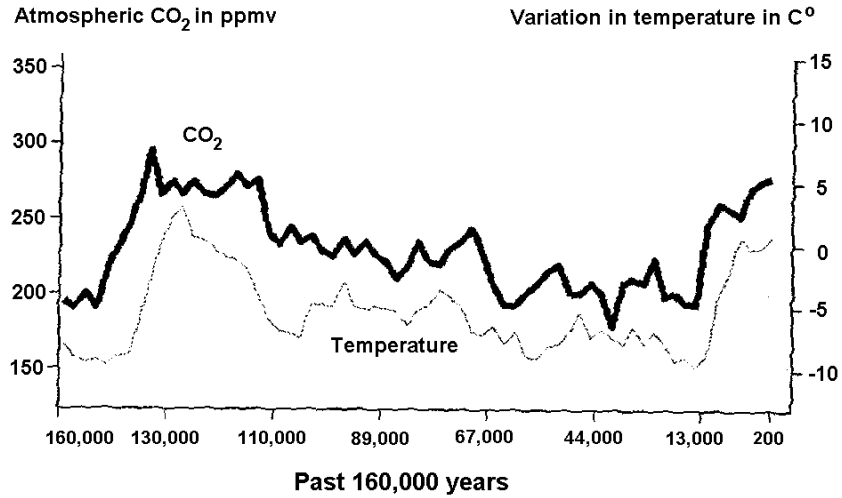
- 5. Since 1998 the Water Corporation has accessed water from the Yarragadee aquifer as a drought contingency measure.

Discuss the impact of drawing water from this confined aquifer if extraction does not occur sustainably.

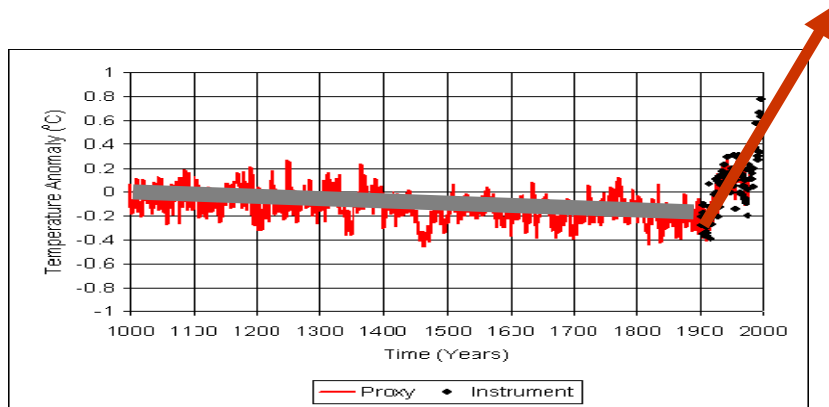
[8 marks]

Allow approximately 15 minutes to answer question 7.

Graph 1:



Graph 2:



Paleoclimatologists gather proxy data from natural recorders of climate variability such as tree rings, ice cores, fossil pollen, ocean sediments, corals and historical data. By analysing records taken from these and other proxy sources, scientists can extend our understanding of climate far beyond the 100+ year instrumental record.
(NOAA)

7. Compare and contrast the data available from the two graphs. Be sure to include the relationships between temperature, time and CO₂ concentration and any links to the enhanced Greenhouse effect.

[12 marks]

Lined writing area with multiple horizontal lines.

This space has been provided for additional workings

ACKNOWLEDGEMENTS

SECTION 1

- Question 1:** Graph from: Ribbe, J. (n.d.). Example 1: Global temperature. In *Mathematical modelling of climate* [PowerPoint slide 16]. Retrieved April, 2006, from University of Southern Queensland website: <http://www.usq.edu.au/users/ribbe/Modelling%20of%20Climate.ppt#274,16,Example%201:%20Global%20Temperature>
- Question 3 (b):** Diagram from: Kansas Geological Survey. (1999). *Principal earthquake zones of the earth*. Retrieved April, 2006, from <http://www.kgs.ku.edu/Extension/image/earthquake2.html>
All rights reserved.
- Question 5:** Department of Environment. (n.d.). *Groundwater resources of the Swan coastal plain, Perth* [Diagram]. Perth: Author.
- Question 7:** **Graph 1**
Global Commons Institute after Jouzel et al. (1997). Past 160,000 years. In *How far and how fast? The critical issue of speed and scale—illustrated by the case of global warming* (fig. 1). Retrieved April, 2006, from Green Innovations Inc. website: <http://www.green-innovations.asn.au/how-far-how-fast-greenhouse-case.htm>
- Graph 2**
Ribbe, J. (n.d.). Example 1: Background. In *Mathematical modelling of climate* [PowerPoint slide 9]. Retrieved April, 2006, from University of Southern Queensland website: <http://www.usq.edu.au/users/ribbe/Modelling%20of%20Climate.ppt#274,16,Example%201:%20Background>
- Text**
Extract from: National Oceanic & Atmospheric Administration (NOAA), (2002). *Introduction to paleoclimatology: Paleo proxy data*. Retrieved April, 2006, from http://www.ncdc.noaa.gov/paleo/primer_proxy.html
- Question 9:** Text adapted from: Geoscience Australia. (2005). *The geohazards program*. Retrieved April, 2006, from <http://www.ga.gov.au/urban/factsheets/index.jsp#program>
© Commonwealth of Australia 2006.
- Question 10:** Text from: Ulansey, D. (2006). *Mass extinction underway* [The current mass extinction]. Retrieved April, 2006, from <http://www.well.com/~davidu/extinction.html>