



1	
2	
3	
4	
TOT	

GEOLOGY 200 FINAL JAN 1997

CHRIS WALLEY'S SECTION

NAME.....ID No.....

TWO HOURS. Answer all sections: Read the questions carefully. Allocate your time carefully. My standard exam rules apply.

SECTION 1 20% OF MARKS

Section 1: True or false? Simply tick the appropriate box. No Explanation needed.

(1 mark a question)

- | | <u>T</u> | <u>F</u> |
|---|--------------------------|--------------------------|
| 1) The holes in the ozone layer are appearing over areas of intense pollution | <input type="checkbox"/> | <input type="checkbox"/> |
| 2) Almost all Lebanese water is hard water because the main aquifers are limestones | <input type="checkbox"/> | <input type="checkbox"/> |
| 3) Comets have a lower density than meteorites just as Jupiter has a lower density than earth. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4) Karstic features occur due to the weathering of igneous and sedimentary rocks. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5) Uranium, plutonium and lithium are the main nuclear fuels. | <input type="checkbox"/> | <input type="checkbox"/> |
| 6) The Richter Scale can be used for estimating the force of historic earthquakes for which no measurements exist. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7) The nearest star is around four million kilometers away. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8) Iron was widely used before the development of the copper alloy, bronze | <input type="checkbox"/> | <input type="checkbox"/> |
| 9) The United States is an example of a nation whose large scale oil imports are due to the fact that its geology has not given it abundant oil supplies. | <input type="checkbox"/> | <input type="checkbox"/> |
| 10) Some industrialised states use 100 times the amount of water per head of population than some of the less well developed countries. | <input type="checkbox"/> | <input type="checkbox"/> |
| 11) Thin, young crust of basaltic composition is likely to be oceanic crust | <input type="checkbox"/> | <input type="checkbox"/> |
| 12) The dinosaurs died out around 64 million years ago | <input type="checkbox"/> | <input type="checkbox"/> |
| 13) An andesite can be expected to be midway in character between rhyolite and basalt. | <input type="checkbox"/> | <input type="checkbox"/> |
| 14) The mantle of the earth is denser than the core. | <input type="checkbox"/> | <input type="checkbox"/> |
| 15) Solid rock is stable at high angles of repose because of its strong shearing stress. | <input type="checkbox"/> | <input type="checkbox"/> |
| 16) In order to stop river flooding groynes and rip rap may be used along a stream bank. | <input type="checkbox"/> | <input type="checkbox"/> |
| 17) CO ₂ and NH ₄ (methane) are greenhouse gases. | <input type="checkbox"/> | <input type="checkbox"/> |
| 18) Melting of all the worlds ice sheets would give a 175m sealevel rise | <input type="checkbox"/> | <input type="checkbox"/> |
| 19) Visible light striking the earth is reradiated back as shorter wave length infra red. | <input type="checkbox"/> | <input type="checkbox"/> |
| 20) Getting half a mark deducted when you have a final course average of 57.5 is an example of the threshold effect | <input type="checkbox"/> | <input type="checkbox"/> |



SECTION TWO (18% OF MARKS)

Quickies! Answer briefly six of the following in the space provided.

1) Why the must the first organisms on earth have been different from almost all organism living today?

2) What would happen if we took a carbon atom and changed
a) the number of protons

b) the number of neutrons

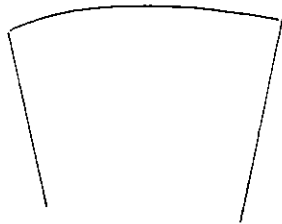
c) the number of electrons

3) The half life of an isotope cannot be speeded up or slowed down. Why is this
a) good news for geologists interested in the age of geological features?.....

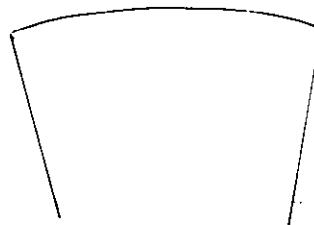
b) Bad news for those working with nuclear waste?

4) Why do we have different igneous rock types?

5) The outer part of the earth is divided differently by different people. On the two diagrams below divide it accordingly



a) *How those interested in the chemical composition of the earth divide it.*



b) *How those interested in tectonics divide it*

6) Why do rocks formed in desert settings rarely provide suitable source rocks for oil?

7) What are the attractions of biomass fuel? What are the disadvantages?

8) Why is incineration not a complete solution to waste problems?.....
.....
.....

SECTION 3 30% COMPULSORY

Examine the attached figure. Use the answer books for your answers.

3A) GEOLOGY

1. Explain in terms of plate tectonics what is happening with the Atlantic Ocean. *2 marks*
2. Why is the Pacific Ocean more complicated than the Atlantic in terms of plate tectonics? What is the main tectonic process operating here? *2 marks*
3. H is Hawaii, a series of massive basaltic volcanoes. Why can it not be simply explained in terms of Plate tectonics? *2 marks*
4. Which direction is the Pacific Plate is moving (N, NE,E etc)? On the basis of this map where will Hawaii end up in a hundred or so million years ? *3 marks*
5. The shallow marine fossils of Portugal (P) and the eastern United States were very similar before 200 million years ago and then rapidly become very different from 180-150 million years onwards. Suggest why this may have happened. *3 marks*

3B) ENVIRONMENTAL GEOLOGY

Two pieces of information needed.

- a) Wind systems tend to blow from west to east over the USA .
- b) The Cordillera is a useful term for the entire range of mountains along the western USA, some of which formed in different plate tectonic settings to the present day.

1. S is the Seattle area of the USA. On the basis of this diagram alone predict the geology in as much detail as you can and give some of the related environmental risks for the area. You may use a diagram. *3 marks*
2. C is, of course, California. Explain the geology here and describe how it differs from that in the Seattle area. You may use a diagram. *3 marks*
3. I is Iceland. From the map what is unusual geologically about this island? *2 marks*
4. Why is the Atlantic on the whole a much safer ocean in terms of tectonic hazards? *2 marks*
5. What is the one area of the Atlantic Ocean that is in danger of tectonic hazards? Why? Can you summarise one event that took place in this region that you have studied which demonstrates this? *3 marks.*
6. Consider the drainage basin of the Mississippi (M). Why is it important that management of it lies with a national body rather than with the twenty or so states that it covers? *3 marks*
7. Why was the Wild West always so dry and dusty that people had to go into bars, drink, start fights and get shot? *2 marks*

SECTION FOUR (32% OF MARKS)

Answer two of the following. Be careful to answer all the parts.

1) Consider the Nile Delta where much of Egypt's agriculture is based. What dangers is it facing? What can be done about it?

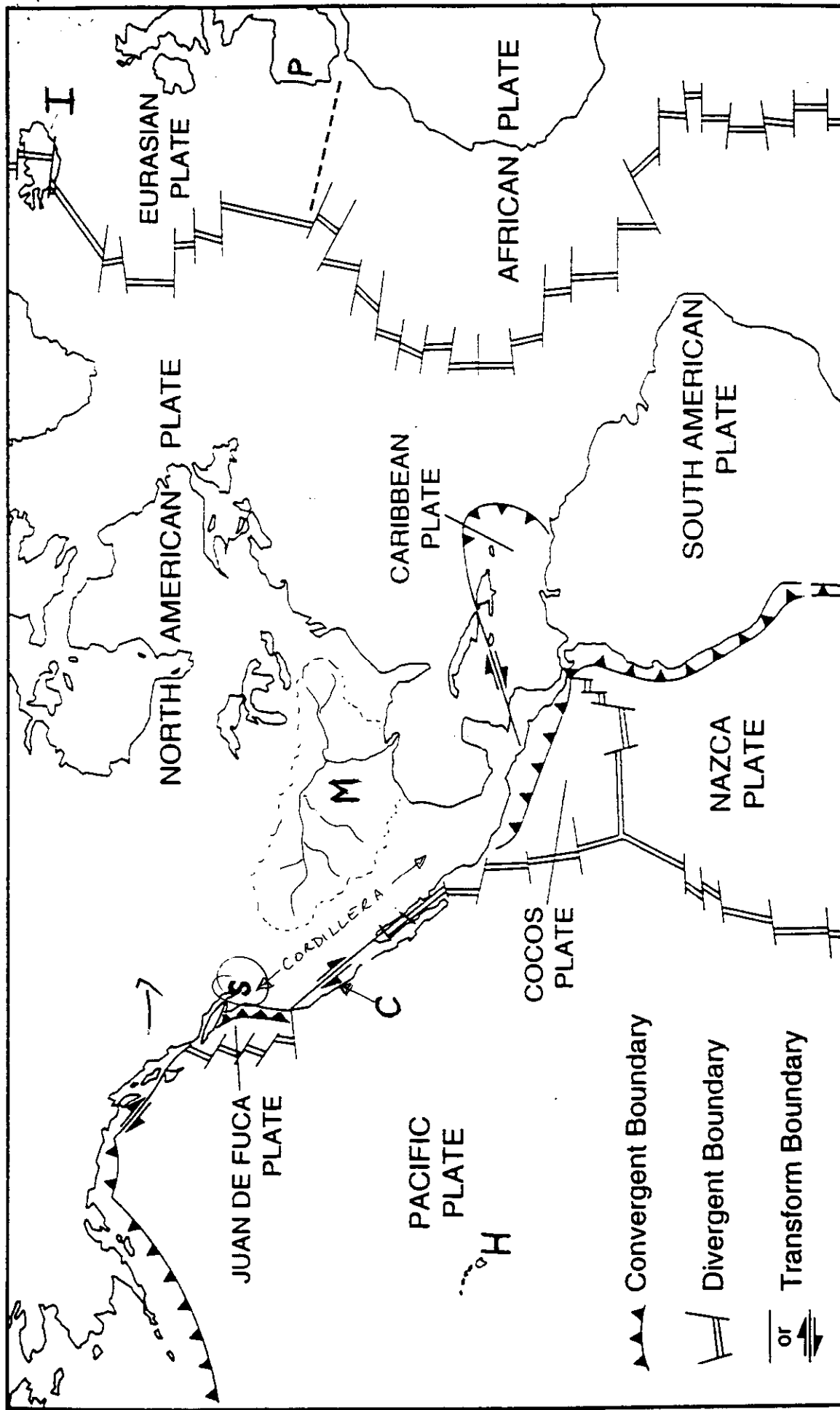
2) As Special Advisor to the Government you are asked to outline a National Water Policy for Lebanon. a) Summarise your objectives, b) list the problems, c) outline the possible remedies.

3) Why is it felt that for certain wastes the best policy is to dilute and disperse and for others it is to contain and concentrate? What are the risks with both?

4) The world will probably have ten billion people during your life time. Can this be managed? How? Are you optimistic or pessimistic?

Have fun:

Chris Walley, 30th Jan 1996



EXTRA SHEET FOR GEOLOGY 200 (I) JAN 1997