ANGLO-CHINESE JUNIOR COLLEGE

JC 2 Preliminary Examinations 2008

GEOGRAPHY 9730/01

Higher 2

Paper 1 Physical Geography

Time: 3 hours **12 August 2008 (Tuesday)**

READ THESE INSTRUCTIONS FIRST

Write your Centre number, index number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Section A
Answer **all** questions.

Section B
Answer **two** questions, each from a different topic.

Insert 1 contains all the Figures and Photographs referred to in the question paper.
Diagrams and sketch maps should be drawn whenever they serve to illustrate an answer.
The world outline map may be annotated and handed in with relevant answers.
You are reminded of the need for good English and clear presentation in your answers.
The number of the marks is given in brackets [ ] at the end of each question or part question.

On the **cover sheet** provided, include:

- Your name and index no.
- The question numbers of the question you have attempted in the boxes provided, and place the cover sheet as the top page over your answers to Section A.
- At the end of the examination, fasten your answers to Section A separate from that of Section B.

This document consists of 5 printed pages, including this cover page.
Insert 1 consists of 10 printed pages.

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Physical Geography (H2)

Section A

Answer **all** the questions in this section.

Question 1, 2 and 3 carry 12 marks and Question 4 carries 14 marks.
You should allocate your time accordingly.

Lithospheric Processes, Hazards and Management

1 Photograph A shows a limestone landscape in Malham, UK, while Photograph B shows a limestone landscape at Guilin, China.

(a) Identify the karst landforms in Photographs A and B, and describe the morphology of each of the landforms. **[3]**

(b) Explain the role of chemical weathering, geology and climate in the formation of the landforms shown in Photographs A and B. **[9]**

Atmospheric Processes, Hazards and Management

2 Figs. 2A and 2B show the climographs of two tropical stations.

(a) Briefly explain the nature of the temperature and rainfall data needed in order to produce such climographs as shown in Figs. 2A and 2B. **[2]**

(b)

(i) Identify the type of climate for each of the stations, and justify your answer using the data shown in Figs. 2A and 2B.

(ii) Account for the seasonal variations in temperature and precipitation at each of the two stations. **[10]**

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Hydrologic Processes, Hazards and Management

3 Figs. 3A and 3B show the hydrograph of the two drainage basins of River Lambourn and River Kent respectively.
Fig. 3C shows the mean monthly precipitation, runoff and discharge for each of the two basins.
Fig. 3D shows the outline and topography of each of the two drainage basins.

(a)

(i) Compare the differences in the hydrographs of River Lambourn and River Kent as shown in Figs. 3A and 3B.

(ii) With reference to the climatic and basin characteristics shown in Figs. 3C and D, account for the differences in the hydrographs of the two rivers. **[8]**

(b) Explain how you would measure the discharge of a small river of no more than 3 metres wide and 1 metre deep. **[4]**

Lithospheric and Atmospheric Processes, Hazards and Management

4 Figs. 4A, 4B and 4C show the plate tectonic setting of the North and South Islands of New Zealand. The direction of the prevailing wind is indicated.

(a) (i) Identify and describe the type of plate boundaries, the nature of the crustal plates, and the crustal plate movements as depicted in Figs. 4A-C. **[4]**

(ii) Show how the Theory of Plate Tectonics provides an explanatory account for the fold mountains and volcanoes as shown in Figs. 4A-C. **[6]**

(b) (i) Name the prevailing surface wind indicated in Fig. 4A.

(ii) With the aid of a diagram, describe and account for the type of precipitation generated by the prevailing winds over the Southern Alps fold mountain as indicated in Fig. 4C. **[4]**

[Turn Over

Section B

Answer **two** questions, each from a different topic. Each question carries 25 marks.

Lithospheric Processes, Hazards and Management

5 EITHER

(a) Explain the causes of hazardous mass movements. **[9]**

(b) To what extent can rock composition and structure account for the nature of weathering and landforms in granitic rocks. **[16]**

OR

(a) Explain how earthquake magnitude and intensity can be measured. **[9]**

(b) With reference to specific examples, assess the extent to which volcanic hazards and its impacts can be mitigated. **[16]**

Atmospheric Processes, Hazards and Management

6 EITHER

(a) To what extent can the phenomenon of **urban heat island** account for the microclimate of urban areas? **[9]**

(b) Provide an explanatory account of the global surface winds and assess its role in the global transfer of heat energy. **[16]**

OR

(a) Discuss the evidence that indicate that Earth's climate has changed in the past 20 000 years. **[9]**

(b) Fig. 5 shows the insolation arriving at selected latitudes in the northern hemisphere.

Describe and account for the latitudinal and seasonal variations in insolation as shown in Fig. 5.

Explain how differences in surface thermal properties could affect the global pattern of insolation receipt. **[16]**

[Turn Over

Hydrologic Processes, Hazards and Management

7 EITHER

(a) Explain how and why channel morphology change in a downstream direction with variations in river discharge and sediment load. **[9]**

(b) With reference to examples, show how human interference within drainage basins can lead to conflicts of interests. **[16]**

OR

(a) Explain how the formation of Hortonian overland flow (HOF) differs from that of Saturation overland flow (SOF). Briefly discuss how human activities can impact Hortonian overland flow and Saturation overland flow **[9]**

(b) Photograph C shows a section in the course of a small river.

With the aid of diagrams, compare the river morphology of the section of the river channel at the bend and the straight section between two bends in the river course.

Provide an explanatory account of the fluvial processes and conditions leading to the fluvial landforms as shown in Photograph C. **[16]**

Acknowledgements:

Question 1	Photograph A	http://upload.wikimedia.org/wikipedia/commons/8/85/Malham_lings_01.JPG
	Photograph B	http://picasaweb.google.com/zhengwenjie/NationalGeographic/photo#5088063751048786162
Question 2	Figs. 2A & B	Arbogast, A F, (2007) Discovering Physical Geography, pp. 228 & 230, Figs. 9.6 & 9.9,
Question 3	Figs. 3A - D	Phillip Allan Updates, **AS** Physical Geography, pp. 57- 58, 61.
Question 4	Fig. 4	Smithson, P, Addison, K, and Atkinson, K, (2002) 3rd Ed, Fundamentals of the Physical Environment, p. 509, Fig. 25.7
Question 6 OR	Fig. 5	http://oceanography.earthednet.org/Mini_Studies/Seasonal_Variations/Seasonal_variations_files/insolationchart.gif
Question 7 OR	Photograph C	http://pennsylvaniaflyfishing.blogspot.com/2007_02_01_archive.html

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Insert 1

This insert contains all the Figures and Photographs referred to in the question paper.

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[Turn Over

Photograph A for Question 1

Photograph B for Question 1

Fig. 2A for Question 2

Station A

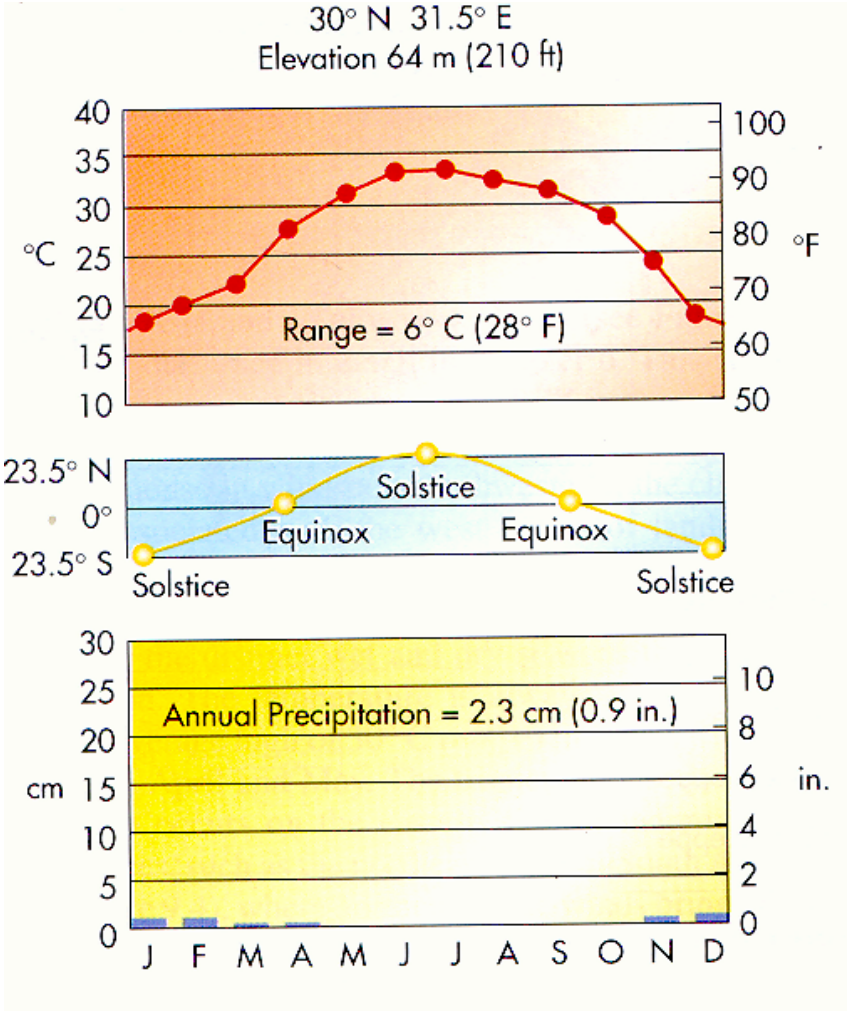


Fig. 2B for Question 2

Station B

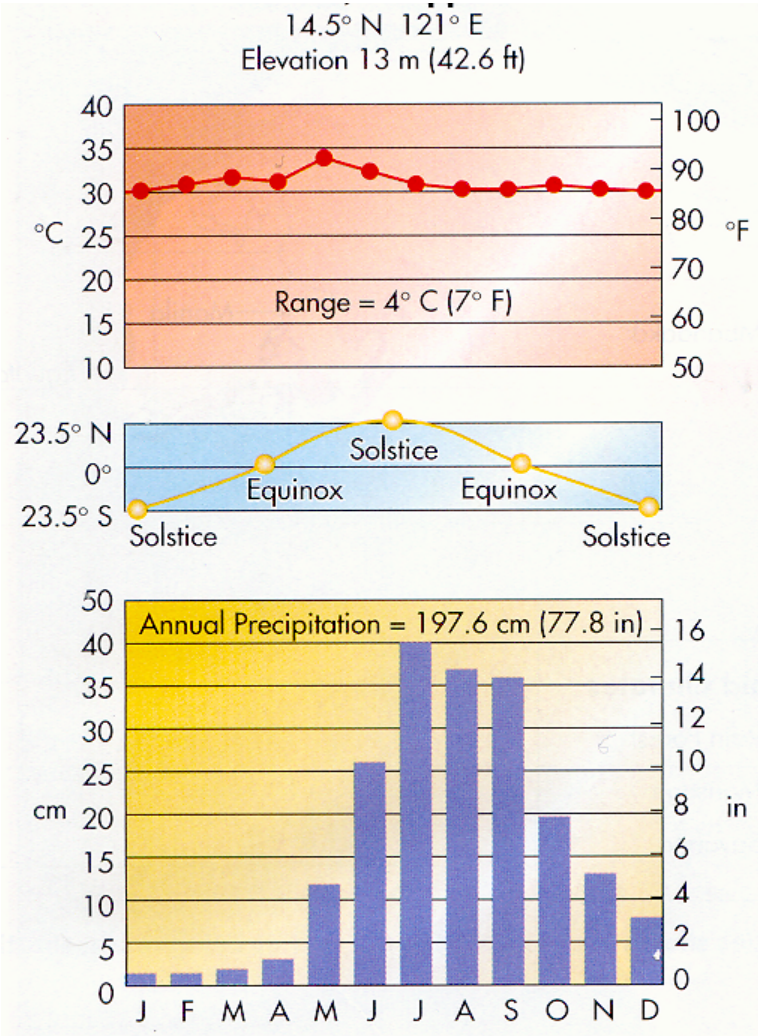
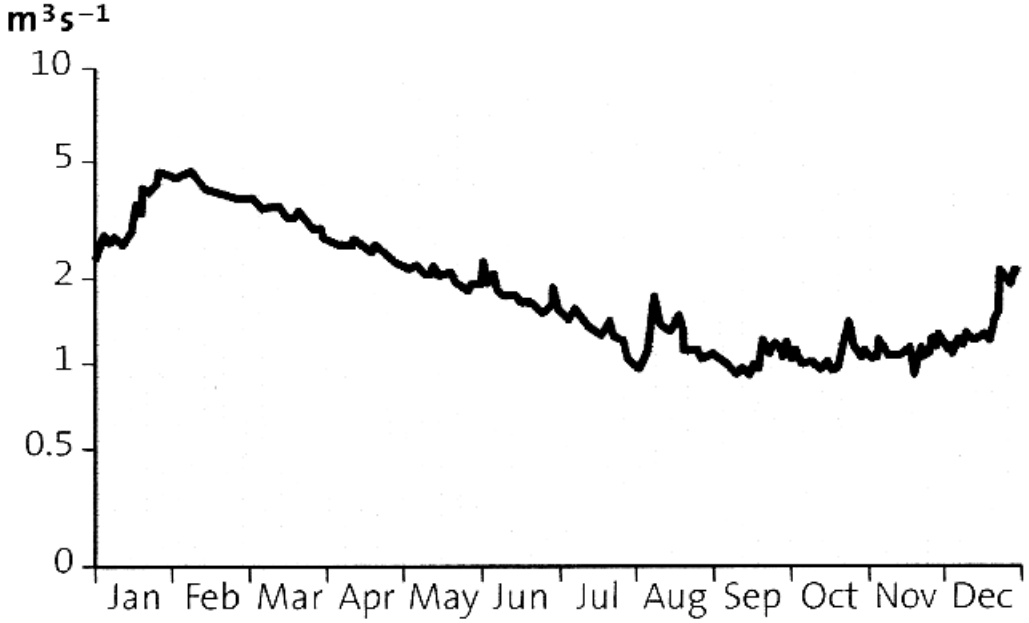


Fig. 3A for Question 3



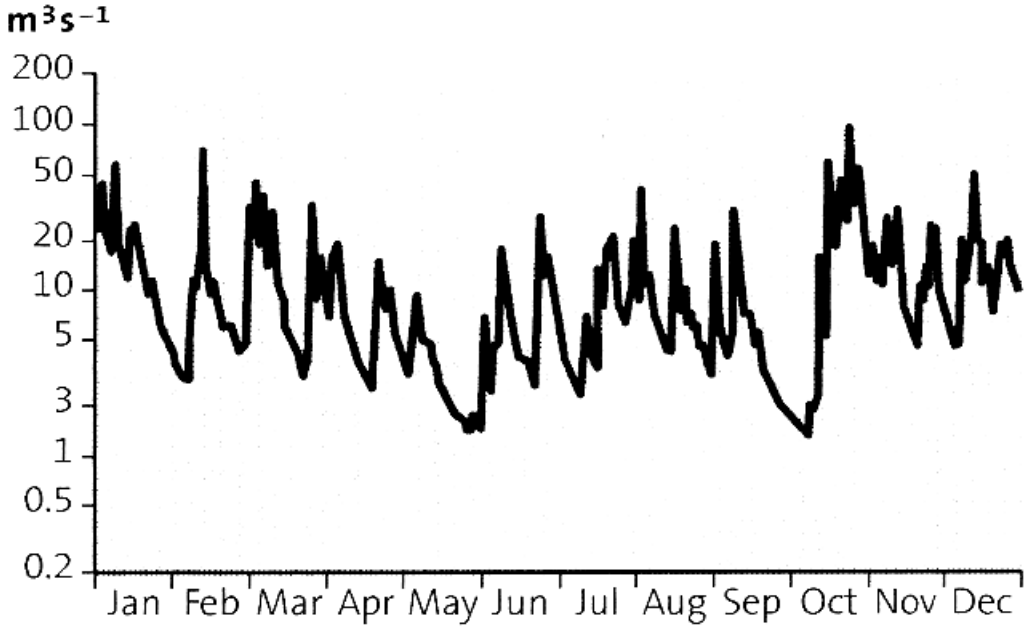


Fig. 3B for Question 3

Hydrographs of gauged daily flows, 1999

Figure 3C for Question 3

Mean monthly precipitation, runoff and discharge

	River Kent			River Lambourn		
	Discharge (cumecs)	Precipitation (mm)	Runoff (mm)	Discharge (cumecs)	Precipitation (mm)	Runoff (mm)
J	13.57	191	174	1.80	69	21
F	11.76	138	137	2.28	51	24
M	10.84	156	139	2.46	60	28
A	6.64	94	82	2.34	49	26
M	4.10	87	53	2.06	59	24
J	3.58	97	44	1.77	57	20
J	3.71	108	48	1.45	49	17
A	5.33	127	68	1.23	61	14
S	7.34	157	91	1.11	63	12
O	10.99	181	141	1.10	63	13
N	13.88	197	172	1.20	75	13
D	14.12	197	181	1.43	76	16

Fig. 3D for Question 3

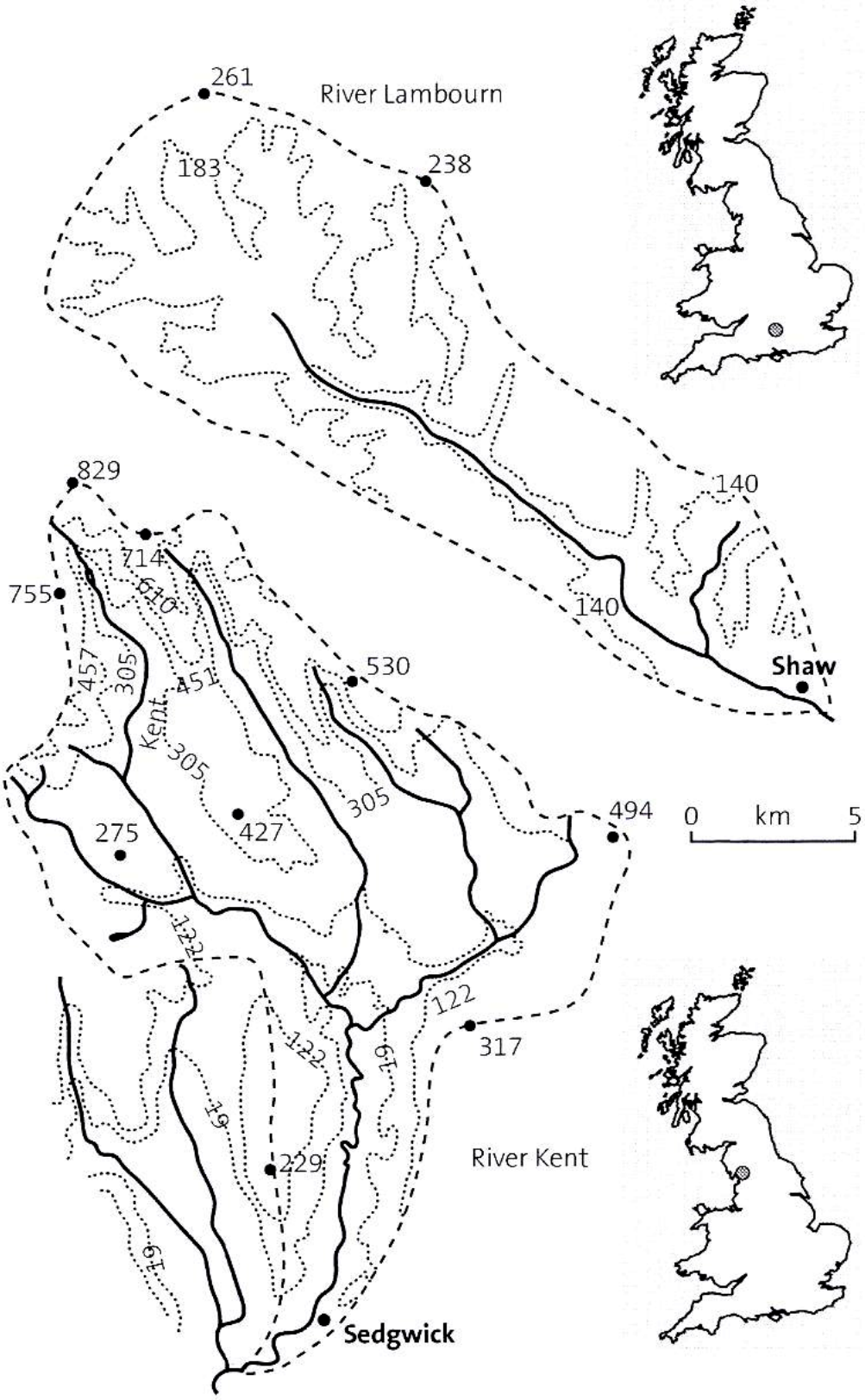


Fig. 4 for Question 4

Plate tectonic setting for New Zealand

Fig. 4A

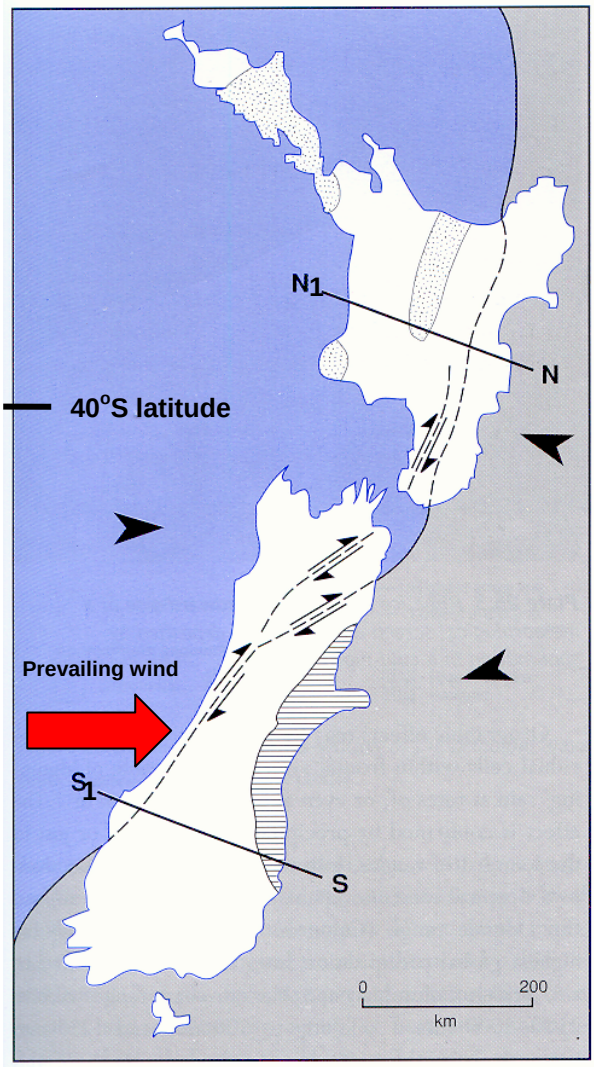


Fig. 4B

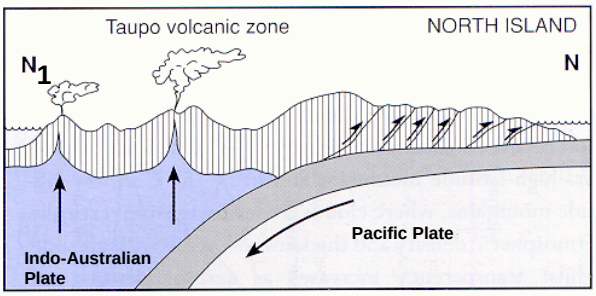
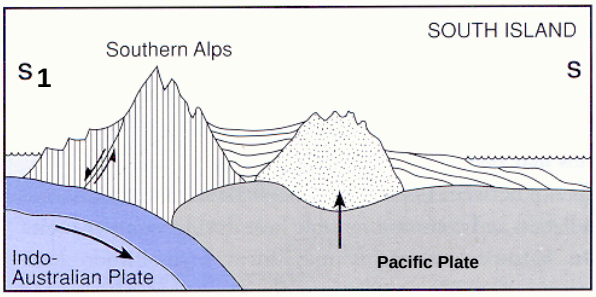


Fig. 4C



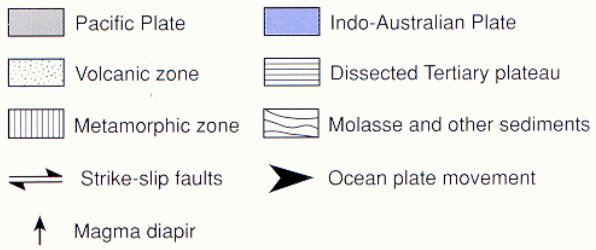
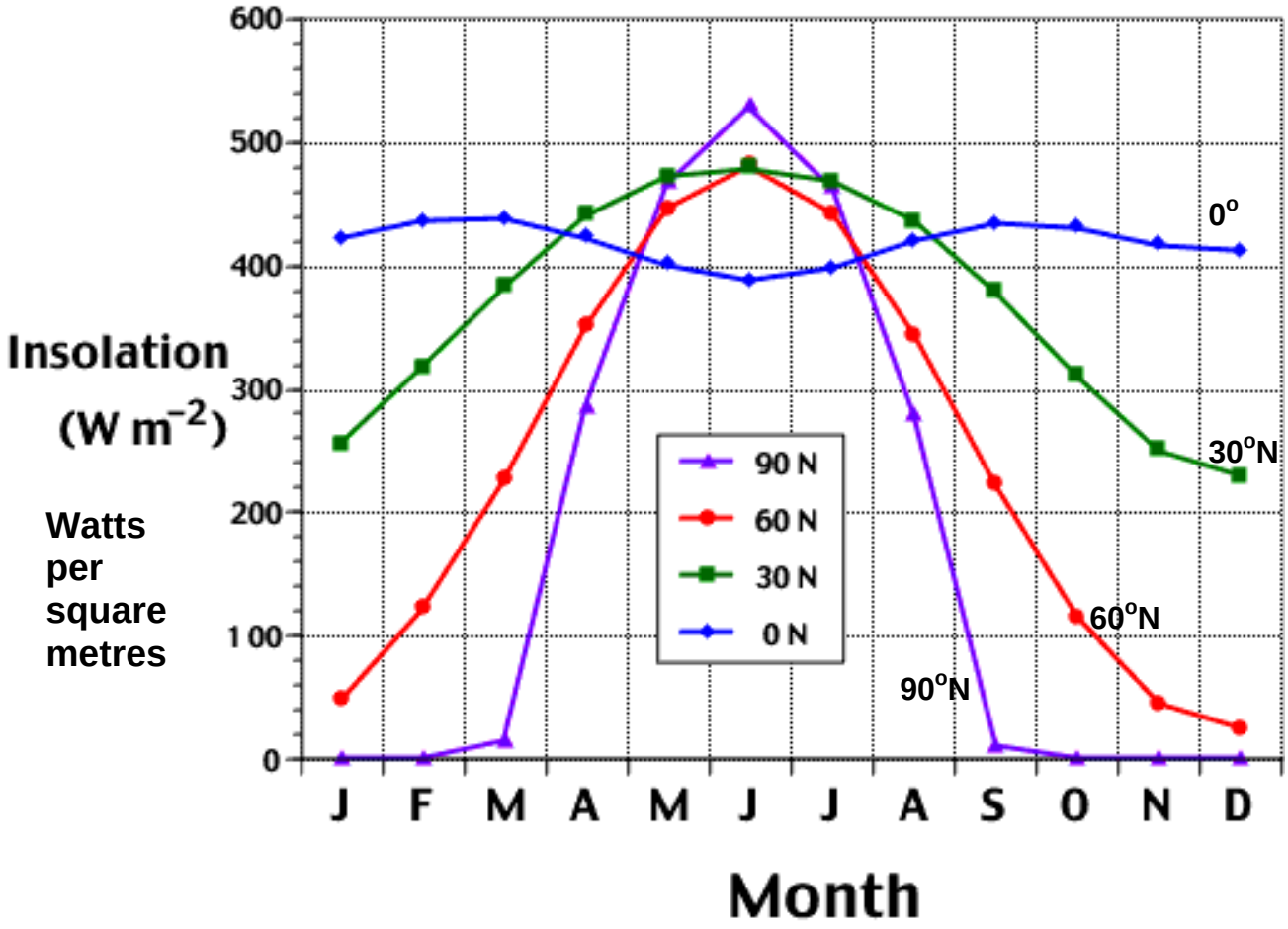


Fig. 5 for Question 6 OR



Photograph C for Question 7 OR