

Surname						Other Names					
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Candidate Signature											

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General Certificate of Education  
 January 2005  
 Advanced Subsidiary Examination



**GEOGRAPHY (SPECIFICATION B)**  
**Unit 2 The Physical Options**

**GGB2**

Thursday 13 January 2005 Morning Session

**In addition to this paper you will require:**  
 the colour insert (enclosed).

Time allowed: 1 hour

**Instructions**

- Use blue or black ink or ball-point pen. You may use pencil for maps, diagrams and graphs.
- Fill in the boxes at the top of this page.
- Answer **one** question in the spaces provided.  
 Choose option **P** or **Q** or **R**.  
 Option **P**: Glacial Environments – Page 2.  
 Option **Q**: Coastal Environments – Page 8.  
 Option **R**: Urban Physical Environments (Temperate Urban Areas) – Page 15.
- Do all rough work in this book. Cross through any work you do not want marked.
- Give sketch maps, diagrams and specific examples, where appropriate.
- If there is not enough space for your answer(s), use the extra page(s) at the end of the book. If you do this, make sure that you show the number of the question you are answering.

**Information**

- The maximum mark for this paper is 50.
- Mark allocations are shown in brackets.
- You are expected to use a calculator where appropriate.
- You will be assessed on your ability to use an appropriate form and style of writing, to organise relevant information clearly and coherently, and to use specialist vocabulary, where appropriate.
- The degree of legibility of your handwriting and the level of accuracy of your spelling, punctuation and grammar will also be taken into account.

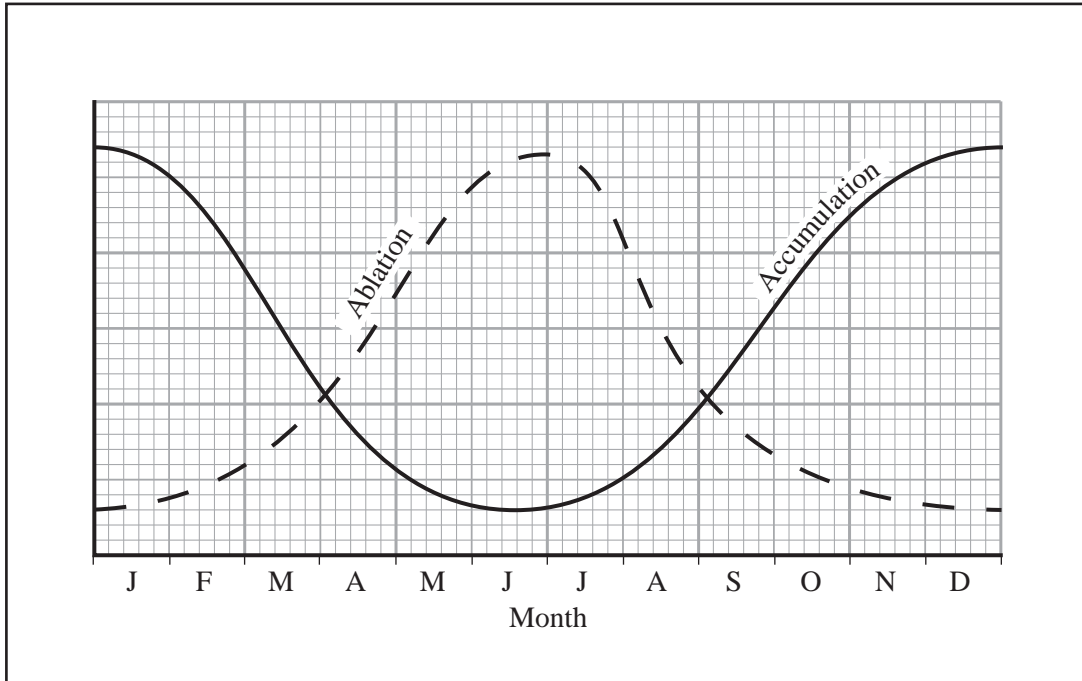
For Examiner's Use			
Number	Mark	Number	Mark
P	X		
1			
Q	X		
2			
R	X		
3			
Total (Column 1)	→		
Total (Column 2)	→		
TOTAL			
Examiner's Initials			

Answer the question on Option **P** or **Q** or **R**.

All questions carry equal marks.

**OPTION P GLACIAL ENVIRONMENTS**

- 1 (a) Study **Figure 1**, which shows the relationship between accumulation and ablation for a glacier in a northern hemisphere temperate climate.



**Figure 1**

- (i) Which months have a negative balance?

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(2 marks)

- (ii) Explain why there is a negative balance at this time of year.

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(5 marks)

(b) Study **Figure 2** on the insert, which is a map extract showing Fox Glacier in New Zealand.

(i) Which of the two locations **A or B** is in the Zone of Accumulation?  
Give evidence from **Figure 2** to support your choice.

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(5 marks)

**QUESTION 1 CONTINUES ON THE NEXT PAGE**

**Turn over ►**

(ii) Which of the two locations **X** or **Y** has extending flow?  
Using evidence from **Figure 2** and your own knowledge, justify your choice.

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*(8 marks)*

(c) Explain the process of frost shattering.

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(6 marks)

(d) Using an example, describe the main characteristics of a corrie.

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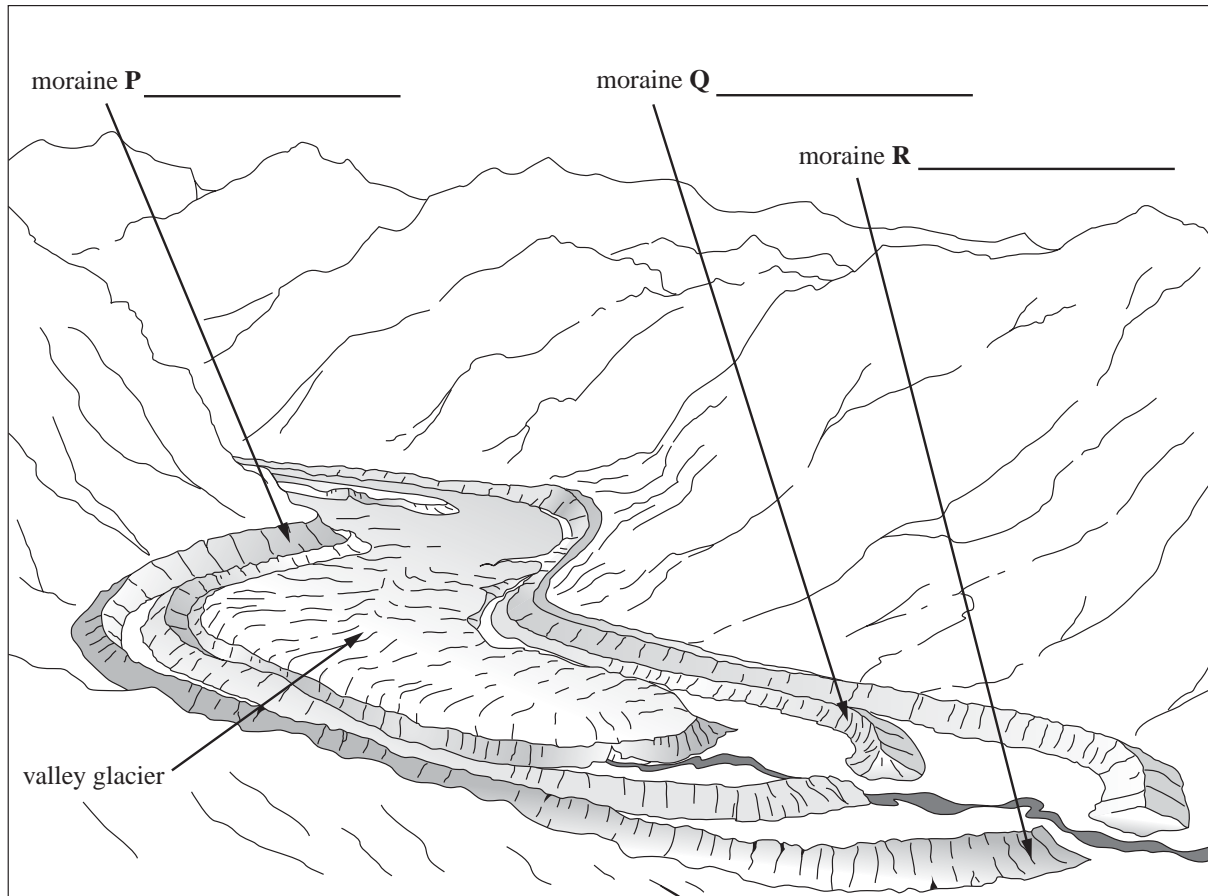
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(6 marks)

**QUESTION 1 CONTINUES ON THE NEXT PAGE**

**Turn over ▶**

(e) Study **Figure 3**, which shows a valley glacier and its moraine deposits.



**Figure 3**

- (i) Label the three different types of moraine **P**, **Q** and **R** on **Figure 3**. (3 marks)
  
- (ii) Explain how moraine **R** has been formed.

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(7 marks)

- (f) Explain how glacial ice may directly **or** indirectly cause a river to change its course (drainage diversion). You may use a diagram to illustrate your answer.

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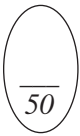
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(8 marks)



Turn over ►

Answer the question on Option **P** or **Q** or **R**.

**OPTION Q COASTAL ENVIRONMENTS**

- 2 (a) (i) Draw a labelled diagram to describe the main characteristics of **constructive** waves.

*(6 marks)*

- (ii) How does the effect of constructive waves on a beach **differ** from that of destructive waves?

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*(8 marks)*

(b) In the context of marine erosion, explain the process of hydraulic action.

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*(6 marks)*

**QUESTION 2 CONTINUES ON THE NEXT PAGE**

**Turn over ►**

(c) Describe the main characteristics of wave cut platforms.

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(6 marks)

(d) Look at **Figure 4a**, which shows a transect across typical areas of coastal sand dunes, and **Figure 4b**, which shows a transect across an area of mature salt marsh.

- (i) Choose either **Figure 4a** or **Figure 4b**.  
Label the features arrowed in your chosen diagram.

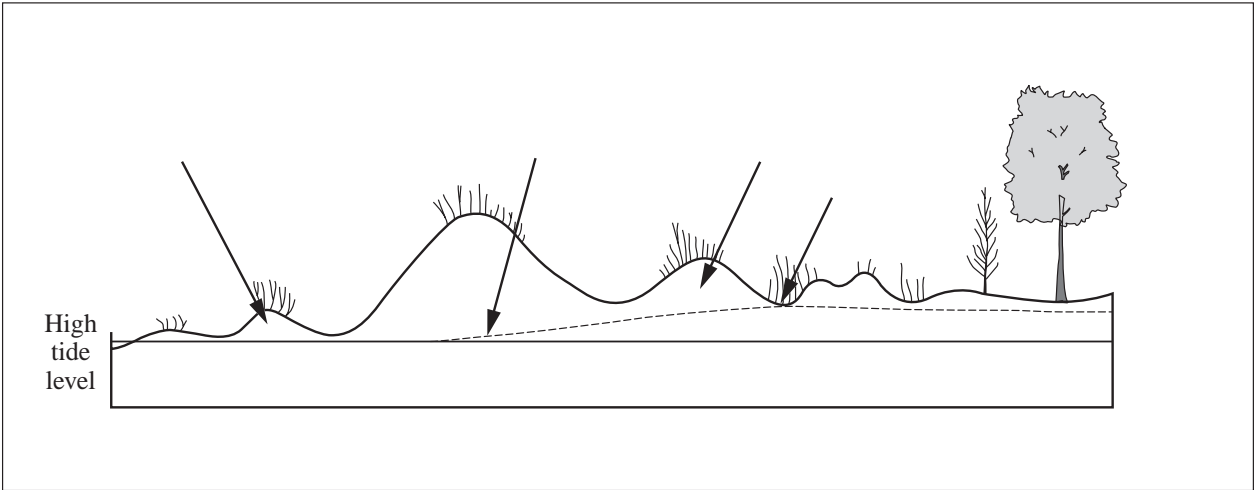


Figure 4a

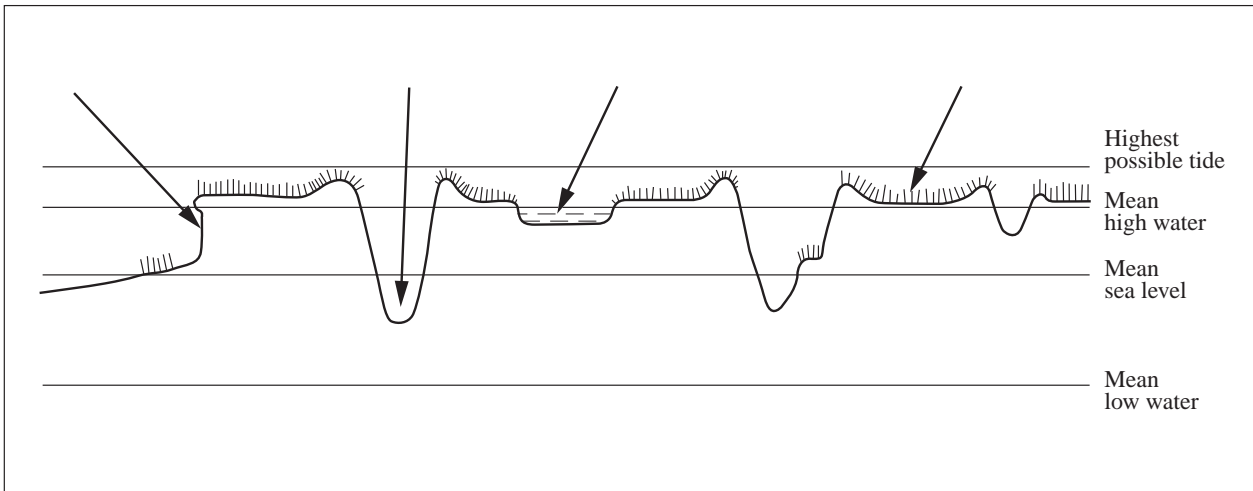


Figure 4b

(4 marks)

- (ii) Choose **either** an area of coastal sand dunes **or** a salt marsh and explain the role that vegetation plays in its formation.

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(6 marks)

QUESTION 2 CONTINUES ON THE NEXT PAGE

Turn over ►

- (e) (i) Study **Figure 5**, which shows global sea levels over the past 160 000 years.

Figure 5, showing global sea levels over the past 160000 years, from D. Merritts & A. De Wet 'Environmental Geology' (1998), W.H. Freeman & Co./Worth Publishers, has not been reproduced here due to third-party copyright constraints.

When was the sea level higher than it is at present?

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*(2 marks)*

(ii) Explain how the pattern of global sea level change shown in **Figure 5** may have resulted from glacial advance **and** retreat.

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*(5 marks)*

**QUESTION 2 CONTINUES ON THE NEXT PAGE**

**Turn over ►**

(iii) How have coral reefs been affected by both global and local sea level changes?

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(7 marks)



Answer the question on Option **P** or **Q** or **R**.

**OPTION R URBAN PHYSICAL ENVIRONMENTS (TEMPERATE URBAN AREAS)**

- 3 (a) (i) Look at **Figure 6** on the insert, which shows diurnal variation of particulate concentration in a temperate MEDC city.  
Describe the changes in particulate concentration for the residential land use.

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*(4 marks)*

- (ii) Suggest reasons for the differing levels of particulate concentration **between** the two land uses during the day.

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*(6 marks)*

**QUESTION 3 CONTINUES ON THE NEXT PAGE**

**Turn over ►**

(iii) How are precipitation **and** fog in urban areas related to particulate concentration?

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(8 marks)

(b) Study **Figure 7**, which shows a generalised Urban Heat Island profile.

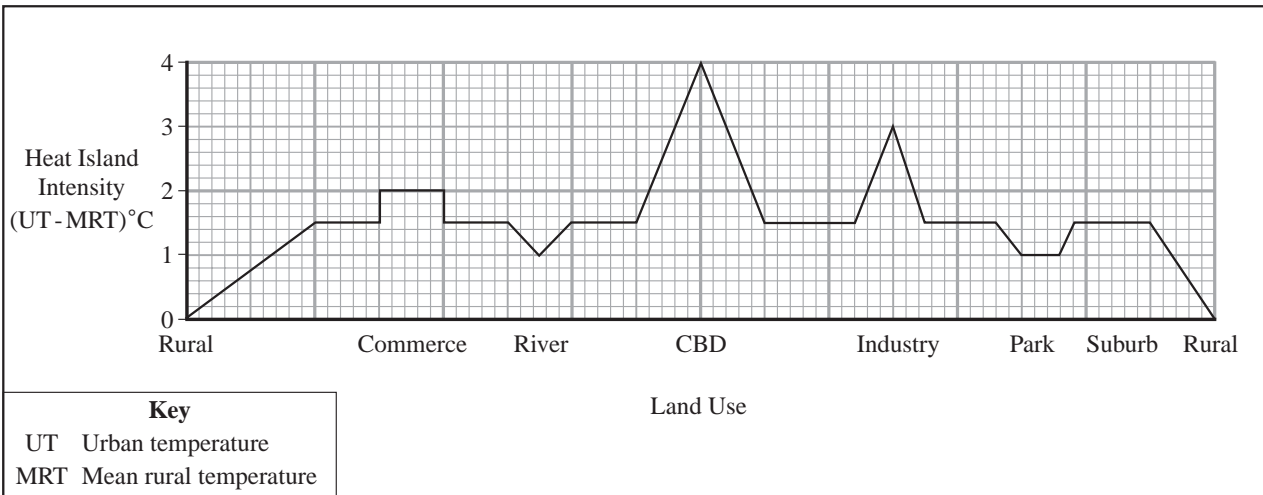


Figure 7



(i) Describe the main characteristics of the Urban Heat Island as shown in **Figure 7**.

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(ii) Using examples of urban areas that you have studied, explain the Urban Heat Island Effect.

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*(7 marks)*

**QUESTION 3 CONTINUES ON THE NEXT PAGE**

**Turn over ►**

- (c) (i) Draw a labelled diagram to show the effect that an isolated building can have on wind within an urban area.

(6 marks)

- (ii) Describe how wind in urban areas varies in:  
speed;  
frequency of extreme gusts and calms.

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(7 marks)

(d) Choose **two** of the following areas:

- routeways;
- parks;
- gardens;
- ecological conservation areas.

Using example(s) describe the distinctive ecology that has developed within each of your chosen areas.

Chosen area: .....

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Chosen area: .....

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(8 marks)



**END OF QUESTIONS**

QUESTION  
NUMBER

Write the question number in the left hand margin.

A series of horizontal dotted lines for writing answers, spanning the width of the page.

QUESTION  
NUMBER

Write the question number in the left hand margin.

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Turn over ►

QUESTION  
NUMBER

Write the question number in the left hand margin.

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QUESTION  
NUMBER

Write the question number in the left hand margin.

A series of horizontal dotted lines for writing.

**THERE ARE NO QUESTIONS PRINTED ON THIS PAGE**

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**Figure 2:** Map courtesy of Land Information New Zealand. Crown copyright reserved.

**Figure 5:** adapted from D MERRITTS & A DE WET, *Environmental Geology* (W H Freeman & Company/Worth Publishers) 1998.

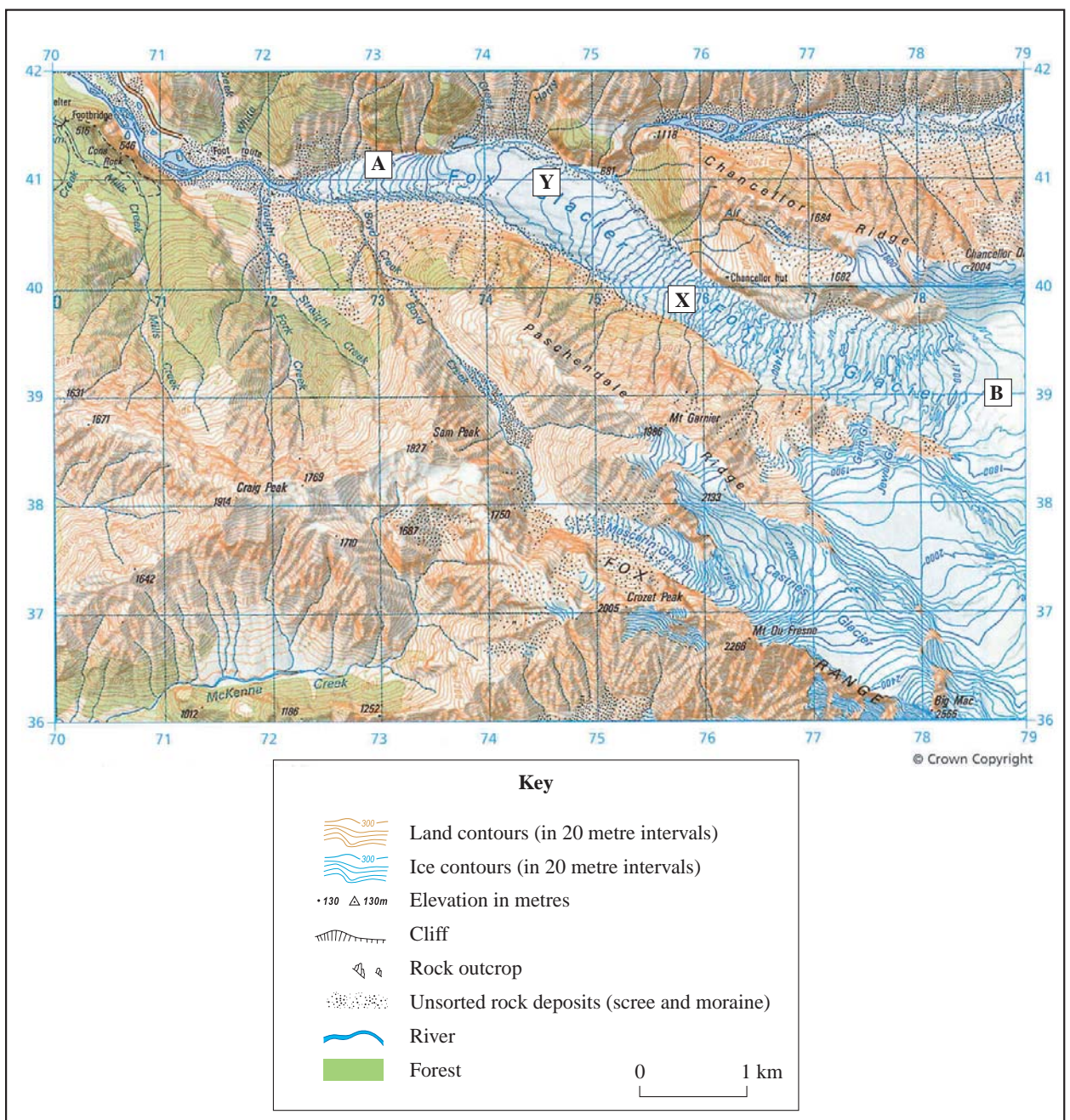
**Figure 6:** adapted from DETWYLER & MARCUS, *Urbanization and Environment* (Duxbury Press).



**GEOGRAPHY (SPECIFICATION B)**  
**Unit 2 The Physical Options**

**GGB2**

**Colour Insert**



**Figure 2**  
**(For use with Question 1)**

Figure 6, which shows diurnal variation of particulate concentration in a temperate MEDC city, from Detwyler & Marcus, 'Urbanisation & Environment', Duxbury Press, has not been reproduced here due to third-party copyright constraints.