

Candidate Name \_\_\_\_\_

Centre Number	Candidate Number

**International General Certificate of Secondary Education  
CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**NATURAL ECONOMY**  
PAPER 4 Alternative to Coursework

**0670/4**

**MAY/JUNE SESSION 2002**

1 hour 45 minutes

Candidates answer on the question paper.  
No additional materials are required.

**TIME** 1 hour 45 minutes

**INSTRUCTIONS TO CANDIDATES**

Write your name, Centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Study the appropriate Source Materials before you start to write your answers.

Write your answers in the spaces provided on the question paper.

**INFORMATION FOR CANDIDATES**

The number of marks is given in brackets [ ] at the end of each question or part question.

Credit will be given for appropriate selection and use of source data in your answers and for relevant interpretation of these data. Suggestions for data sources are given in some questions.

You may use the source data to draw diagrams and graphs or to do calculations to illustrate your answers.

<b>FOR EXAMINER'S USE</b>

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**This question paper consists of 14 printed pages and 2 blank pages.**





**Fig.1 World map**



**Fig.2 Map of Mexico**

- 1 Mexico is one of the tropical countries which contains about 10% of the Earth's plant and animal species on just 1.4% of the Earth's land.

Northern Mexico is mainly covered by desert; the central region is pine and oak forest and in the southeast region there is evergreen tropical forest. The largest remaining is Lacondon Forest in Chiapas State. The state of Chiapas alone has about 10000 plant species, 600 bird species and 1200 butterfly species. There are many biosphere reserves throughout Mexico.

Mexico's population was estimated at over 91 million in 1995. More than 60% of Mexicans live in towns or cities. Mexico City has already grown to 20 million people. Although the population growth has dropped to 1.9% per annum, this still means an extra 1.8 million mouths to feed each year.

rainfall mm	J	F	M	A	M	J	J	A	S	O	N	D
Mexico City	13	5	10	20	53	119	170	152	130	51	18	8
San Cristobal	10	12	20	55	112	240	155	182	247	120	33	24
% humidity												
Mexico City	33	20	24	27	32	44	50	53	56	48	39	36
San Cristobal	49	51	47	47	52	58	56	56	58	58	53	55

- (a) How many kms is San Cristobal from Mexico City?

.....[1]

- (b) Describe **three** differences between the climates of San Cristobal and Mexico City.

.....  
 .....  
 .....  
 .....[3]

2 The Tzeltal Indians of Chiapas State have recognised plant 'life forms' in the rainforest for generations. They classify all plants they know into four 'life forms'.

'Life form'	Number of different types of plants
Trees	178
Herbs	119
Grasses	35
Vines	24
Total	

(a) Complete the table by filling in the total number of different types of plants. [1]

(b) (i) Which 'life form' shows the greatest biodiversity?  
 .....[1]

(ii) Calculate, showing your working, the percentage (%) types of plants which are trees.  
 .....  
 .....[2]

3 A scientist lived with the Tzeltal Indians. They took the scientist on guided visits to the rainforest to study the 'life forms'.

The scientist made three discoveries.

X Many plants were similar to plants found in other tropical rain forests.

Y Some plants that had not been studied by scientists before.

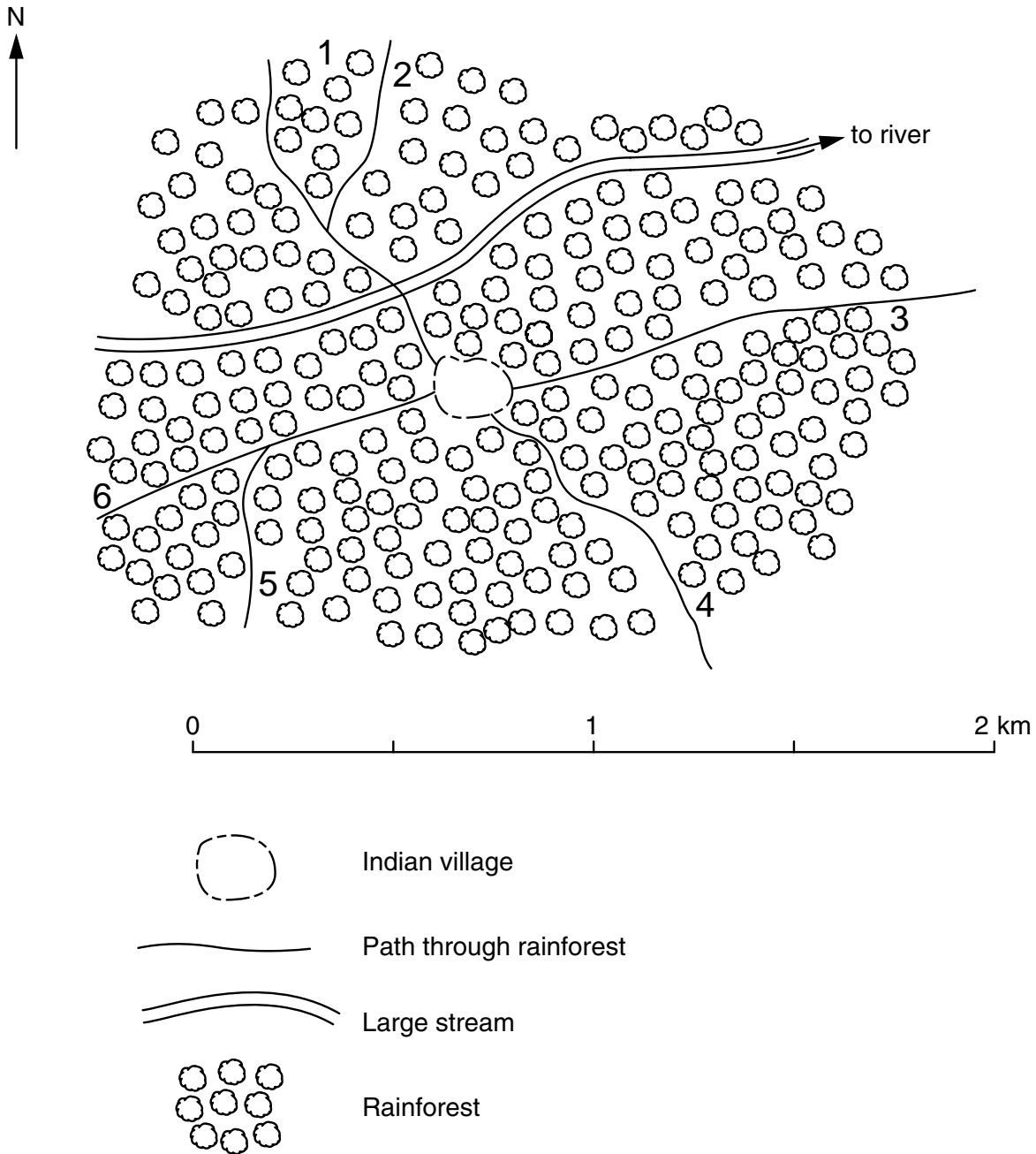
Z The four 'life forms' were biological groups of plants which would be known by scientists around the world.

(a) Which one of the three discoveries shows that the Indians have studied their environment in a scientific way? Give **one** reason for your answer.  
 .....  
 .....[1]

(b) Which of the three discoveries shows that tropical rainforests might have all developed in a similar way? Give **one** reason for your answer.  
 .....  
 .....[1]

(c) Which discovery could be of greatest benefit to the Chiapas State? Give **one** reason for your answer.  
 .....  
 .....[1]

- 4 To make sure that the scientists' discoveries are correct, you have been asked to visit another Indian village in Chiapas State. It is impossible to get to parts of the rainforest so it will only be possible for you to record information near the paths and take away a small number of samples for further study in the village.



**Fig. 3**

- (a) What equipment would you use to obtain and record information about the plants?

.....  
 .....[3]

- (b) Suggest what plant samples you would take back to the village.

.....  
 .....[1]

- 5 Two Natural Economy students have each prepared a plan for you to investigate the rainforest area shown on Fig. 3. The plans are shown below.

PLAN OF STUDENT A.

Walk down one path going north and one path going south from the village. Stop when you see an interesting plant. Ask your Indian guide if the plant has a name. Write this down in a notebook.

PLAN OF STUDENT B.

Walk down one path going north, south, east and west from the village. Stop every 100 metres and record all the plants found in a square 3 m x 3 m on one side of the path. Ask your Indian guide the name of each type of plant and record them. Repeat this every 100 metres until the results for 10 squares have been recorded.

- (a) (i) Which student has produced the best plan for the investigation?

.....[1]

- (ii) Suggest **three** reasons for your choice.

.....

.....

.....

.....

.....[3]

- (b) Draw on the map (Fig. 3) where the recording for the method you have chosen would take place. [2]

- 6** The data shown below was recorded in a notebook by another student who walked along one path in a tropical rainforest. The student has not recorded the data very carefully.

15m from village	10 trees	12 herbs	5 grasses	0 vines
45m	8 herbs	6 grasses	12 trees	2 vines
30 from village	10 trees	7 grasses	9 herbs	3 vines

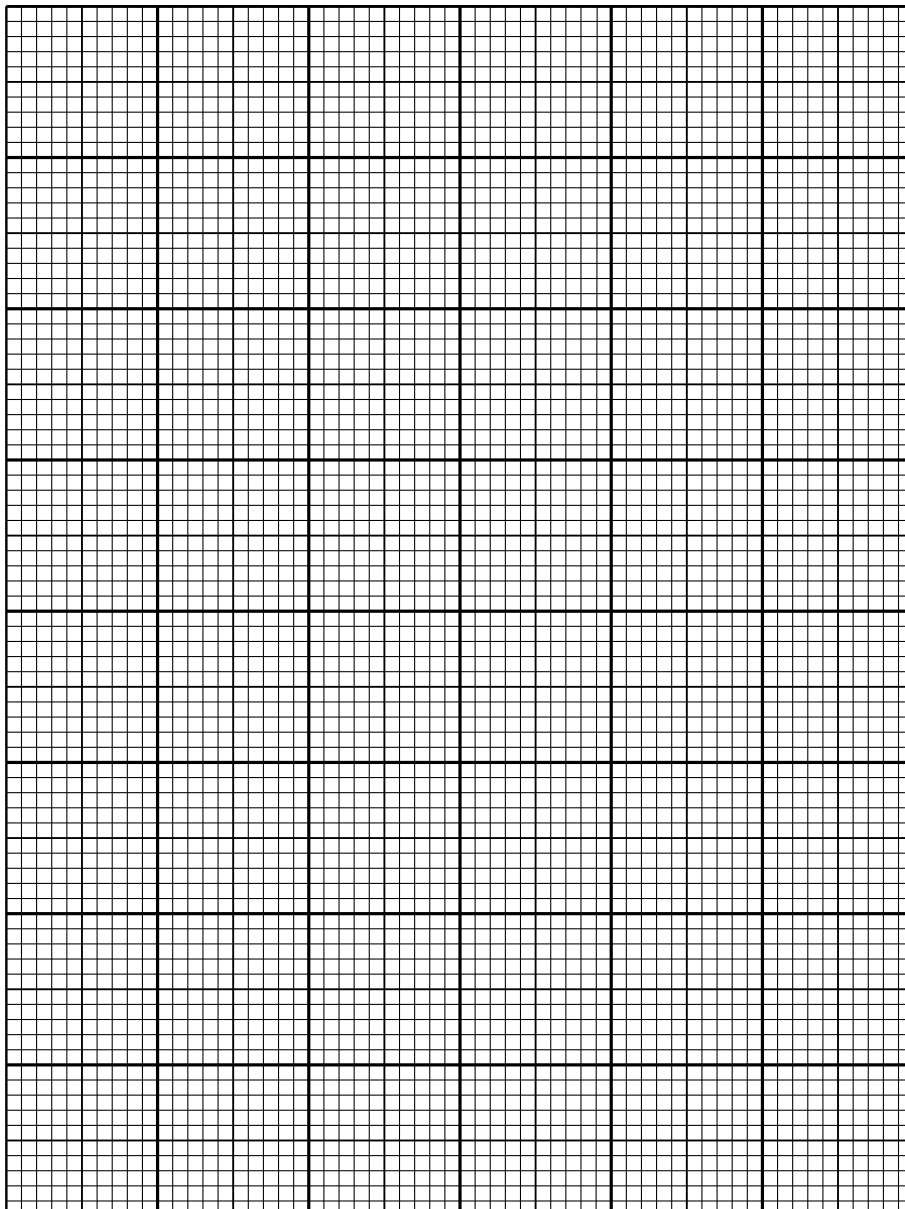
- (a)** In the space below draw a table and present the data in a different way, so that it can be more easily understood.

[4]

- (b) A new road is being built through one part of Chiapas State, because oil has been discovered. Conservationists think that the oil should not be extracted and the road should not be built. The effects on plant diversity have already been recorded after road building in a similar location. The same sample areas were visited each year before and after the road was built.

	Before road built			After road built		
	1987	1988	1989	1990	1991	1992
Number of types						
Trees	36	34	35	32	30	27
Herbs	18	20	21	19	18	19

Plot the data in the form of a graph.



[4]



