

Conservation

Question Paper 2

Level	International A Level
Subject	Biology
Exam Board	CIE
Topic	Biodiversity, classification and conservation
Sub Topic	Conservation
Booklet	Theory
Paper Type	Question Paper 2

Time Allowed : 60 minutes

Score : / 50

Percentage : /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%

- 1 The western lowland gorilla, *Gorilla gorilla*, has become an endangered species although it has no known enemies, except humans. Gorillas are herbivorous, feeding on fruit, shoots, tree bark and leaves. Fig. 1.1 shows a western lowland gorilla.



Fig. 1.1

- (a) Suggest three reasons why the western lowland gorilla has become an endangered species.

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- (b) (i) Explain how captive breeding programmes in zoos may help in the protection of endangered species, such as the western lowland gorilla.

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(ii) State two disadvantages of captive breeding programmes.

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[Total: 8]

2 (a) List three reasons why it is important to conserve endangered plant species.

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(b) The tree *Vatica guangxiensis* is an endangered species. Only three wild populations exist, all in south-western China. Conservation of this species began in the 1980s. Conservation methods included attempts to preserve the habitat of the wild populations and the establishment of a fourth population in the Xishuangbanna Tropical Botanical Garden.

In 2002, the genetic diversity of each of the four populations was assessed. This was done by testing samples of DNA from a number of individuals.

- Twenty different regions of DNA were investigated, using electrophoresis.
- For each population, the percentage of samples that showed differences in the DNA structure, shown by different bands on the DNA 'fingerprint', was calculated.
- This figure was recorded as the percentage of polymorphic bands.

The greater the percentage of polymorphic bands, the greater the genetic diversity in the population.

Table 4.1 shows the results.

Table 4.1

population	number of individual plants sampled	percentage of polymorphic bands
wild population A	27	38.53
wild population B	30	31.60
wild population C	10	27.27
population in the botanic garden	28	30.74

- (i) With reference to Table 4.1, compare the genetic diversity of the population of *V. guangxiensis* in the botanic garden with the genetic diversity of the three wild populations.

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- (ii) Suggest explanations for the relatively low percentage of polymorphic bands recorded in wild population **C**.

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- (iii) Explain why high genetic diversity is important for a species.

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- (iv) The Xishuangbanna Tropical Botanical Garden is located only tens of kilometres from the habitats of the wild populations of *V. guangxiensis*.
Suggest how this may help with the long-term conservation of this species.

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- (c) Seed banks also have an important role in the conservation of endangered plant species.

- (i) Explain why storing seeds may be a more successful method of conservation than maintaining a population of growing plants.

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- (ii) Suggest why a sample of each type of seed stored in a seed bank is germinated every few years.

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[Total: 15]

- 3 (a) The tiger, *Panthera tigris*, is classified as an endangered species by the International Union for the Conservation of Nature and Natural Resources (IUCN). The IUCN publishes an annual list of endangered species called the Red List.

Fig. 8.1 shows the number of tigers in the wild between 1900 and 2010.

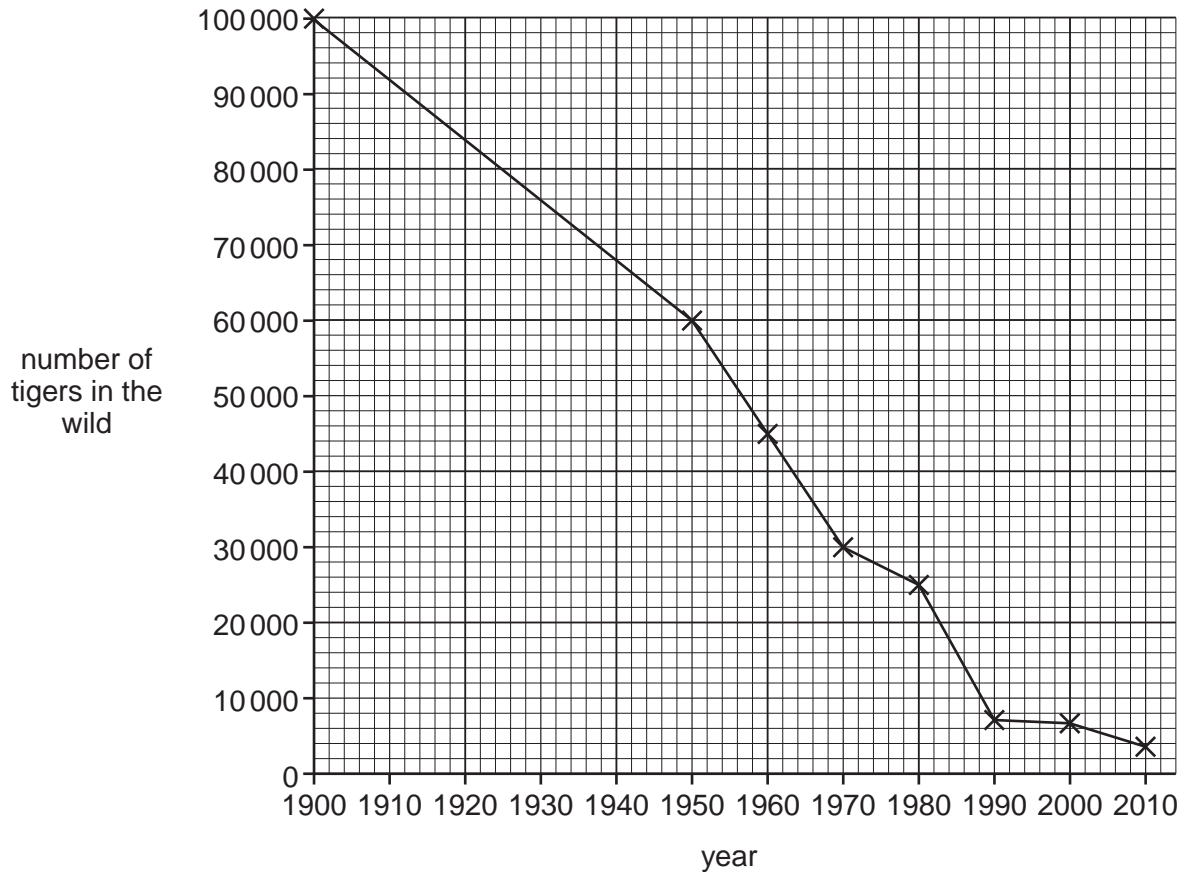


Fig. 8.1

Calculate the overall rate of decrease in number of tigers between 1900 and 2010.

Give your answer to the **nearest whole number**.

answer tigers per year [2]

(b) Describe the reasons why a **named** species has become endangered.

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[Total: 6]

- 4 The Bengal Tiger, *Panthera tigris tigris*, is an endangered mammalian species of Southern Asia. It lives mostly in a forest habitat.

Fig. 1.1 shows a Bengal Tiger.



Fig. 1.1

- (a) Table 1.1 shows the relationship between available forest habitat and Bengal Tiger numbers between 1970 and 2010.

Table 1.1

year	forest habitat remaining compared to 1970 (%)	Bengal Tiger numbers
1970	100	37 000
1980	79	27 000
1990	42	12 000
2000	26	3 600
2010	18	1 400

- 5 (a) The squirrel monkey, *Saimiri sciureus*, of Costa Rica has become an endangered species.

Fig. 1.1 shows a squirrel monkey.



Fig. 1.1

Explain what is meant by the term *endangered species*.

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- (b) Discuss possible ways in which the squirrel monkey could be protected.

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[Total: 6]

- 6 The African hunting dog, *Lycaon pictus*, is a carnivore which hunts in packs in areas of East Africa.

Fig. 1.1 shows an African hunting dog.



Fig. 1.1

- (a) The African hunting dog has cells that are eukaryotic while bacteria have cells that are prokaryotic.

Describe the differences between eukaryotic and prokaryotic cells **with respect to their DNA**.

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(b) In some parts of East Africa *L. pictus* is becoming an endangered species.

Suggest reasons why *L. pictus* is becoming an endangered species.

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(c) One way of protecting *L. pictus* is to create conservation areas.

Describe two **other** methods of conserving endangered species such as *L. pictus*.

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[Total: 7]