

5 The biodiversity of species in Costa Rica is one of the highest in the world.

Costa Rica represents 0.3% of the Earth's total land area. It has 4% of all identified species of living organisms. Many of these species live in the rainforests of this country.

(a) (i) Explain what is meant by the term **biodiversity**.

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(ii) Describe how the species richness of the rainforests in Costa Rica could be measured.

(1)

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(b) A study was carried out to investigate the antimicrobial properties of plants found in Costa Rica. The species tested are all used in traditional medicine.

Nine of the species tested showed antimicrobial properties and six of these species are found only in the rainforest.

(i) Suggest why the results of this investigation support the need to maintain biodiversity.

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*(ii) The species tested included the Jatobá plant, *Hymenaea courbaril*.

The photograph shows leaves, flowers and seed pods of the Jatobá plant.



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Magnification $\times 0.3$

Describe how the antimicrobial properties of the seeds of the Jatobá plant could be tested.

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(iii) Some of the plants tested could be used to develop new drugs to treat diseases caused by bacteria.

Before these drugs could be approved for use, they would have to be tested on animals and healthy volunteers.

Suggest why these drugs would have to be tested on animals and healthy volunteers.

(2)

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(Total for Question 5 = 12 marks)

