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1. Daniel has a plant on his window sill.
Even though it has lots of light, it is not growing very well.



- (a) Name one factor that Daniel can change that will increase the growth of his plant.

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(1)

- (b) Explain how this factor will increase plant growth.

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(1)

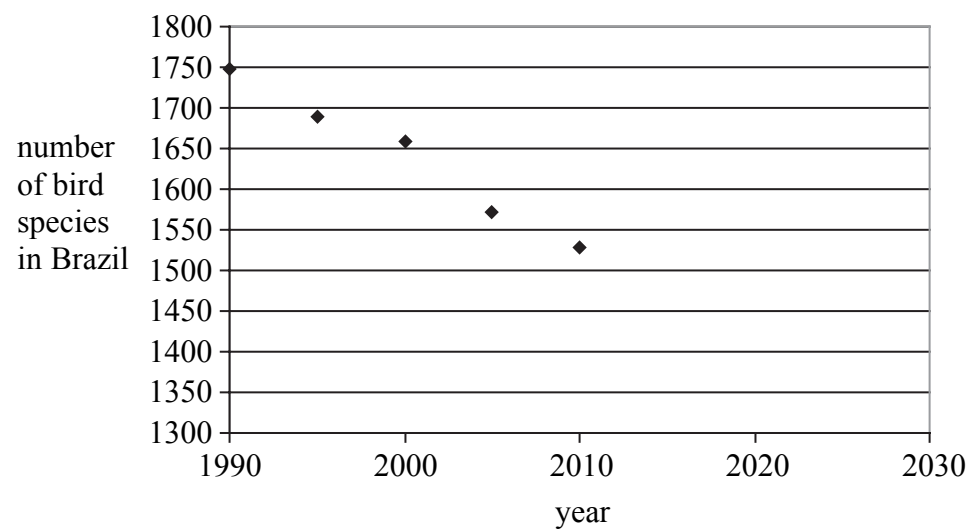
(Total 2 marks)

Q1



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2. The graph shows how the number of bird species in Brazil has changed from 1990 to 2010.



(a) Draw a straight line of best fit on the graph above. (1)

(b) Extend your line of best fit and use it to estimate how many bird species will be left in Brazil by 2025.

..... (1)

(c) Scientists have suggested that deforestation could be the main reason for this decline in the number of bird species in Brazil. Explain how reforestation could stop any further decline in the number of bird species.

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(Total 4 marks)

Q2



3. The diagram shows a length of DNA coiled to form a double helix.

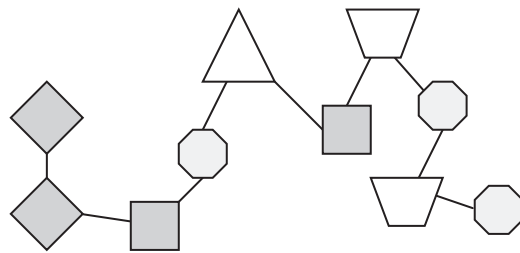
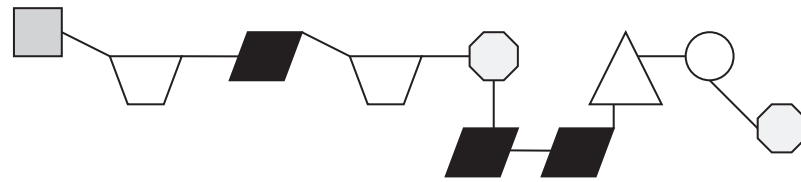


(a) Describe how the two strands of the double helix are held together.

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(2)

(b) A gene is a length of DNA that 'codes' for a protein.
The diagrams below represent the structure of two different proteins.



Describe how these two proteins are different.

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(2)

(Total 4 marks)

Q3



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4. (a) State one way in which animal and plant cells are similar and one way in which they are different.

Similar

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Different

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(2)

- (b) Plants make glucose.
Plants use this glucose and nitrates to make proteins.

Suggest one other way in which the plant cell may use glucose.

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(1)

- (c) Describe how nitrates are absorbed into plants.

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(2)

- (d) Farmers use nitrates to improve plant growth.
Describe an effect on the environment of the overuse of nitrates.

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(2)

Q4

(Total 7 marks)



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5. (a) Biodiversity can be increased significantly by leaving a small strip of land around fields of crops.



strip of ground left around crop

State why it is important to maintain natural populations.

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(2)

- (b) The picture shows one of the many types of ground beetles. Ground beetle populations can be used as living indicators of farmland quality.



State what is meant by a living indicator.

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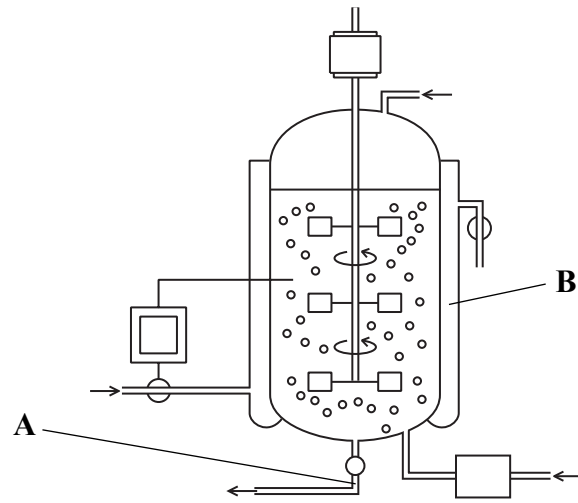
(1)

(Total 3 marks)

Q5



6. The diagram shows a fermenter.



(a) What are the functions of **A** and **B**?

Function of A

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Function of B

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(2)

(b) Genetically engineered bacteria can be used in a fermenter to make insulin. Describe **two** aseptic techniques when using a fermenter.

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(2)

(c) Explain why aseptic techniques are used when using a fermenter.

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(2)

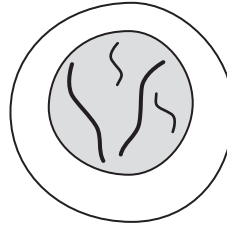
Q6

(Total 6 marks)



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7. The diagram shows the first stage of mitosis in an animal cell.



Describe the remaining stages of the process of mitosis.

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Q7

(Total 4 marks)

TOTAL FOR PAPER: 30 MARKS

END

