

17.3 Evolution

Question Paper

Course	CIEA Level Biology
Section	17. Selection & Evolution
Topic	17.3 Evolution
Difficulty	Easy

Time allowed: 30
Score: /21
Percentage: /100

Question 1a

Evolution results in the formation of new species from pre-existing species over time.

Define the term *evolution*.

[2 marks]

Question 1b

In order for speciation to occur, the different populations must be reproductively isolated from each other.

One way in which populations may become reproductively isolated is by ecological separation.

Give **two** examples of ecological barriers that may exist between populations.

[2 marks]

Question 1c

Allopatric and sympatric speciation both result in the formation of new species.

State the key difference between them.

[1 mark]

Question 1d

Sympatric speciation can occur when certain behavioural barriers result in the reproductive isolation of populations.

Suggest **one** behavioural barrier and explain how it may result in reproductive isolation.

[2 marks]

Question 2a

DNA of organisms can be sequenced and used to show evolutionary relationships between species.

State the name of **two** organelles from which DNA can be extracted.

[2 marks]

Question 2b

Describe how DNA can be used to provide information about the evolutionary relationship between species.

[2 marks]

Question 2c

The fossil record provides evidence of mass extinction events that occurred throughout the history of life on Earth.

Define the term *mass extinction event*.

[1 mark]

Question 2d

Scientists believe that the Earth is currently undergoing another mass extinction event.

State **two** possible reasons that could cause this mass extinction event.

[2 marks]

Question 3a

A population of beetles exists in an area of forest. The beetle's outer shell that protects their wings is called an elytra. These can appear in different colours and patterns. The beetles in the forest live mostly in leaf litter that is brown and green in colour. They are hunted by predators such as birds.

Describe the advantage to a beetle if their elytra was brown or green in colour.

[2 marks]

Question 3b

The different phenotypes of the beetles are mainly determined by their gene pool.

Define the term *gene pool*.

[1 mark]

Question 3c

The humans that live near the forest build a road through the beetles' habitat. The road is too wide for the beetles to cross, causing the two populations to become isolated from each other. On one side of the road, the leaf litter is cleared and a population of plants with red berries starts to colonise the area.

State the type of speciation that could occur in this instance.

[1 mark]

Question 3d

Describe how the speciation mentioned at part (c) would occur in the beetle populations. [

[3 marks]

