

Question 30 (7 marks)

Geological and biological history of New Zealand

<i>Event</i>	<i>Time</i>
Australia and New Zealand separated	85–65 million years ago
New Zealand drifted east and subsided, its land mostly under seawater (most fossils are marine)	85–22 million years ago
Mammals became abundant worldwide	60 million years ago
Earliest migratory bird fossils	55 million years ago
New land created by volcanoes in New Zealand	22 million years ago to present
Many new, unique species of birds appear in the fossil record	20 million years ago to present
Islands completely devoid of mammals. Birds occupied niches that were usually occupied by mammals	700 years ago

Use this information and other relevant knowledge to demonstrate how the practice of biology has led to the validation of current theories of evolution.

Evolution is defined as change over time.

Current theories of evolution support the fact that overtime species began to evolve

from a common ancestor and migrated to other parts of the world. This is clearly

shown the convergent evolution and divergent evolution. This is supported by the evidence

in fossils, biogeography, comparative anatomy and biochemistry and comparative embryology provides

validation of current theories of evolution.

convergent, divergent, fossils, 7
 biogeography
 - anatomy
 - embryology
 - biochemistry

Question 30 continues on page 25

Question 30 (continued)

Paleontology is the study of fossils. Fossils are the remains of species that ~~which~~ have existed on earth for millions of years. By studying fossils provides information of how early species appeared in the past, compared to present day organisms. Such as the migratory bird fossils. This reveals the species must have risen from a common ancestor.

Biogeography is the study of the ~~distro~~ distribution of species. Divergent evolution is supported by this, for example Darwin's finches. are located in many sections of the world show different features in appearance and behavior. This also proves that the finches must have risen from a common ancestor.

Comparative anatomy is comparing the similarity of limbs and vertebrates in organisms. The example of the pentadactyl limb displays the similarity in homologous structures between organisms. The ~~idea~~ ^{theory} of evolution supports this study by organisms had once evolved from a common ancestor.

Biochemistry is used to show the genetic similarity between species. Common ancestry is also supported by this to our knowledge of human evolution. For instance human and chimpanzees have lead to the theory of once ~~to~~ evolving from an common ancestor in the past.

End of Question 30

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-25-

Start here.

The ~~idea of~~ Convergent evolution is supported through the use of ~~these~~ by biogeography. For example Australian mole and American Golden cope mole have very similar environments and appearances suggests that these species were once ~~part of~~ ~~the~~ ~~same~~ ~~species~~ ~~that~~ ~~arised~~ from a common ancestor.

In conclusion, the theory of evolution is supported through palaeontology, biochemistry, comparative anatomy and ^{biogeography} ~~biochemistry~~ reveals how the separation of land can produce different or similar species ~~and~~ reveals the common ancestry they once shared.