

**Year 12 Human Biology**

**Extended Response: Evidence for Evolution**

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| Name: |
| Teacher: |

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|  | Marks Received | Marks Available | Percentage |
| Total |  | 25 |  |

Assessment Time: 40 minutes

Weighting: 5%

You must **answer all questions** in the booklet provided. Please clearly number questions and use the paper at the back of the booklet if you wish to plan your answer. Clearly label your plan.

Human Biological Sciences Unit 4

Extended Response

1. Radiocarbon dating and potassium-argon dating are two methods scientists use to determine the age of fossils. Compare and contrast these two techniques.

(9 marks)

1. Examining fossils and their surroundings is one method by which evolution can be shown to have occurred. However there are also many types of comparative studies that can be used to support the theory of evolution. Two of these involve studies in biochemistry, namely protein sequences and DNA.

a) Describe the two comparative studies of protein sequences and DNA, and explain how they can be used to provide evidence for evolution. (11 marks)

b) The table below shows differences in the amino acid sequence of haemoglobin between humans and other species. Use this to construct a phylogenetic tree of these organisms on the graph paper provided.

(5 marks)

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| **Species compared with humans** | **Number of differences from human beta haemoglobin** |
| Chimpanzee | 0 |
| Gorilla | 1 |
| Rhesus monkey | 8 |
| Squirrel Monkey | 9 |
| Dog | 15 |
| Horse | 25 |
| Mouse | 27 |
| Grey Kangaroo | 38 |
| Chicken | 45 |
| Frog | 67 |

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