**Evolution**

|  |  |
| --- | --- |
| Instructions to students  • You have 50 minutes to complete the test.  • Please answer all questions in the spaces provided.  • There is to be no talking during the test. | Marks  Section I: Multiple-choice questions: 10 marks  Section II: Short-answer questions: 32 marks  Section III: Extended-response questions: 8 marks  Total: 50 marks |

|  |  |
| --- | --- |
| Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Score: /50  Grade: % |
| Comments: | |

Section I: Multiple-choice questions

For each question, circle the correct answer.

|  |  |  |
| --- | --- | --- |
| 1 A dog breeder noticed that dogs with long curly tails won more prizes at the dog shows than dogs with short tails. He decided that he would mate the female and male dogs with the longest tails to get puppies that might win more prizes. This is an example of: | | L:\1. Publishing and Editorial\1. Product\Oxford Science\Oxford Science VICTORIA\Oxford Science 10 VIC\2. Extras\16. Class tests\Artwork\Final jpegs\CT0201_07059-r.jpg |
| A | selective breeding. |
| B | Darwinism. |
| C | cross-breeding. |
| D | natural selection. |
| 2 According to Lamarck’s theory of inheritance of acquired characteristics, what would happen if a cat lost an eye in an accident as a kitten? | | |
| A | The cat would lose sight in the other eye. | |
| B | The cat’s eye will grow back. | |
| C | The cat would have kittens with one eye. | |
| D | The cat would die. | |
| 3 Evolution by natural selection occurs as a result of: | | |
| A | gene flow between generations. | |
| B | selecting individuals with desirable traits and breeding them. | |
| C | competition between individuals with different traits. | |
| D | mutation within a species. | |

|  |  |  |
| --- | --- | --- |
| 4 Fossils that show intermediate states, between an ancestral form and that of its descendants, are referred to as: | | |
| A | alternative fossils. | |
| B | strata fossils. | |
| C | trace fossils. | |
| D | transitional fossils. | |
| 5 What is meant by the ‘struggle for existence’? | | |
| A | All living things increase in a geometric ratio. | |
| B | Some individuals in a species will die because they are not suited to the environment. | |
| C | There is a great variety of species living on Earth. | |
| D | Some species keep splitting into new species. | |
| 6 Comparative morphology is comparison of the: | | |
| A | depth of the strata in which the fossil was found. | |
| B | structures of living animals that are no longer used. | |
| C | anatomies of different organisms. | |
| D | age of fossils. | |
| 7 The rear legs of a snake are an example of: | | L:\1. Publishing and Editorial\1. Product\Oxford Science\Oxford Science VICTORIA\Oxford Science 10 VIC\2. Extras\16. Class tests\Artwork\Final jpegs\CT0203_07059.jpg |
| A | pentadactyl limbs. |
| B | vestigial organs. |
| C | homologous structures. |
| D | a living fossil. |
| 8 Physical isolation occurs when individuals of a population: | | |
| A | are physically incompatible. | |
| B | behave differently to each other. | |
| C | are separated by a river. | |
| D | reproduce at different times. | |
| 9 Australia has a vast collection of marsupials amongst its native animals. Scientists use the theory of continental drift to explain the location of similar marsupials in: | | |
| A | South America. | |
| B | Africa. | |
| C | Arctic. | |
| D | Indonesia. | |
| 10 The process of natural selection favouring a particular phenotype is known as: | | |
| A | sexual dimorphism. | |
| B | a gene pool. | |
| C | directional selection. | |
| D | sexual selection. | |

|  |  |
| --- | --- |
|  | Section I total marks:  /10 marks |

Section II: Short-answer questions

|  |  |  |
| --- | --- | --- |
| 11 Darwin’s book *On the Origin of the Species by Means of Natural Selection* suggested that:  • all living things vary  • all living things tend to increase in geometric ratio  • the number of individuals in a population (or species) tend to remain constant in stable ecosystems.  a What two critical deductions can be made as a result of these observations?  b What implications for the human population do these observations have? | L:\1. Publishing and Editorial\1. Product\Oxford Science\Oxford Science VICTORIA\Oxford Science 10 VIC\2. Extras\16. Class tests\Artwork\Final jpegs\CT0204_07059-rm.jpg | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | /3 marks |
| 12 What was the name of the supercontinent that contained the continents of India, Africa, South America, Antarctica and Australia? | | |
|  | | |
|  | | /1 mark |

|  |  |
| --- | --- |
| 13 How do amino acids provide evidence of evolution? | |
|  | |
|  | |
|  | |
|  | |
|  | |
|  | /2 marks |
| 14 Name two molecules that can be compared to determine if a recent common ancestor exists. | |
|  | |
|  | |
|  | /2 marks |
| 15 Using Lamarck’s theory of inheritance of acquired characteristics, describe how giraffes’ necks became elongated. | |
|  | |
|  | |
|  | |
|  | |
|  | |
|  | /2 marks |

|  |  |
| --- | --- |
| 16 Give two examples of situations in which a population of a species becomes reproductively isolated from other species. | |
|  | |
|  | |
|  | |
|  | /2 marks |
| 17 A similar molecule was compared between humans and a number of organisms. The results are shown in the table below.   Use the information given to determine the animal most closely related to *Homo sapiens* and the animal that is least related to *Homo sapiens.* | |
| |  |  | | --- | --- | | Organism | Number of differences in the molecule | | Human | 0 | | Gorilla | 12 | | Dog | 25 | | Snake | 42 | | |
|  | |
|  | |
|  | /2 marks |
| 18 Write a definition for the term ‘living fossil’. | |
|  | |
|  | |
|  | /1 mark |

|  |  |
| --- | --- |
| 19 Explain how similar marsupials, which can’t fly or swim, are found in both South America and Australia. | |
|  | |
|  | |
|  | |
|  | |
|  | |
|  | /2 marks |
| 20 Most modern elephants live in warm environments, but their ancestor, the woolly mammoth, lived during an ice age. Explain how this change might have occurred. | |
|  | |
|  | |
|  | |
|  | |
|  | |
|  | /3 marks |
| 21 Name two molecules that can be compared to determine if a recent common ancestor exists. | |
|  | |
|  | |
|  | /2 marks |

|  |  |
| --- | --- |
| 22 What are the major steps in natural selection? | |
|  | |
|  | |
|  | |
|  | |
|  | |
|  | /3 marks |
| 23 Describe what relative dating is and explain how it is carried out. | |
| L:\1. Publishing and Editorial\1. Product\Oxford Science\Oxford Science VICTORIA\Oxford Science 10 VIC\2. Extras\16. Class tests\Artwork\Final jpegs\CT0205_07059-r.jpg | |
|  | |
|  | |
|  | |
|  | |
|  | /4 marks |

|  |  |
| --- | --- |
| 24 Archaeopteryx has been shown to have a wishbone and flight feathers, bone-filled regions between the teeth and long V-shaped lines in the tail. Why are these features significant? | |
| L:\1. Publishing and Editorial\1. Product\Oxford Science\Oxford Science VICTORIA\Oxford Science 10 VIC\2. Extras\16. Class tests\Artwork\Final jpegs\CT0202_07059-rm.jpg | |
|  | |
|  | |
|  | |
|  | |
|  | /3 marks |
|  | Section II total marks:  /32 marks |

Section III: Extended-response questions

|  |  |
| --- | --- |
| 20 A native garden is covered in mulch to protect it from extreme conditions. Two weeds, one with a small dull brown leaf and the other with a large bright green leaf, try to grow on the mulch. The gardener is busy and only pulls out a single weed (the first one he notices) every few days. Over a period of two months he finds brown weeds have taken over the garden. Explain how this might have occurred. | |
|  | |
|  | |
|  | |
|  | |
|  | /2 marks |
| 21 Use examples to compare how analogous and homologous structures evolve in different organisms over time. | |
|  | |
|  | |
|  | |
|  | |
|  | |
|  | |
|  | /6 marks |
|  | Section III total marks:  /8 marks |