AQA, OCR, Edexcel

A Level

A Level Biology

Genetic Diversity and Adaptation Answers

Name:

M M E

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Total Marks: /39

Answer	Marks
1. a) i) Within a species – there is diversity between the alleles Between species – there is diversity between genes	2 marks
ii) – all humans have the gene for blood type -Different alleles determine the blood type	2 marks
iii) – mutations - alleles introduced by new individuals to the population (immigration)	2 marks
iii) – change in the base sequence - codes for a different order of amino acids. - this new protein has advantageous properties in survival and/or reproduction	3 marks
b) i) Natural: volcano, earthquake, flood, fire, meteorite, extreme weather etc. Human interaction: deforestation, construction, global warming etc.	2 marks
ii) – an event causes of large reduction in the size of a population -there are fewer alleles so less diversity -the new population is created from fewer alleles	3 marks
iii) – a few organisms from a population leave and form a new population	1 mark
iv) – fewer alleles in the population - more chance of inbreeding/one disease could destroy the whole population	2 marks

2. a) i) Organisms that are better adapted have a higher chance of survival Therefore have more chance of reproducing and passing on their genes	2 marks
b) i) – the way in which an organism acts in order to increase its chances of finding food to survive and ultimately reproduce.	2 marks
ii) -Anatomical is adaptations in the structure of the body -Physiological are adapted processes within the body	2 marks
c) i) -Physiological adaptation – efficient kidneys, conserve water loss during excretion - Anatomical adaptation – oily fur – prevents water evaporating from the body surface to the environment	4 marks
3. a) i) – the process could not be observed - religion opposed evolution	1 mark
b) i) -Evolution occurs by a change in the DNA base sequence -Some organisms are more closely related than others so their DNA base sequences would be more similar - comparison on DNA shows similarities and differences in genes - Comparison can show how recently organisms shared a common ancestor - Genetic code is universal/ same codons code for the same amino acids in different organisms	4 marks

ii) It can be observed as the reproduction rate of cells is much faster	1 mark
iii) – mutation in a bacterial cell changes base sequences and allows a protein to be coded for that gives the cell resistant properties - cell is not killed by trimethoprim -continue to survive and reproduce - offspring cells carry the gene for resistance. - new strain of bacteria is then spread across a population	5 marks
iv) Continuous	1 mark