AQA, OCR, Edexcel

A Level

A Level Biology

Evolution and Natural Selection Questions

Name:

M M E

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Total Marks: /25

Evolution and Speciation

Answer	Marks
1. a) i) Group of organisms that can breed to produce fertile offspring.	1 mark
b) i) -Volcanic eruption creates a physical barrier that divides a population of organisms -Conditions in each isolated environment are different (e.g. more/less nutrients) - Conditions put pressure on organisms and they have to adapt through natural selection -Selection pressures/natural selection -Mutations mean allele frequency will change -Eventually individuals from each population are unable to breed to produce fertile offspring	5 marks
ii) Allopatric	1 mark

ii) Seasonal – mutation causes a change in flowering/ mating/ sexually active period etc. Mechanical-mutation causes a change in genitalia = unsuccessful mating Behavioural – Courtship rituals change so individuals are not attracted to the rest of the species. Gametic- male and female gametes from different populations cannot create offspring because gametes cannot pair properly/fuse	4 marks
2. a) i) – Darwin hypothesised that the finches were all descended from a common ancestor because of similar visible (phenotypic) features -beak shape and size were different in different populations, this was linked to the ecological niche that the finch population lived in on the island -Beak shape/size was adapted to best suit the food that was found in each environment ii) – Bats and Butterflies both have wings and can fly - These phenotypes in the two species have developed separately along different evolutionary paths/different ancestors/evolved independently of each other.	3 marks 2 marks

b) i) – More individuals - struggle/competition -variation - advantageous features/ alleles/ genes - Survive and reproduce	5 marks
c) i) – alteration of the gene/allele frequencies by chance - via organism death/emigration or lack of reproduction means that genes are lost from the population - In a small population sometimes genes are permanently lost	3 marks
ii) <u>Advantage:</u> - allows comparison of extinct organisms to living organisms - Historical evidence of phenotypes of extinct organisms <u>Disadvantage:</u> - Fossil record is incomplete - Little/no DNA evidence	2 marks