

Variation and Selection

Question Paper

Cambridge IGCSE Biology 0610

Time Allowed: 1 hr.

Score:

Percentage:

Grade:

Multiple Choice Questions (10)

1 What is **not** a feature of natural selection?

- A competition for resources
- B production of many offspring
- C selection by humans
- D variation within the population

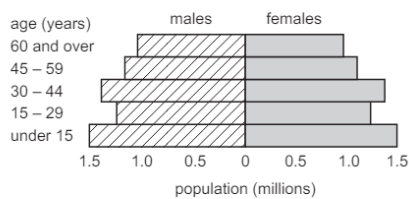
2 What is a mutation?

- A a change in a gene or chromosome
- B a condition caused by a dominant allele
- C a process used in genetic engineering
- D a type of continuous variation

3 Which characteristic shows discontinuous variation in humans?

- A height
- B length of foot
- C tongue rolling
- D weight

4 The diagram shows the age structure of a human population.



Which age group has the largest number of people?

- A 60 and over
- B 45-59
- C 30-44
- D under 15

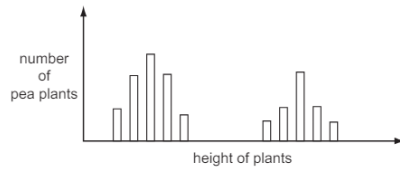
5 The table shows the birth rates and death rates in four countries.

Which country will double its population most quickly?

	birth rate / % population	death rate / % population
A	5.0	4.0
B	4.5	2.5
C	3.5	2.0
D	3.0	3.0

6

The bar chart shows the heights of pea plants grown from 500 pea seeds.



What variation do the plants show?

- A continuous variation only
- B discontinuous variation only
- C both continuous variation and discontinuous variation
- D neither continuous variation nor discontinuous variation

7

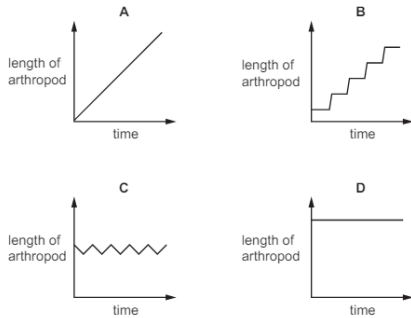
What is an example of a characteristic that shows discontinuous variation in humans?

- A blood group
- B body mass
- C height
- D width of hand

8

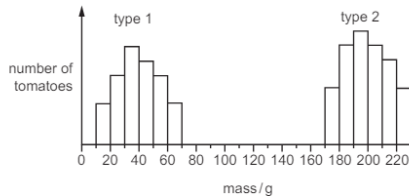
In arthropods, growth occurs only after the exoskeleton is shed and before the new one hardens.

Which graph shows a typical growth curve for an arthropod?



9

The graph shows the masses of two different types of tomato.



What can be concluded from the graph?

- A Genes do not affect the mass of tomatoes.
- B Type 1 tomatoes show continuous variation.
- C Type 2 tomatoes are sometimes smaller than type 1 tomatoes.
- D Type 2 tomatoes show discontinuous variation.

10

A man who was blood group A and a woman who was blood group B had four children, each with a different blood group A, B, AB and O.

Which type of variation does this demonstrate?

- A continuous, environmental and genetic
- B continuous and genetic only
- C discontinuous, environmental and genetic
- D discontinuous and genetic only

Comprehensive Questions (27)

- 1 Make a table with two columns listing the special adaptations of Marram grass (see Figure 18.17) and their functions. [6]
- 2 Pears from the same tree were collected and measured. The ranges in length of a sample of 150 of the pears are shown in the table.

range in length/cm	number of pears	range in length/cm	number of pears
Under 10.0	1	13.0–13.4	24
10.0–10.4	3	13.5–13.9	20
10.5–10.9	5	14.0–14.4	17
11.0–11.4	7	14.5–14.9	14
11.5–11.9	9	15.0–15.4	9
12.0–12.4	13	15.5–15.9	7
12.5–12.9	19	16.0 and over	2

- a Plot a graph of the range in length against number of pears. [4]
- b i) What is the commonest range in lengths of the pears? [1]
 ii) Name the type of variation shown by the data. [1]
 iii) Suggest three environment factors that could be responsible for the variation in the pears. [3]
- c The flowers from which the pears formed were pollinated by insects. Explain why the seeds in the pears did not all have the same genotype. [2]

- 3 a i) Define the term *mutation*. [1]
 ii) State three factors that can cause an increase in mutation. [1]
- b i) What type of variation is shown by human blood groups? [1]
 ii) State what type of graph would be suitable to display data about the frequencies of blood groups in a population. [1]

- 4 One variety of barley has a short stem and large seeds. Another variety has a long stem and small seeds. When they are cross-pollinated, the offspring are all short-stemmed with small seeds. These were then self-pollinated.
- a List the four varieties that could be produced. [1]
- b Which of these are different from either of the parent plants? [2]