

Variation and selection – 2022 November IGCSE 0610 Biology

1. Nov/2022/Paper_11/No.34

Which row shows the results of meiosis?

	cells produced are	gametes produced
A	genetically different	no
B	genetically different	yes
C	genetically identical	no
D	genetically identical	yes

2. Nov/2022/Paper_11/No.35

In a species of plant, the allele for red flower colour, R, is dominant to the allele for yellow flower colour, r.

What would be the flower colour of the offspring of a cross between a parent with the genotype Rr and a parent with the genotype rr?

- A 100% red
- B 75% red and 25% yellow
- C 50% red and 50% yellow
- D 25% red and 75% yellow

3. Nov/2022/Paper_11/No.36

What is needed for natural selection to take place?

- A excess resources for the population
- B no variation within a population
- C reproduction by individuals that are better adapted to the environment than others
- D selection by humans of organisms with desired characteristics

4. Nov/2022/Paper_12/No.34

Which phenotype shows discontinuous variation in humans?

- A foot length
- B height
- C sex
- D weight

5. Nov/2022/Paper_13/No.34

A fruit grower wants to develop a new disease-resistant fig tree with tastier fruit.

She crosses two fig trees and plants the seeds that are produced.

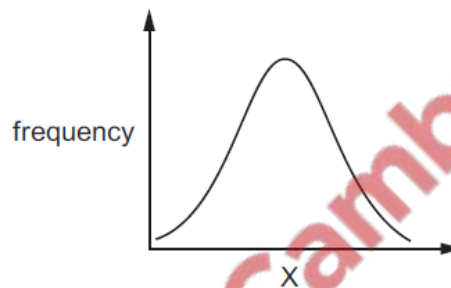
She chooses the best plant that grows from the seeds and takes cuttings from it. The cuttings grow into trees that are identical to the chosen plant.

Which processes are involved?

- A selective breeding, involving sexual reproduction followed by asexual reproduction
- B natural selection involving selection of individuals best adapted to the environment
- C sexual reproduction resulting in natural selection
- D asexual reproduction resulting in selective breeding

6. Nov/2022/Paper_13/No.35

The graph shows the frequency of the human characteristic X.



Which characteristics can be represented by X?

	height	sex	weight
A	yes	no	no
B	no	yes	yes
C	yes	no	yes
D	no	yes	no

7. Nov/2022/Paper_21/No.33

Which statement is correct?

- A Discontinuous variation is mainly caused by environmental factors.
- B Ionising radiation and some chemicals decrease the rate of mutation.
- C A gene mutation is a change in the base sequence of a DNA molecule.
- D Small variations in height within a human population are an example of discontinuous variation.

8. Nov/2022/Paper_21/No.34

A person who is homozygous for the sickle cell allele has a child with a person that is heterozygous.

What is the likelihood that the offspring would be homozygous for the sickle cell allele?

- A 100% B 75% C 50% D 25%

9. Nov/2022/Paper_22/No.33

Which feature is a leaf adaptation for a xerophyte?

- A hair-like structures on the leaves
B large surface area
C many stomata
D thin waxy cuticle

10. Nov/2022/Paper_22/No.34

What is an example of evolution?

- A the genetic engineering of bacteria to produce human insulin
B the development of antibiotic-resistant bacteria
C the changes made to livestock as a result of artificial selection
D the production of lactose-free milk

11. Nov/2022/Paper_23/No.33

How do the leaves of hydrophytes differ from those of xerophytes?

- A more hairs on the surface of the leaves
B smaller total surface area
C stomata on the undersides of the leaves
D thinner cuticle

12. Nov/2022/Paper_23/No.34

Broccoli and cauliflower are crop plants that have been produced from a common wild plant.

Which process would be used to produce the broccoli and cauliflower plants from wild plants?

- A artificial selection
B competition
C evolution
D natural selection

Eggs can be part of a balanced diet.

(a) Egg yolks are a source of iron and vitamin D.

State the dietary importance of iron and vitamin D.

iron

.....

.....

vitamin D

.....

.....

[2]

(b) Chickens lay eggs. Fig. 3.1 is a photograph of a chicken.



Fig. 3.1

A farmer wanted to increase the size of his chickens.

Describe how the farmer could use **selective breeding** to produce larger chickens.

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..... [3]

(c) New alleles are formed by mutation.

(i) Define the term mutation.

..... [1]

(ii) State **two** factors that increase the risk of mutation.

1

2

[2]

[Total: 8]

