Variation and selection – 2022 June IGCSE 0610

1. June/2022/Paper_ 11/No.35

Which statement about selective breeding is correct?

A It does not involve humans.

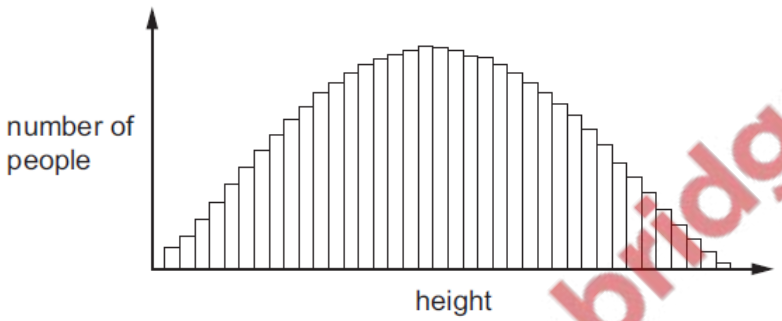
B It involves a struggle for survival.

C It always involves only one parent.

D It involves parents that possess desirable features.

2. June/2022/Paper_ 12/No.34

The graph shows the different heights of people in a human population.



Which row describes the variation shown by the graph?

	type of variation	has intermediate phenotypes
A	continuous	no
B	continuous	yes
C	discontinuous	no
D	discontinuous	yes

3. June/2022/Paper_ 12/No.35

Which statement about selective breeding is correct?

A It does not involve humans.

B It involves a struggle for survival.

C It always involves only one parent.

D It involves parents that possess desirable features.

4. June/2022/Paper_ 13/No.35

Which statement about selective breeding is correct?

A It does not involve humans.

B It involves a struggle for survival.

C It always involves only one parent.

D It involves parents that possess desirable features.

5. June/2022/Paper_ 21/No.33

Sickle cell anaemia is a genetic disorder which results in severe illness in homozygous individuals. In some human populations, being heterozygous can be beneficial.

What could be the reason for this?

A Heterozygous individuals are not affected by the disorder.

B Heterozygous individuals are more resistant to malaria.

C The disorder is caused by a dominant allele.

D The disorder is sex-linked.

6. June/2022/Paper_ 21/No.34

Which statement about selective breeding is correct?

A It does not involve humans.

B It involves a struggle for survival.

C It always involves only one parent.

D It involves parents that possess desirable features.

7. June/2022/Paper_ 23/No.37

With which kingdoms do bacteria share the same genetic code?

A animal, plant, fungus and protoctist

B animal, plant and fungus only

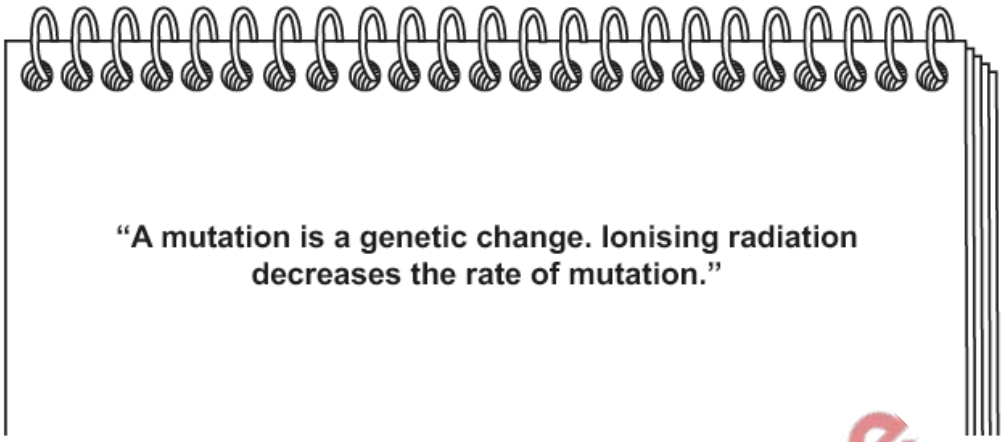
C animal and plant only

D animal only

8. June/2022/Paper_ 32/No.5(b)

(b) Mutations can create variation.

A student made some statements about mutations in their notebook.



Identify **one** incorrect word in the sentences.

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9. June/2022/Paper_ 43/No.2(c_ e)

(c) The allele for the normal form of haemoglobin is Hb^A.

The allele for the abnormal form of haemoglobin is Hb^S.

Draw a genetic diagram to determine the probability of two heterozygous parents having a child who does **not** have the Hb^S allele.

parental phenotypes ..... x .....

parental genotypes ..... x .....

gametes (..... , ...) x (..... , ...)

offspring genotypes .....

probability of offspring **not** having the Hb^S allele .....

[5]

(d) Fig. 2.2 and Fig. 2.3 are maps showing some of the different regions in a country. Scientists studied the distribution of the Hb^S allele in the country.

Fig. 2.2 shows the estimated frequency of the allele within the population.

Fig. 2.3 shows the estimated number of babies born with sickle cell anaemia in each region.

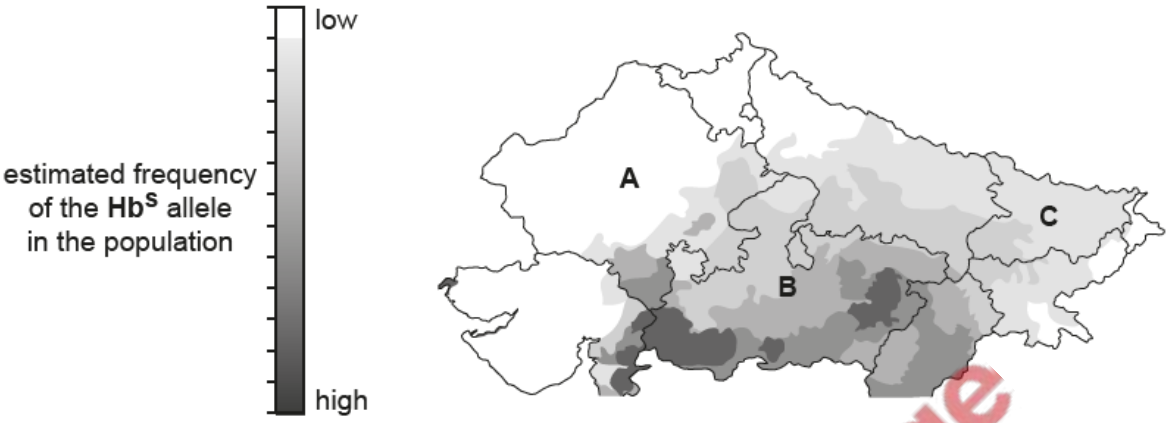

Fig. 2.2

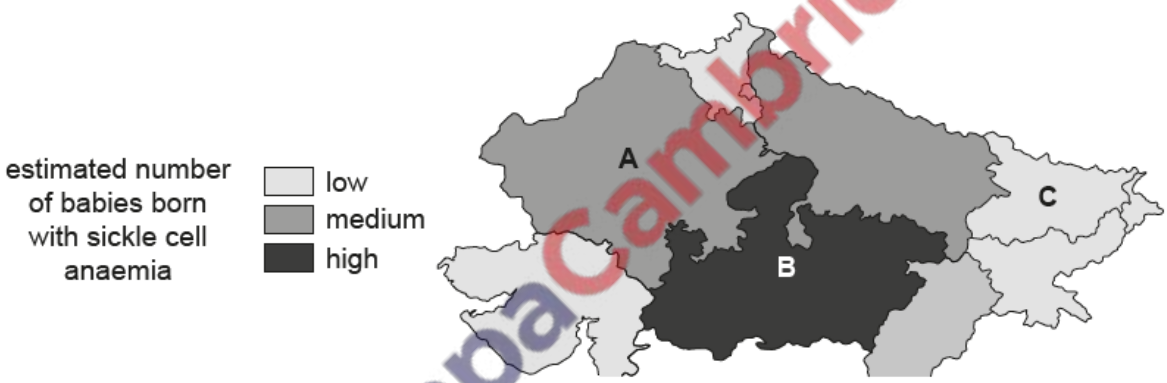

Fig. 2.3

The scientists made a statement:

'There is a relationship between the frequency of the **Hb^S** allele and the number of babies born with sickle cell anaemia in regions **A**, **B** and **C**.'

(i) Using the information in Fig. 2.2 and Fig. 2.3, discuss the evidence for and against this statement for regions **A**, **B** and **C only**.

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(ii) Suggest how the scientists would identify the presence of the **Hb^S** allele in tissue samples.

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(e) Mutations are always inherited in single-celled organisms that reproduce asexually but are **not always** inherited in organisms that reproduce sexually.

Explain why.

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..... [4]