

Inheritance – 2021 O Level 5090

1. **Nov/2021/Paper_11/No.38**

One gene has two codominant alleles, A^E and A^F , and one recessive allele, A^G .

How many different genotypes and phenotypes are possible?

| | genotypes | phenotypes |
|----------|-----------|------------|
| A | 3 | 3 |
| B | 4 | 6 |
| C | 6 | 4 |
| D | 6 | 6 |

2. **Nov/2021/Paper_11/No.39**

What is a result of natural selection?

- A** dogs that are friendly to humans
- B** grapes that contain no seeds
- C** mosquitoes that are resistant to insecticides
- D** onion crops that have a pleasant taste

3. **Nov/2021/Paper_12/No.37**

What is an example of discontinuous variation in humans?

- A** height
- B** blood group
- C** hair colour
- D** mass

4. **Nov/2021/Paper_12/No.38**

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6. **Nov/2021/Paper_12/No.40**

During the division of a nucleus by meiosis, changes can happen that produce a gamete with an abnormal number of genes or chromosomes.

Which change might produce a gamete that can result in a child having Down's syndrome?

- A a gamete with one extra chromosome
- B a gamete that lacks one gene
- C a gamete that lacks one chromosome
- D a gamete with one extra gene

7. **Jun/2021/Paper_11/No.37**

Chromosomes, DNA molecules and genes are pieces of inherited material with different sizes.

Which statement describes the relationship between these pieces of inherited material?

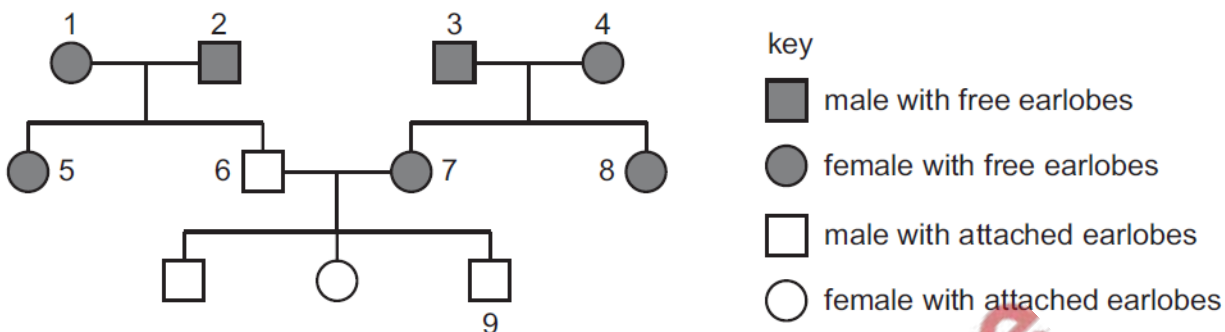
- A A chromosome is larger than a gene.
- B A gene is larger than a chromosome.
- C Multiple chromosomes make up a DNA molecule.
- D Multiple DNA molecules make up a gene.

8. Jun/2021/Paper_11/No.38

Earlobes can either be attached to the cheek or be 'free' (unattached). This characteristic is controlled by a single gene.

The allele for attached earlobes is recessive.

The diagram shows the inheritance of attached earlobes in one family.



Which two individuals **must** be heterozygous for earlobe attachment?

- A 1 and 7 B 3 and 4 C 5 and 8 D 6 and 9

9. Jun/2021/Paper_11/No.39

Which statements about natural selection are correct?

| | natural selection can lead to better adapted species surviving | natural selection can lead to extinction of a species | natural selection can lead to gene mutations occurring |
|---|--|---|--|
| A | true | true | true |
| B | true | true | false |
| C | true | false | true |
| D | false | true | true |

10. Jun/2021/Paper_12/No.37

Which sex chromosomes are present in every sperm cell?

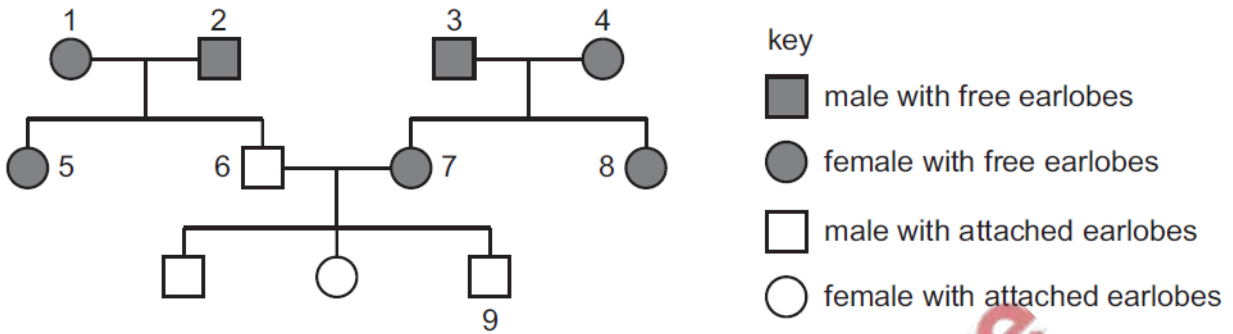
- A X chromosome only
 B Y chromosome only
 C X or Y chromosome only
 D X and Y chromosomes

11. Jun/2021/Paper_12/No.38

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| B | true | true | false |
| C | true | false | true |
| D | false | true | true |