Inheritance – 2020 IGCSE 0610

1. Nov/2020/Paper_11/No.32

In humans, sex determination is controlled by the X and Y chromosomes.

A man and a woman have three children, two boys and a girl.

What is the probability that their next child will be a girl?

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

2. Nov/2020/Paper_12/No.32

Which is a correct description of mitosis?

A It produces genetically identical cells called gametes.

B It produces genetically identical cells for growth and repair.

C It produces genetically different cells for growth.

D It produces genetically different cells called gametes.

3. Nov/2020/Paper_12/No.33

Which term is used to describe alleles that are always expressed when they are present in the genotype?

A dominant

B heterozygous

C homozygous

D recessive

4. Nov/2020/Paper_12/No.34

Some human phenotypes are listed.

1 body mass

2 foot size

3 height

4 sex

Which features are examples of continuous variation?

A 1, 2 and 3 **B** 1, 3 and 4 **C** 1 and 4 only **D** 2 and 3 only

5. Nov/2020/Paper_13/No.32

Which word describes nuclear division to produce genetically identical cells?

A fertilisation

B inheritance

C meiosis

D mitosis

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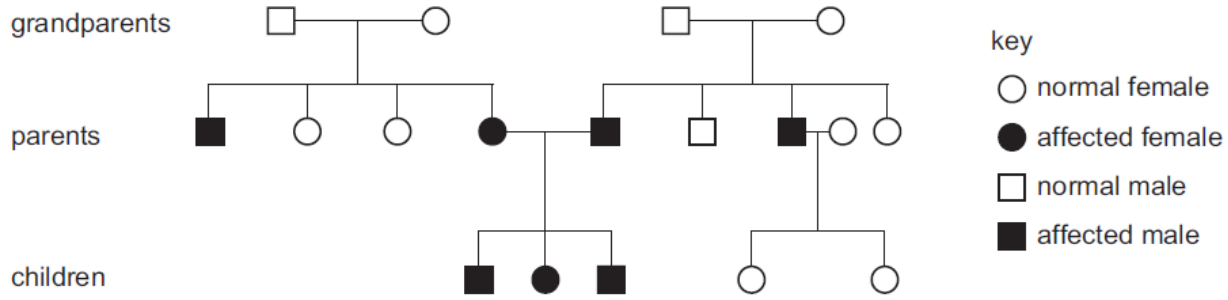
6. Nov/2020/Paper_13/No.33

The diagram shows a family tree. Some individuals have inherited a genetic condition.



Which statement about the grandparents is correct?

A Each carries two recessive alleles for this condition.

B Each carries only one recessive allele for this condition.

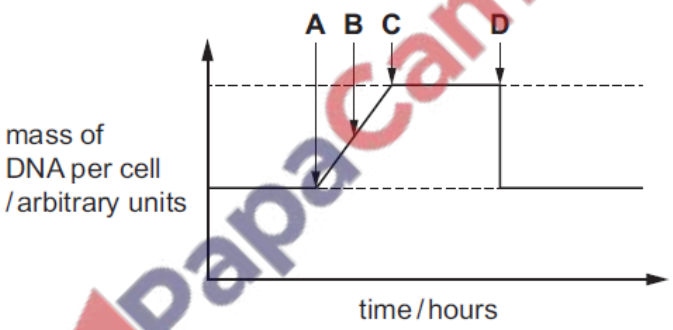
C Only the grandmothers are heterozygous.

D Only the grandfathers are heterozygous.

7. Nov/2020/Paper_21/No.30

The graph shows how the mass of DNA changes during a mitotic cell division.

Where on the graph are two cells formed?



8. Nov/2020/Paper_21/No.31

What happens during meiosis?

A A diploid cell divides to form diploid cells.

B A diploid cell divides to form haploid cells.

C A haploid cell divides to form diploid cells.

D A haploid cell divides to form haploid cells.

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9. Nov/2020/Paper_21/No.32

Red-green colour blindness is a condition that occurs more frequently in men than in women.

Which statement about this condition is correct?

A It can pass from father to son.

B It is a sex-linked characteristic.

C It shows co-dominance.

D The gene is on the Y chromosome.

10. Nov/2020/Paper_21/No.33

Which statement explains why the allele for sickle-cell anaemia is commonly found in human populations in certain parts of the world?

A It is transmitted by mosquitoes.

B It protects people against malaria.

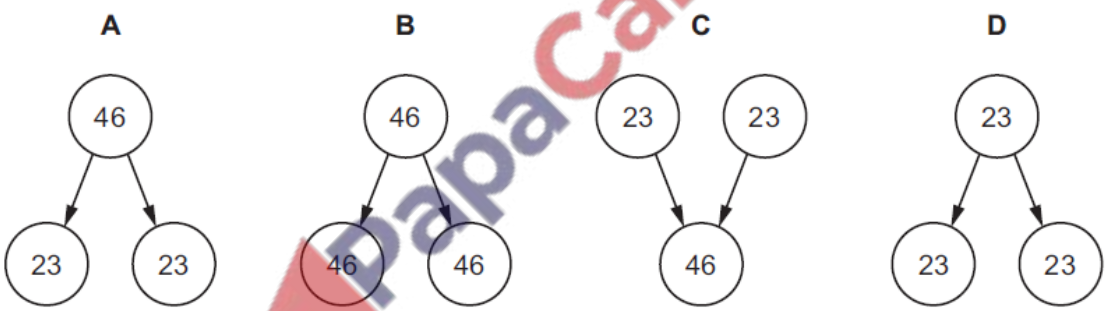
C It prevents people being bitten by mosquitoes.

D It increases oxygen transport.

11. Nov/2020/Paper_22/No.30

The diagrams show human nuclei and the number of chromosomes in each nucleus.

Which diagram represents nuclear division of skin cells for growth and repair?



12. Nov/2020/Paper_22/No.31

Meiosis is sometimes called 'reduction division'.

What is reduced during meiosis?

A Body cells are reduced in size.

B Chromosomes are reduced in number.

C The number of gametes is reduced.

D The rate of cell division is reduced.

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13. Nov/2020/Paper_22/No.32

In guinea pigs, the allele for black fur is dominant and the allele for white fur is recessive.

A test cross can be used to determine the genotype of a black guinea pig.

What would be the expected result of the test cross if the black guinea pig was heterozygous?

A 50% black, 50% white

B 25% black, 75% white

C 100% black

D 100% white

14. Nov/2020/Paper_22/No.33

Which substance is coded for by a length of DNA?

A base

B glucose

C glycerol

D lipase

15. Nov/2020/Paper_23/No.31

Some features of cell division are listed.

1 chromosome number is maintained

2 haploid cells are produced

3 new cells are genetically different

4 results in variation

Which features are involved in meiosis?

A 1, 2 and 3 only

B 1, 2 and 4 only

C 2, 3 and 4 only

D 2 and 3 only

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16. Nov/2020/Paper_23/No.32

Which statement about the inheritance of red-green colour blindness is correct?

A The gene for red-green colour blindness is located on the X chromosome.

B Females are more likely to have red-green colour blindness than males.

C The allele for red-green colour blindness is the dominant allele.

D The gene for red-green colour blindness is located on the Y chromosome.

17. Nov/2020/Paper_23/No.33

A couple are both heterozygous for the sickle-cell allele.

What is the probability that their first child will have sickle-cell anaemia?

A 25% **B** 33% **C** 50% **D** 75%

18. Nov/2020/Paper_42/No.6

Fig. 6.1 is a diagram of DNA.

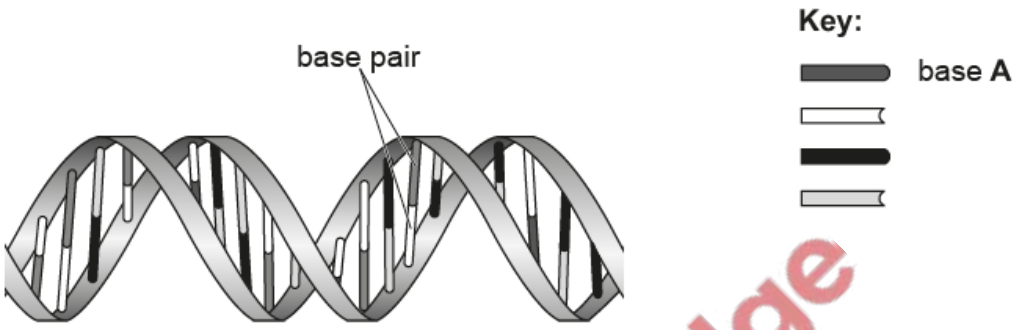

Fig. 6.1

(a) (i) State the letter of the base that pairs with **A**.

..... [1]

(ii) State the letters of the other bases in DNA.

..... [1]

(b) Outline the roles of DNA in a cell.

.....

.....

.....

.....

..... [2]

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(c) Fig. 6.2 shows a plant tissue in which cells are dividing by mitosis.

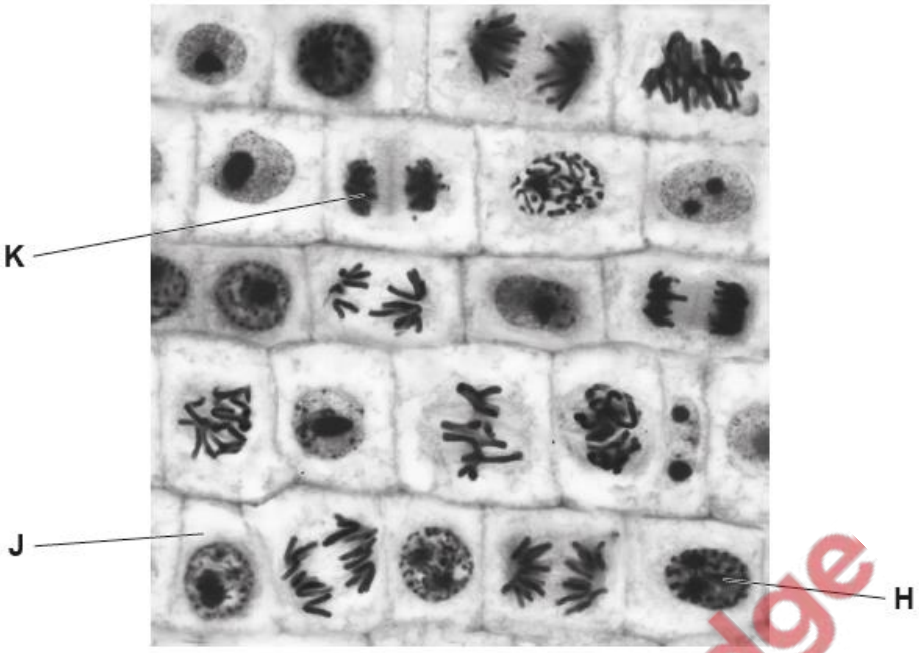

Fig. 6.2

(i) Cell **H** in Fig. 6.2 is about to divide by mitosis.

State what happens to the chromosomes in cell **H** before mitosis takes place **and** state why it is necessary.

.....

.....

.....

.....

..... [2]

(ii) Cell **K** is about to divide into two cells.

State the structures that will form between the nuclei so that the cell divides into two cells.

.....

..... [2]

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(iii) Cell **J** in Fig. 6.2 is an example of a diploid cell.

State what is meant by the term diploid.

.....

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..... [1]

[Total: 9]

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