AQA GCSE BIOLOGY (HIGHER) · 8461

BIOLOGY



EXAM QUESTION PACK

4.6.1 REPRODUCTION (PACK 5)

SCORE	PERCENTAGE
/25	%

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Q1.

For many years scientists studied the organisms in an area of grassland.

One of the animals was a species of black fly. In this population only one allele **B** existed for colour. All the flies were homozygous **BB**.

A mutation occurred which produced a new recessive allele **b** which could produce a green colour.

(a) Draw **two** genetic diagrams to show how the single **b** allele in just one fly was able to produce homozygous **bb** green flies in two generations.

First generation

Second generation

(4)

(b) Although this new allele was recessive and the mutation only occurred once, a large proportion of the fly population was soon green.

Suggest in terms of natural selection why the recessive **b** allele was able to spread through the population.

_____

_____

_____

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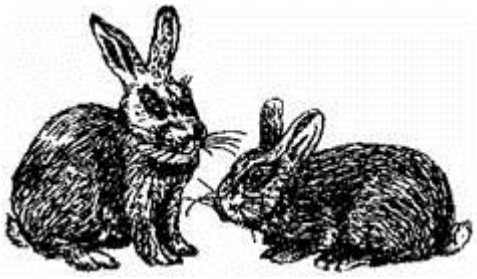
(3)

(Total 7 marks)

Q2.

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These young rabbits look like their parents. This is because information about characteristics such as fur colour is passed from parents to their young.



Choose words from this list to complete the sentences below.

body **chromosomes** **clones** **cytoplasm**

genes **nucleus** **sex**

Information is passed from parents to their young in _____ cells.

Each characteristic, e.g. fur colour, is controlled by _____ .

The structures which carry information for a large number of characteristics are

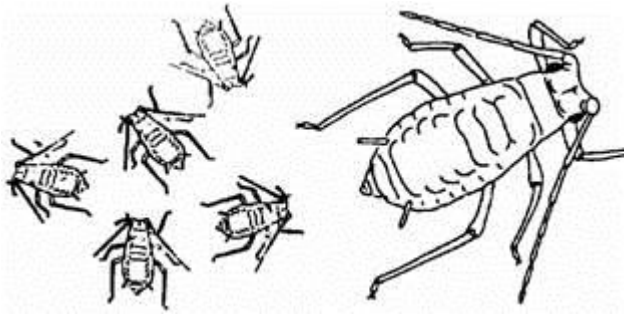
called _____ .

The part of the cell which contains these structures is called the _____ .

(Total 4 marks)

Q3.

The bean aphid is a type of black-fly which lives on broad bean plants in summer.
In the autumn, males and females mate and produce eggs.



(a) Name the type of reproduction which produces the eggs.

_____

(1)

(b) In spring these eggs hatch. The young aphids are all female.
Explain why they are all similar but not identical to each other.

_____

(1)

(c) These females are then able to produce offspring without needing any males.

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(i) Name the type of reproduction where females do **not** need males to produce offspring.

_____

(1)

(ii) How will the offspring from one of these females:

A compare with each other

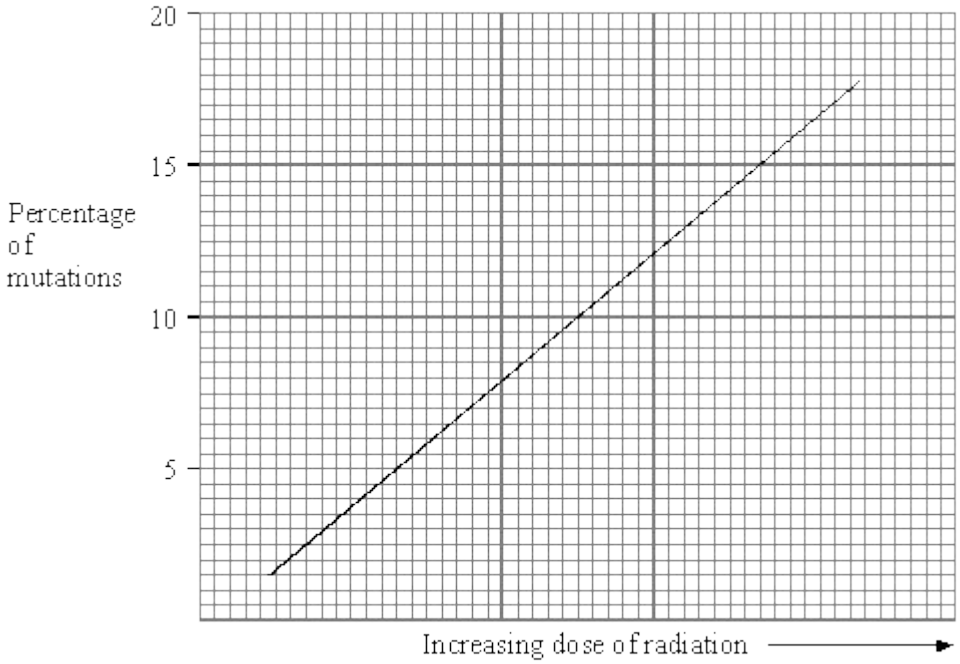
_____

B compare with the offspring from other females?

_____

(2)

(d) Some scientists investigated mutations in these aphids. They exposed the aphids to X-rays.
They plotted their results.



(i) What was the connection between the dose of X-rays and the percentage of mutations?

_____

(1)

(ii) Name **one** other possible cause of mutations.

_____

(1)

(Total 7 marks)

Q4.

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Cystic fibrosis is an inherited disease which causes the tubes in the lungs to be blocked with sticky mucus. Two parents who do not have the disease can still produce children who do have the disease.

(a) Explain how children can inherit this disease from parents who do not have it (use a genetic diagram in your answer if you want to).

_____

_____

_____

_____

_____

(4)

(b) Mucus contains protein. The information for the production of this protein is stored in a gene.

Explain how a change in a gene causes a different protein to be produced.

_____

_____

_____

_____

(3)

(Total 7 marks)

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