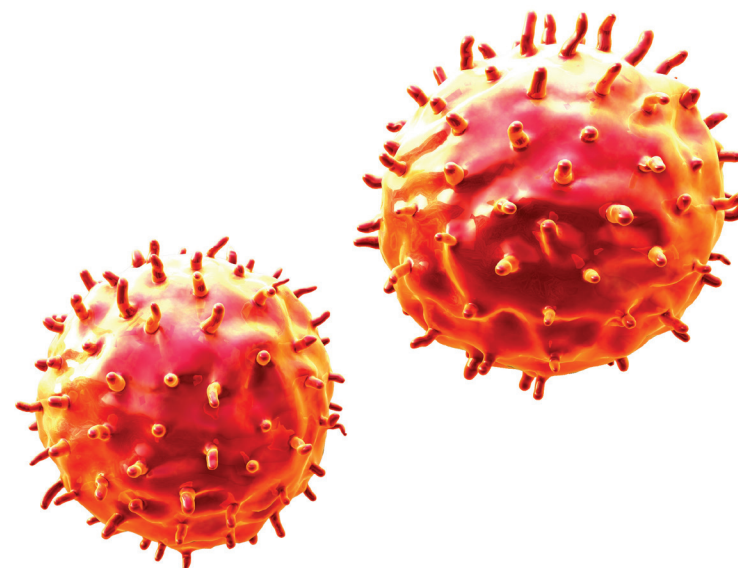


Interactive Example Candidate Responses

Paper 3 (May / June 2016), Question 6

Cambridge IGCSE™
Biology 0610



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6 (a) Define the term *genetic engineering*.

removal of ~~insert~~ of a certain ~~gene~~ from chromosomes
of a species and ~~inserting~~ ^{inserting} it into another different species to
obtain desirable characteristic

[2]

(b) State two examples of genetic engineering.

For each example, outline how it benefits humans.

Write your answers in Table 6.1.

Table 6.1

example	benefit to humans
taking genes of production of insulin from humans and adding ^{inserting} it to bacteria	insulin produced by bacteria will be taken and prescribed to people who have problems with secretion of insulin in body
taking genes from a micro-organism that is not affected by insecticides and adding it to plants	plant crops will not be harmed by insecticides to have healthier crops if insecticide affect soil

[4]

[Total: 6]

Your
Mark

6(a)

6(b)

Q6 Mark scheme

(a)	change the genetic material (of an organism); by removing/changing/inserting (individual) genes; from one organism/species to another; 2 marks												
(b)	<p>1 references to artificial selection mark as a pair, but benefit must match example</p> <table> <tr> <th>example</th><th>benefit</th></tr> <tr> <td>to make (bacteria) produce insulin ;</td><td>treat diabetes/cheaper method of production ;</td></tr> <tr> <td>crop plants resistant to herbicides/pesticides ;</td><td>kill weeds/other pests without killing plant so more food produced ;</td></tr> <tr> <td>crop plants resistant to insects ;</td><td>less of plant eaten by insect – more food produced ;</td></tr> <tr> <td>crop plants produce more vitamins ;</td><td>fewer cases of vitamin deficiency ;</td></tr> <tr> <td>any valid example ;</td><td>any valid benefit ;</td></tr> </table> <p>4 marks</p>	example	benefit	to make (bacteria) produce insulin ;	treat diabetes/cheaper method of production ;	crop plants resistant to herbicides/pesticides ;	kill weeds/other pests without killing plant so more food produced ;	crop plants resistant to insects ;	less of plant eaten by insect – more food produced ;	crop plants produce more vitamins ;	fewer cases of vitamin deficiency ;	any valid example ;	any valid benefit ;
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any valid example ;	any valid benefit ;												

6 (a) Define the term *genetic engineering*.

take a gene from a species and put it in another species by bacteria as it produce rapidly to develop its characteristics.

[2]

(b) State **two** examples of genetic engineering.

For each example, outline how it benefits humans.

Write your answers in Table 6.1.

Table 6.1

example	benefit to humans
Selective breeding	having Cattles with more meat and milk
insulin	taking insulin and put with bacteria where bacteria divide and insulin increase.

[4]

[Total: 6]

Select
page

Your
Mark

6(a)

6(b)

Q6 Mark scheme

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- 6 (a) Define the term
- genetic engineering*
- .

its genes which show the DNA of
the person if he is boy or girl
and show if it's homozygous or
heterozygous [2]

- (b) State two examples of genetic engineering.

For each example, outline how it benefits humans.

Write your answers in Table 6.1.

Table 6.1

example	benefit to humans
DNA	help to know the person's sex type
heterozygous	it's the gene that 2 or more different gene

[4]

[Total: 6]

Your
Mark

6(a)

6(b)

Q6 Mark scheme

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