

Genetic Engineering and Selective Breeding

Question Paper 2

Level	Edexcel
Subject	Biology
Exam Board	GCSE(9-1)
Topic	Natural Selection and Genetic Modification
Sub Topic	Genetic Engineering and Selective Breeding
Booklet	Question Paper 2

Time Allowed: 42 minutes

Score: /35

Percentage: /100

- (b) (i) Fertilisation takes place during sexual reproduction to produce genetically different offspring.

Complete the sentence by putting a cross (☒) in the box next to your answer.

Fertilisation occurs when

(1)

- A** diploid gametes combine to produce a diploid zygote
- B** diploid gametes combine to produce a haploid zygote
- C** haploid gametes combine to produce a diploid zygote
- D** haploid gametes combine to produce a haploid zygote

- (ii) Genetically different organisms contain different DNA codes that produce different proteins.

Describe the process that takes place in the nucleus during the first stage of protein synthesis.

(2)

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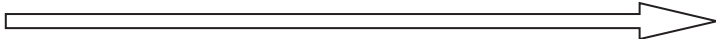
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(Total for Question 1 = 12 marks)

2 The diagram shows the development of maize cobs over the last 1000 years of cultivation.

maize cobs					
mean mass of cob /g	15	45	70	90	
date	1000 years ago				resent

(a) Describe how scientists can use plant breeding programmes to produce maize plants with larger cobs.

(3)

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3 When bacteria divide they replicate their genome and synthesise their cell wall.

Figure 12 outlines the stages of bacterial replication.

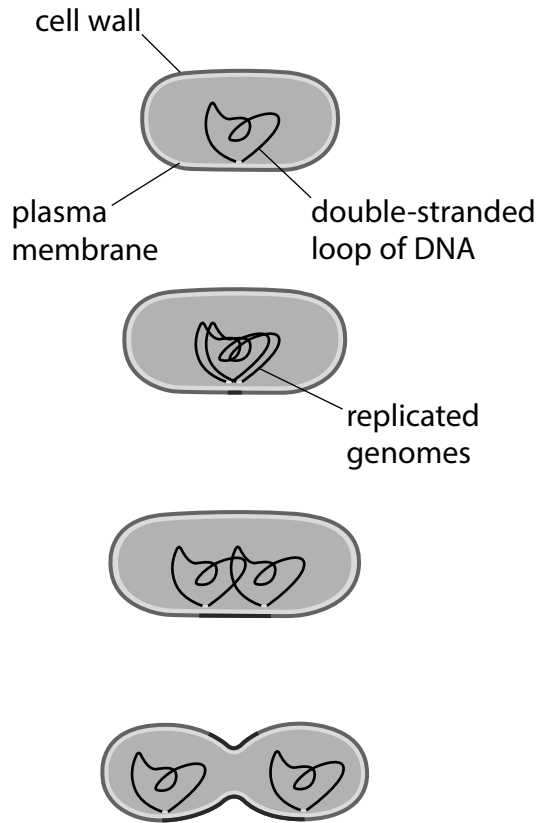


Figure 12

(a) Penicillin inhibits the synthesis of the cell wall in bacteria.

Explain the effect of penicillin on bacterial and human cells.

(3)

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- (b) Penicillin, isolated from a fungus, was the first antibiotic used to treat bacterial infections and is still widely used today.

Scientists have genetically engineered bacteria to produce large amounts of penicillin.

Describe how scientists would produce a genetically modified bacterium that produces penicillin.

(4)

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