1.2 Asexual Reproduction and Its Comparison With Sexual Reproduction: 10-minute Pack

EDEXCEL 4BI1 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 State one example of asexual reproduction in yeast and name the visible feature of the parent cell that shows this process.

(Total for Question 1 is 1 mark)

2 In an illustrative microscope observation, a bacterial cell copies its DNA and divides into two similar-sized cells. No smaller outgrowth develops on the parent. Name the asexual method observed.

(Total for Question 2 is 1 mark)

3 A gardener uses a cutting from a named rose plant to produce a new plant. Give one reason the new plant is likely to keep the parent's chosen flower colour.

(Total for Question 3 is 1 mark)

4 Give one example of a microorganism that reproduces by binary fission and name the process occurring in the parent cell.

(Total for Question 4 is 2 marks)

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5 Describe vegetative propagation in plants, using runners, bulbs or tubers as a named example and stating how the offspring relate genetically to the parent.

(Total for Question 5 is 2 marks)

6 In an illustrative pond investigation, plants have the same leaf size when grown under the same conditions. A student says this proves they are genetically identical clones. State one reason why this observation alone does not prove the claim.

(Total for Question 6 is 1 mark)

7 In an illustrative mint investigation, runners receive 20 ml of water per plant daily and seedlings receive 50 ml. The seedlings grow taller. Identify the variable that prevents this result from being attributed to propagation method alone.

(Total for Question 7 is 1 mark)

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Mark scheme · 1.2 Asexual Reproduction and Its Comparison With Sexual Reproduction: 10-minute Pack

Question 1

budding in yeast and the visible feature is a small bud forming on the parent cell — **B1**

Answer: Budding in yeast, shown by a small bud forming on the parent cell.

Question 2

binary fission — **B1**

Answer: Binary fission.

Question 3

the cutting is genetically identical to the parent and has the same alleles for colour — **B1**

Answer: The cutting is a clone of the rose and has the same alleles for flower colour.

Question 4

names a valid microorganism, e.g. Escherichia coli or other bacterium — **B1**

names the process in the parent cell, binary fission involving replication of DNA then cell division — **B1**

Answer: Example: Escherichia coli (a bacterium). Process: binary fission, where the DNA replicates and the cell splits into two.

Question 5

names a method with an example, e.g. runners in strawberry, bulbs in tulip, or tubers in potato — **B1**

describes that new plants grow from those structures and are genetically identical to the parent — **B1**

Answer: Vegetative propagation, e.g. runners in strawberry or tubers in potato: new plants grow from those structures and are genetically identical clones of the parent.

Question 6

genetically different plants can have the same leaf size or appearance; matching one observable characteristic does not establish identical genetic information — **B1**

Answer: Genetically different plants can have the same leaf size, so matching leaf size does not prove they are clones.

Question 7

the different daily volume of water supplied per plant — **B1**

Answer: The daily volume of water supplied per plant differs between the groups.

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