

Reproduction and meiosis: practice questions

5 questions · 15 marks · mark scheme at the back

For Edexcel GCSE Biology 1BI0 and Combined Science 1SC0. **Triple only** is not in Combined Science. **Higher tier** is only on the Higher paper.

Name

Total / 15

1 **Triple only** [1 mark]

Which of these is an advantage of asexual reproduction?

- A. ☐ It produces variation in the population
- B. ☐ It does not need a mate
- C. ☐ It makes gametes by meiosis
- D. ☐ It makes offspring that are different from the parent

2 **Triple only** [2 marks]

Explain one advantage of sexual reproduction for a population of organisms.

3 **Triple only** [2 marks]

A farmer grows a large field of plants that were all produced by asexual reproduction. A new disease spreads through the field and every plant dies. Explain why.

4 [4 marks]

A human body cell has 46 chromosomes. (a) State the number of chromosomes in a human egg cell. (1) (b) One cell divides by meiosis. State the number of daughter cells produced. (1) (c) Explain why the number of chromosomes in a human cell does not double each generation. (2)

5

Triple only

[6 marks]

Evaluate the advantages and disadvantages of asexual reproduction and of sexual reproduction for a population of organisms living in an environment that may change.

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Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [1] Triple only

B B: It does not need a mate (1)

2. [2] Triple only

- it produces variation in the population (1)
- so some individuals are likely to survive a change in the environment or a new disease (1) allow 'some are resistant to the disease'

3. [2] Triple only

- the plants are genetically identical / there is no variation in the population (1)
- so none of the plants has resistance to the disease / if one is susceptible, all are (1)

4. [4]

- (a) 23 (1)
- (b) 4 (1)
- (c) gametes have half the number of chromosomes (1)
- fertilisation restores the full number (46) / the zygote gets 23 from each parent (1)

5. [6] Triple only

Level 3 5-6	A detailed, balanced evaluation of both types of reproduction. Advantages and disadvantages are linked to their consequences for survival of the population, with a reasoned judgement.
Level 2 3-4	Some advantages and disadvantages of both types are given, with some linking of ideas, but the evaluation may be unbalanced or lack a conclusion.
Level 1 1-2	Simple statements about one or both types of reproduction, with little or no linking of ideas.

Indicative content

- asexual: only one parent, so no need to find a mate
- asexual: rapid reproductive cycle, so many offspring quickly
- asexual: offspring are genetically identical so there is no variation in the population
- asexual: if the environment changes or a disease appears, all individuals may be affected
- sexual: two parents are needed so a mate must be found, which takes time and energy
- sexual: variation in the population
- sexual: some individuals more likely to survive and reproduce when conditions change
- judgement: asexual is better in a stable environment where speed matters; sexual is better when the environment is likely to change