

Sexual and asexual reproduction, and reproduction in plants: practice questions

8 questions • 27 marks • mark scheme at the back

For Pearson Edexcel International GCSE Biology 4BI1 and Science (Double Award) 4SD0. **Biology only** is not in the Double Award and is only examined on Paper 2.

Name

Total / 27

1 Which statement about asexual reproduction is correct?

[1 mark]

- A. ☐ It involves two parents
- B. ☐ It involves the fusion of gametes
- C. ☐ The offspring are genetically identical to the parent
- D. ☐ It produces a lot of variation

2 Describe what happens in fertilisation and what happens to the zygote afterwards.

[3 marks]

3 A wind-pollinated flower has anthers that hang outside the flower and a large feathery stigma. Explain how these two features help the flower to be pollinated.

[4 marks]

4 Describe how fertilisation takes place in a flowering plant after a pollen grain has landed on the stigma.

[3 marks]

- 5** A student sets up three test tubes of cress seeds to investigate the conditions needed for germination. Tube 1 has damp cotton wool at room temperature. Tube 2 has dry cotton wool at room temperature. Tube 3 has damp cotton wool in a refrigerator. All three tubes are kept in the dark. Only the seeds in tube 1 germinate. State what the student can conclude and give two variables that should be kept the same. **[4 marks]**

- 6** Explain why a germinating seed can grow even though it is buried in soil and cannot yet photosynthesise. **[3 marks]**

- 7** Compare the structure of an insect-pollinated flower with a wind-pollinated flower and explain how each is adapted for pollination. **[6 marks]**

8 A gardener takes cuttings from a rose plant that has large red flowers. State what the gardener can expect about the new plants and explain why. **[3 marks]**

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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]

C C (1)

2. [3]

- nucleus of a male gamete fuses with the nucleus of a female gamete (1)
- to form a zygote (1)
- the zygote divides (by cell division) and develops into an embryo (1)

3. [4]

- anthers hang outside the flower / on long filaments (1)
- so pollen is easily blown away / carried by the wind (1)
- feathery stigma has a large surface area (1)
- so it can catch pollen from the air (1)
- allow stigma hangs outside the flower so it can catch pollen

4. [3]

- a pollen tube grows from the pollen grain (1)
- down through the style to the ovary / into the ovule (1)
- the nucleus of the male gamete fuses with the nucleus of the female gamete (egg cell) (1)

5. [4]

- water is needed for germination (1)
- a warm / suitable temperature is needed for germination (1)
- same type / number of seeds (1)
- same amount of cotton wool / same time / same light (1)
- allow any sensible control variable

6. [3]

- the seed contains stored food / starch / oil (1)
- enzymes break down the food reserves (1)
- to release energy by respiration / provide materials for growth until leaves can photosynthesise (1)

7. [6]

Level 3 5-6	A detailed and accurate comparison of both flower types, with several structures described and the adaptations clearly explained in terms of pollination. Both types are covered in balance.
Level 2 3-4	Some accurate description of structures and some explanation, but the answer may be unbalanced or have limited explanation of how each feature helps pollination.
Level 1 1-2	A few simple statements about the flowers, with little or no explanation. The comparison may be missing.

Indicative content

- insect-pollinated: large, brightly coloured, scented petals to attract insects
- insect-pollinated: nectaries make nectar as food for insects
- insect-pollinated: anthers and stigma inside the flower so insects brush against them
- insect-pollinated: pollen is sticky or spiky so it sticks to insects; stigma is sticky
- wind-pollinated: small, dull petals (no need to attract insects), no nectar or scent
- wind-pollinated: anthers hang outside on long filaments so wind can blow pollen away
- wind-pollinated: pollen is light and made in large amounts
- wind-pollinated: large feathery stigma outside the flower to catch pollen from the air

8. [3]

- the new plants will have large red flowers / will be the same as the parent (1)
- they are genetically identical to the parent / clones (1)
- because they are produced by asexual reproduction / only one parent / no gametes involved (1)