

Past-paper walk-through

Meiosis ■ 17.3

eXercise

Questions in this set

- 0610/21 N25 Q28 ■ 1 mark
- 0610/23 N25 Q33 ■ 1 mark
- 0610/41 J25 Q3 ■ 17 marks

Reading the mark scheme

- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- **//** separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = “or words to that effect” – the wording need not match.

Question 28

0610/21 N25 ■ Q28 ■ 1 mark

28 Which statement describes the effect of meiosis on chromosome number?

- A** A diploid parent cell produces diploid daughter cells.
- B** A diploid parent cell produces haploid daughter cells.
- C** A haploid parent cell produces diploid daughter cells.
- D** A haploid parent cell produces haploid daughter cells.

Solution 28

Answer: **B**

Why

- Meiosis halves the chromosome number, which is how gametes are made.
- So a diploid parent cell produces haploid daughter cells.
- Fertilisation then restores the diploid number by fusing two haploid nuclei.

Question 33

0610/23 N25 ■ Q33 ■ 1 mark

33 Four features of cell division are listed.

- 1 Haploid cells are produced.
- 2 New cells are genetically identical.
- 3 It is a reduction division.
- 4 It results in variation.

Which features would be associated with meiosis?

- A** 1, 2 and 3 **B** 1, 2 and 4 **C** 1, 3 and 4 **D** 2, 3 and 4

Solution 33

Answer: **C**

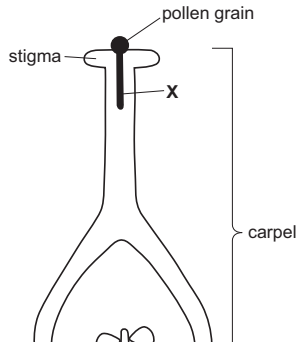
Why

- Meiosis is a reduction division: it halves the chromosome number, so haploid cells are produced.
- It also shuffles the alleles, so it results in variation.
- Mitosis is the one that makes genetically identical cells, so that feature belongs to mitosis instead.

Question 3

0610/41 J25 ■ Q3 ■ 17 marks

- 3 (a) Fig. 3.1 shows one stage involved in plant reproduction after pollination.



Question 3



Fig. 3.1

- (i) State the name of the part labelled **X** in Fig. 3.1.

Question 3

- (ii) Describe the events that occur after the stage shown in Fig. 3.1 that result in fertilisation.

Question 3

- (b)** A species of plant can use self-pollination and cross-pollination.
 - (i)** Suggest reasons for this species of plant to use self-pollination rather than cross-pollination.

Question 3

- (ii) Discuss the potential effects of only using self-pollination in a population of plants.

Question 3

(c) Meiosis produces gametes and is a source of genetic variation.

State **two other** sources of genetic variation in populations.

Question 3

Question 3

[2]

(d) Describe mitosis and its roles in organisms.

Question 3

(e) State the name of the unspecialised cells that divide by mitosis.

Question 3

[Total: 17]

Solution 3

(a)(i)

Mark scheme

- pollen tube ;
- 1

Solution 3

(a)(ii)

Mark scheme

- any three from:
- pollen tube grows / AW (and enters ovule / ovary) ;
- pollen / male, nucleus travels down (pollen) tube / style ;
- (pollen and ovule) nuclei fuse ;
- ref. to ovule ;
- 3 A X for pollen tube / ecf from 3ai

Solution 3

(b)(i) Mark scheme

- any three from:
- 1
- lack of (named) pollinators ;
- 2
- idea that plant is isolated / AW ;
- 3
- uses less, pollen / energy ;
- 4

Solution 3

- increased chance of, fertilisation / pollination / offspring ;
- 5
- idea of (less genetic diversity is) beneficial if plant is well-adapted to its
- environment ;
- 6
- AVP ;
- 3
- 0610/41
- May/June 2025
- Guidance

Solution 3

(b)(ii) Mark scheme

- any three from:
- 1
- less / no, genetic variation ;
- 2
- less likely to, survive / adapt to, changes in the environment ;
- 3
- less resilience against disease / disease spreads more quickly ;
- 4

Solution 3

- (increased risk of) extinction ;
- 5
- ref. to likelihood of genetic disease ;
- 3

Solution 3

(c)

Mark scheme

- any two from:
- mutation ;
- random, mating / pollination ;
- random fertilisation ;
- AVP ;
- 2

Solution 3

(d) Mark scheme

- any four from:
- 1
- ref. to nuclear division ;
- 2
- production of genetically identical cells ;
- 3
- (copies of / replicated) chromosomes separate ;
- 4

Solution 3

- chromosome number is maintained (in each daughter cell) / AW ;
- 5,6 named roles of mitosis ;;
- 4
- e.g. growth / repair of (damaged)
- tissues / replacement of cells / asexual
- reproduction / production of organs or
- tissues

Solution 3

(e)

Mark scheme

- stem (cells) ;
- 1
- Guidance