

6: Reproduction – Topic questions

Paper 4

The questions in this document have been compiled from a number of past papers, as indicated in the table below.

Use these questions to formatively assess your learners' understanding of this topic.

Question	Year	Series	Paper number
1	2015	November	31
3	2016	June	42
5	2015	November	31

The mark scheme for each question is provided at the end of the document.

You can find the complete question papers and the complete mark schemes (with additional notes where available) on the School Support Hub at www.cambridgeinternational.org/support

- 1 (c) Zookeepers report that isolated female Komodo dragons, *Varanus komodoensis*, have produced offspring asexually. This is very unusual in vertebrates.

- (i) State **two** disadvantages of asexual reproduction.

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.....[2]

- (ii) State **two** disadvantages of sexual reproduction.

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.....[2]

- (d) Sexual reproduction requires meiosis to occur.

- (i) Define the term *meiosis*.

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.....[2]

- (ii) Explain the significance of meiosis to the survival of endangered species of lizards.

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.....[3]

[Total: 16]

- 3 (b)** Meiosis is necessary for sexual reproduction of carnation plants.

Define the term *meiosis*.

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[2]

- 5 Fig. 5.1 is a diagram showing the events from pollination to fertilisation in a species of flowering plant.

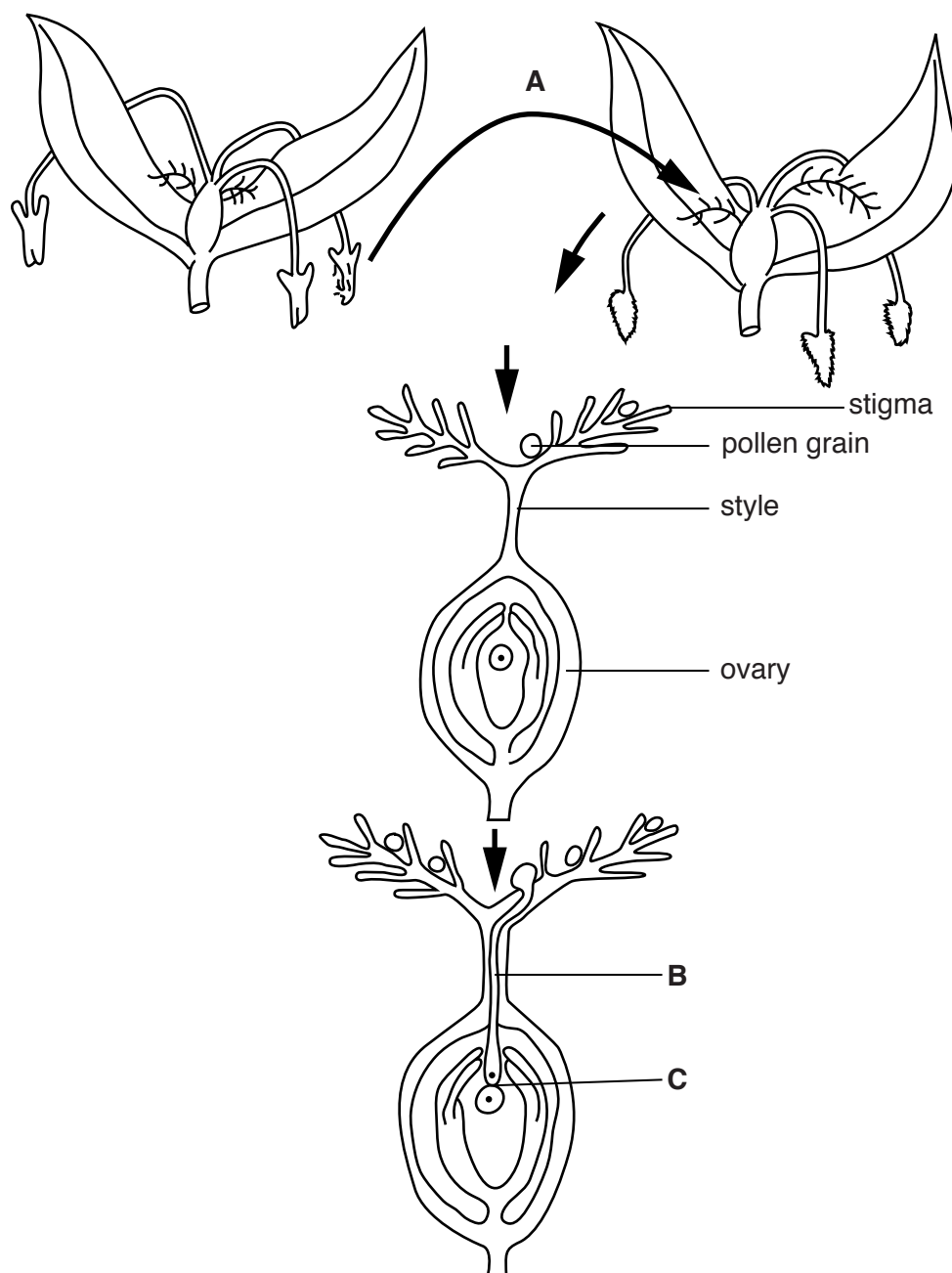


Fig. 5.1

- (a) Name the likely method of pollination for the flowers shown at **A** in Fig. 5.1. Give an explanation for your choice.

method of pollination

explanation

.....

.....

[3]

- (b) In Fig. 5.1 pollen is transferred from one plant to another.

State the name for this type of pollination.

.....[1]

- (c) Name structure **B** shown in Fig. 5.1 and state its function.

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.....[2]

- (d) Fertilisation occurs at **C** as shown in Fig. 5.1.

Describe what happens at fertilisation in flowering plants.

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.....[2]

- (e) Seed formation occurs after fertilisation. Seeds are formed inside the fruits and then dispersed.

- (i) Name the part of the flower that develops into the seed.

.....[1]

- (ii) Name the part of the flower that develops into the fruit.

.....[1]

- (iii) State an advantage of seed dispersal.

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.....[1]

- (f) Seed germination occurs when conditions are suitable.

Explain the role of enzymes in seed germination.

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.....[2]

[Total: 13]

Abbreviations used in the Mark Scheme:

;	separates marking points
/	alternatives
I	ignore
R	reject
A	accept (for answers correctly cued by the question, or guidance for examiners)
AW	alternative wording (where responses vary more than usual)
AVP	any valid point
ecf	credit a correct statement / calculation that follows a previous wrong response
ora	or reverse argument
()	the word / phrase in brackets is not required, but sets the context
<u>underline</u>	actual word given must be used by candidate (grammatical variants excepted)
max	indicates the maximum number of marks that can be given

Question	Answer	Marks
1 (c) (i)	reduced genetic diversity ; identical offspring ; negative traits passed on ; more competition for local resources ; less chance of survival in a varying environment ; one disease could wipe out total population ; AVP ; e.g. less chance of evolving	[max 2]
1 (c) (ii)	offspring may not be as well adapted to environment ; slower process / takes longer (than asexual reproduction) ; requires partner / two parents ; less energy efficient / requires more energy / many eggs is wasteful ; AVP ;	[max 2]
1 (d) (i)	reduction division / chromosome number is halved / one set of chromosomes ; diploid to haploid ; for production of gametes ; daughter cells are not genetically identical / genetically different ;	[2]

Question	Answer	Marks
1 (d) (ii)	for adaption to, new / changed environment ; causes (genetic) variation ; competition for survival ; best suited reproduce ; allows natural selection ; allows evolution ; AVP ;	[max 3]
		[Total: 9]
3 (b)	1 reduction / nuclear, division ; 2 chromosome number is halved ; 3 (diploid to) haploid ; 4 results in genetically different, cells / gametes / AW ;	[max 2]
		[Total: 2]
5 (a)	method of pollination: wind ; explanation to max 2: Feathery / AW, stigma ; long, filament ; large, anthers / stamens ; anthers / stamens, hang outside flower ; anthers loosely attached (to filament) ; light pollen ; no petals ;	[max 3]
5 (b)	cross (pollination)	[1]
5 (c)	pollen tube ; delivers male gamete / pollen nucleus / male nucleus to ovule ; AW	[2]
5 (d)	idea that tip of pollen tube opens / AW ; gametes / sex cells / ova and pollen nuclei, fuse / join / combine ; formation of zygote ; diploid ;	[max 2]
5 (e) (i)	ovule	[1]
5 (e) (ii)	ovary (wall)	[1]
5 (e) (iii)	colonise new areas ; reduce (intraspecific) competition ; reduce inbreeding ; ora	[max 1]
5 (f)	stored food / food reserves (in seed) broken down ; named enzyme plus substrate ; product plus use ; enzymes required in process of respiration ;	[max 2]
		[Total: 13]