16. Reproduction

16.3 Sexual reproduction in plants

Paper 1 and 2

Question Paper

Paper 1

Questions are applicable for both core and extended candidates

1 Parts of an insect-pollinated flower are listed.

1 anther
2 filament
3 stigma
4 style

Which parts are in a carpel?

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

2 What must **always** be present for seeds to germinate?

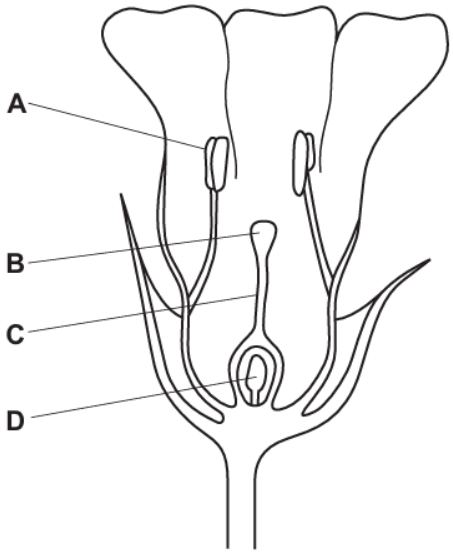
A chlorophyll
B light
C soil
D water

3 Which row describes an insect-pollinated flower?

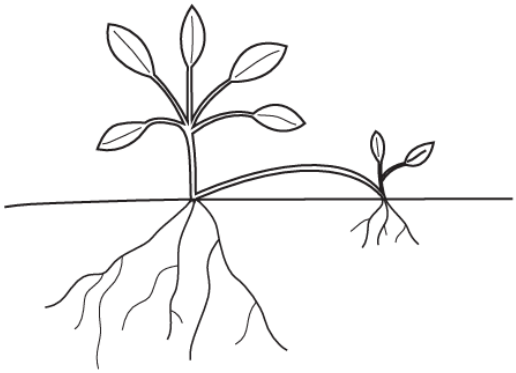
	anther	pollen grain	stigma
A	inside flower	large and sticky	inside flower
B	outside flower	large and sticky	inside flower
C	inside flower	small and light	outside flower
D	outside flower	small and light	outside flower

4 The diagram shows half a flower.

Which structure produces pollen?



5 The diagram shows one way that a plant can reproduce.



What is a feature of this type of reproduction?

A The offspring show genetic variation.

B Only one parent is required.

C Offspring are easily dispersed over a wide area.

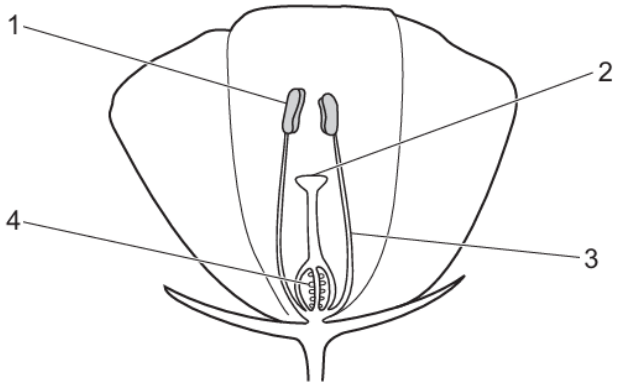
D Pollination by insects is required.

6 The table shows the conditions that four samples of seeds were kept in.

Which sample would germinate?

	water	oxygen
A	present	absent
B	absent	absent
C	present	present
D	absent	present

7 The diagram shows a cross-section of a flower.



During pollination, which labelled structure releases the pollen and which labelled structure receives the pollen?

	releases pollen	receives pollen
A	4	1
B	3	4
C	1	2
D	2	3

8 What is an example of sexual reproduction?

A one bacterial cell dividing to produce two daughter bacterial cells

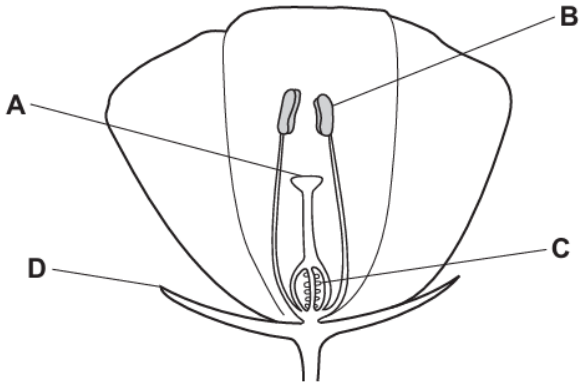
B one banana plant being divided into two banana plants

C one pollen grain nucleus fusing with one ovule nucleus in a flower

D one yeast cell producing buds which separate to become new yeast cells

9 The diagram shows a cross-section of an insect-pollinated flower.

Which label is the stigma?



10 What is the correct description of pollination?

A Pollen grains are transferred from the anther to the ovary.

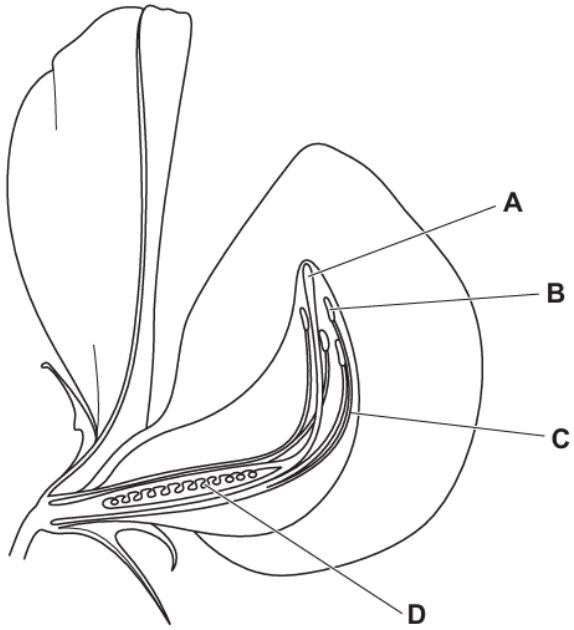
B Pollen grains are transferred from the anther to the stigma.

C Pollen grains are transferred from the ovary to the stigma.

D Pollen grains are transferred from the stamen to the anther.

11 The diagram shows a flower cut in half.

Which structure receives the pollen nucleus during fertilisation?



12 What is the transfer of pollen from an anther to a stigma called?

A fertilisation

B respiration

C meiosis

D pollination

13 Which conditions are always required for the germination of seeds?

	condition			
	light	oxygen	suitable temperature	water
A	✓	✓	✗	✓
B	✓	✗	✓	✗
C	✗	✓	✗	✓
D	✗	✓	✓	✓

key

✓ = required

✗ = not required

14 Where do fertilisation and pollination occur in a flower?

	fertilisation	pollination
A	carpel	ovule
B	ovary	stigma
C	stigma	anther
D	style	carpel

15 To which part of the flower is pollen transferred in pollination?

A anther

B petal

C sepal

D stigma

16 What is essential for the germination of all seeds?

A light

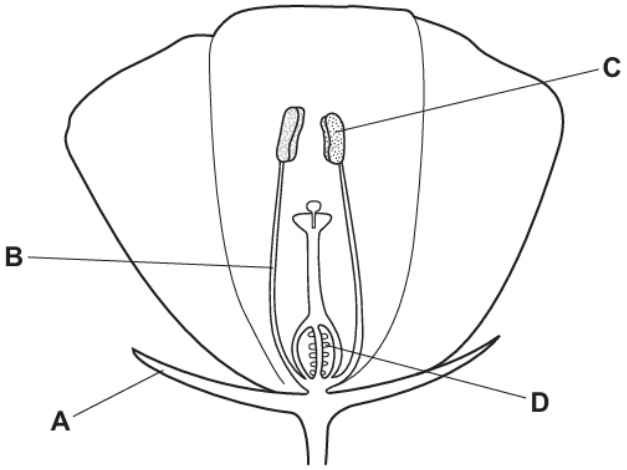
B nutrients

C water

D photosynthesis

17 The diagram shows a section of an insect-pollinated flower.

Which structure is the anther?



18 Which parts of the gametes fuse during fertilisation?

A cell membranes

B cell walls

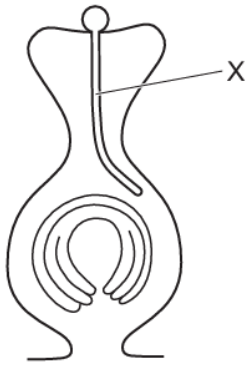
C cytoplasm

D nuclei

Paper 2

Questions are applicable for both core and extended candidates unless indicated in the question

19 The diagram shows the carpel of a flower just after pollination.



What is the name of the part labelled X?

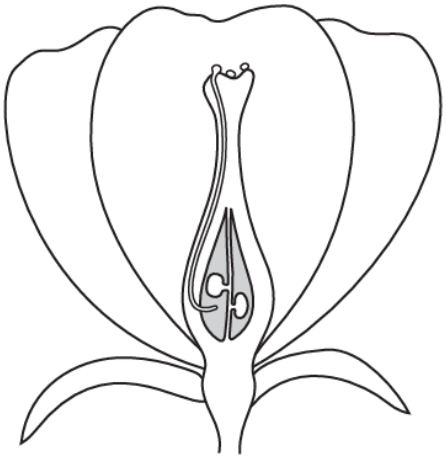
A filament

B ovule

C pollen tube

D stigma

20 The diagram shows part of a flower.



Which processes have taken place? **(extended only)**

	pollination	fertilisation
A	no	no
B	no	yes
C	yes	no
D	yes	yes

21 A farmer grows hot pepper plants and sweet pepper plants in different fields on his farm.

Each year, the farmer saves seeds from the pepper plants to grow the next crop of peppers.

One year, the farmer notices that some of the seeds from the sweet pepper plants have grown into plants which produce hot and sweet peppers.

What is the most likely explanation? **(extended only)**

A Self-pollination has occurred and pollen has been transferred from the anther of a hot pepper plant to the stigma of a sweet pepper plant.

B Cross-pollination has occurred and pollen has been transferred from the stigma of a hot pepper plant to the anther of a sweet pepper plant.

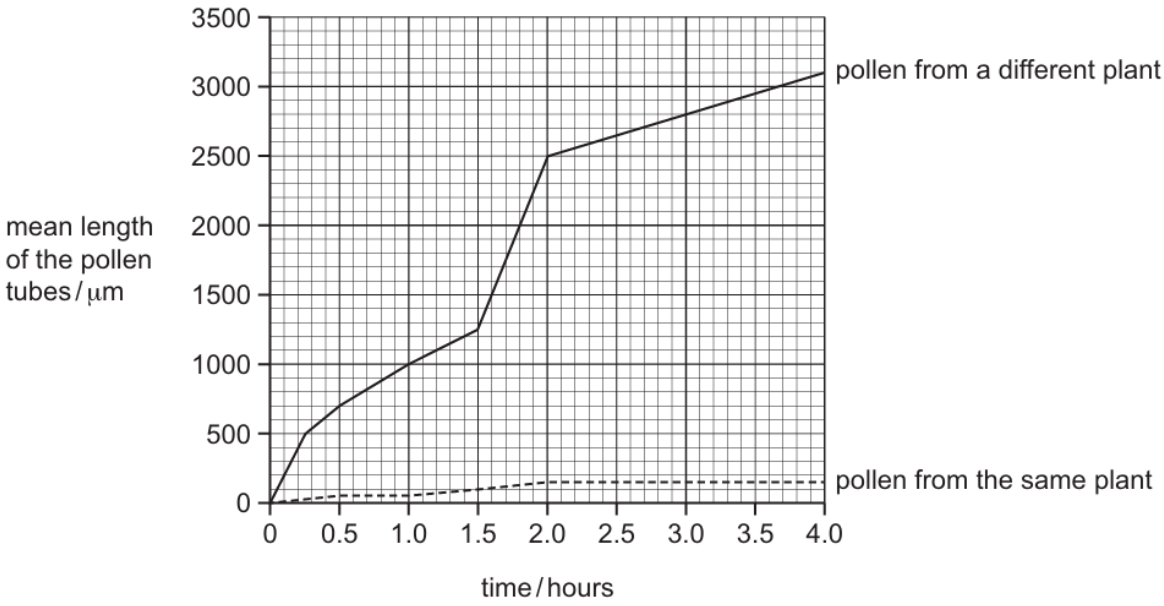
C Self-pollination has occurred and pollen has been transferred from the stigma of a hot pepper plant to the anther of a sweet pepper plant.

D Cross-pollination has occurred and pollen has been transferred from the anther of a hot pepper plant to the stigma of a sweet pepper plant.

22 Pollen grains from a plant were placed onto the stigma of a flower of the same plant. The lengths of the pollen tubes were measured for four hours. (The mean length of the style in this species of plant is 2 mm.)

This was repeated using pollen from a different plant.

The results are shown.



Which statements are correct? **(extended only)**

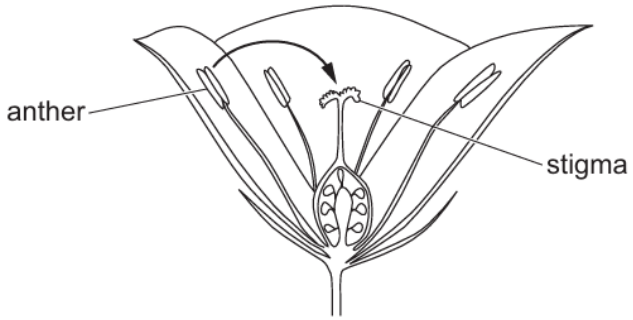
1 Self-pollination does **not** lead to fertilisation.

2 The difference in growth of the two types of pollen is an adaptation to increase variation.

3 The pollen tubes from a different plant grew fastest between 2.0 hours and 4.0 hours.

A 1, 2 and 3 **B** 1 and 2 only **C** 1 and 3 only **D** 2 and 3 only

23 The diagram shows the structure of part of a flower.



The arrow represents the transfer of pollen.

Which statement about the arrow is correct? **(extended only)**

A The arrow represents cross-pollination in an insect-pollinated flower.

B The arrow represents cross-pollination in a wind-pollinated flower.

C The arrow represents self-pollination in an insect-pollinated flower.

D The arrow represents self-pollination in a wind-pollinated flower.

24 Which row describes self-pollination? **(extended only)**

	pollen transferred from anther to stigma of		
	a different flower on the same plant	a flower on a different plant of the same species	same flower
A	✓	✓	✗
B	✓	✗	✓
C	✗	✗	✓
D	✗	✓	✓

key
✓ = yes
✗ = no

25 Some flowers can only be pollinated by specific insect species.

What will happen if none of these insects are present?

A genetically different seed produced

B genetically identical seed produced

C no seed produced

D only small amounts of seed produced

26 Which description of cross-pollination is correct? **(extended only)**

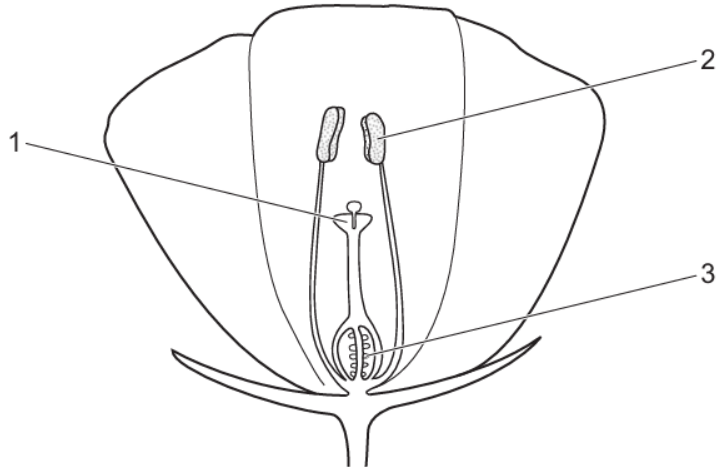
A the transfer of pollen grains from the anther of one plant to the stigma on a different plant

B the transfer of pollen grains from the anther to the stigma on the same plant

C the transfer of pollen grains from the stigma of one plant to the anther on a different plant

D the transfer of pollen grains from the stigma to the anther on the same plant

27 The diagram shows half a flower. There is a description of each numbered part.



1 the stigma which receives pollen from insects

2 the anther which produces smooth and light pollen grains

3 the ovule where fertilisation occurs when the male and female nuclei fuse

Which descriptions are correct for an insect-pollinated flower?

A 1 only **B** 1 and 3 only **C** 2 and 3 only **D** 1, 2 and 3