The National Orthodox School Shmaisani

The National Orthodox School / Shmaisani

Subject: Biology **Worksheet : Reproduction in plants**

Name:

Date: **Grade 9 IB**

Question 1 : Circle the correct answer :

1 Which statements describe self-pollination?

	transfer of pollen	two plants required
A	from anther to stigma	yes
B	from anther to stigma	no
C	from stigma to anther	yes
D	from stigma to anther	no

2 A number of new plants are growing from pieces of a plant that have become detached and have rooted in soil.

Which statement is correct about these new plants when they mature?

A The fruit they produce will all ripen at the same time.

B They will all grow to the same size.

C They will all have the same colour flowers.

D They will all produce the same number of fruit.

3 A plant has flowers whose anthers mature and fall off before the stigma is fully developed.

What will this prevent?

A cross-pollination

B insect-pollination

C self-pollination

D wind-pollination

4. What is always essential for seeds to begin germinating?

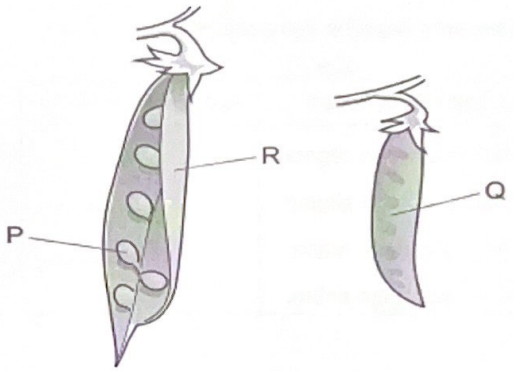
A carbon dioxide

B light

C mineral salts

(**D**) oxygen

5. The diagram shows peas growing on the plant.



What are the labelled structures?

	P	Q	R
A	fruit	seed	pericarp
B	fruit	testa	seed
(C)	seed	fruit	pericarp
D	seed	fruit	testa

6. What passes down a pollen tube after pollination?

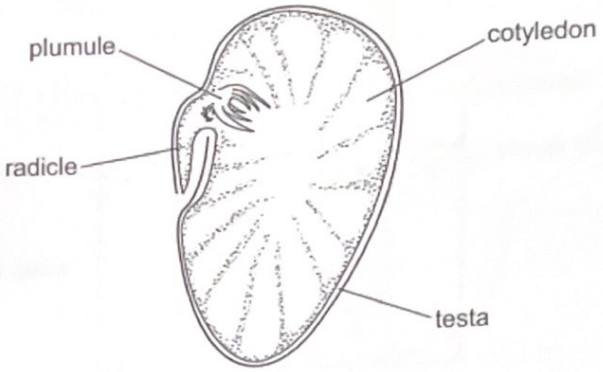
A female nucleus

(**B**) male nucleus

C ovule

D pollen grain

7. The diagram shows a broad bean seed. Part of it has been cut away to show the internal structure.



Which parts make up the complete embryo?

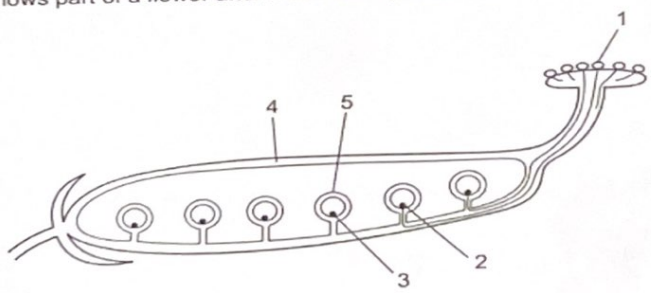
A radicle, plumule, cotyledons and testa

B radicle, plumule and cotyledons only

C radicle and plumule only

D radicle only

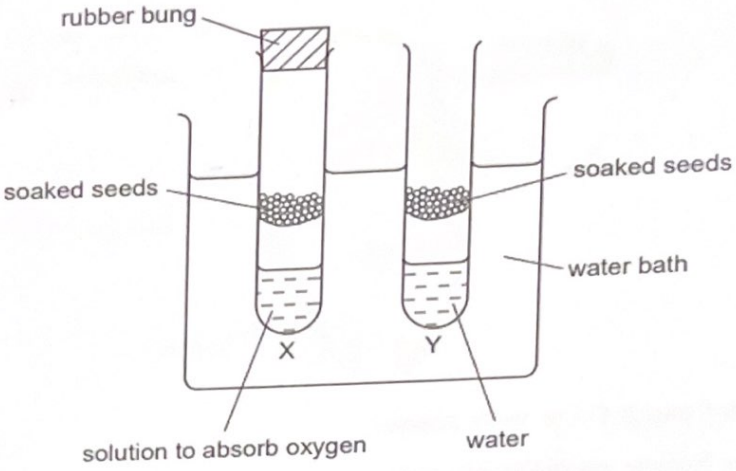
8. The diagram shows part of a flower after it has been pollinated.



Which labelled structures are diploid and which are haploid?

	diploid	haploid
A	1	4
B	2	1
C	3	2
D	4	5

9. The diagram shows an experiment to find out if seeds need oxygen to germinate.



Which change would make tube Y an effective control?

A Add soda lime (absorbs carbon dioxide) at the bottom of tube Y.

B Close tube Y with a rubber bung.

C Do not soak the seeds in tube Y.

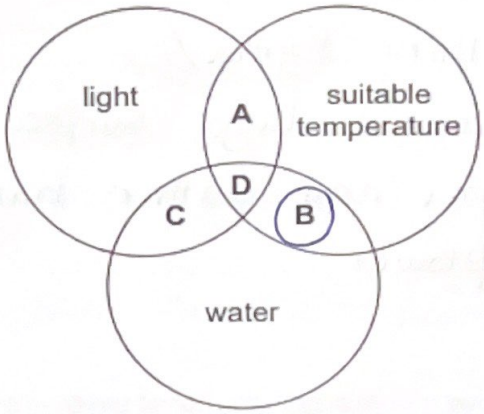
D Replace the soaked seeds in tube Y with seeds that have been boiled.

10. An insect carries pollen from one flower to another flower on the same plant.

What is the type of reproduction and what is the type of pollination in this plant?

	reproduction	type of pollination
A	asexual	cross-pollination
B	asexual	self-pollination
C	sexual	cross-pollination
D	sexual	self-pollination

Which conditions are necessary to activate enzymes when a seed germinates?



Question 2 :

Johnson grass, *Sorghum halepense*, is wind-pollinated.

(a) Fig. 4.1 shows some Johnson grass flowers.

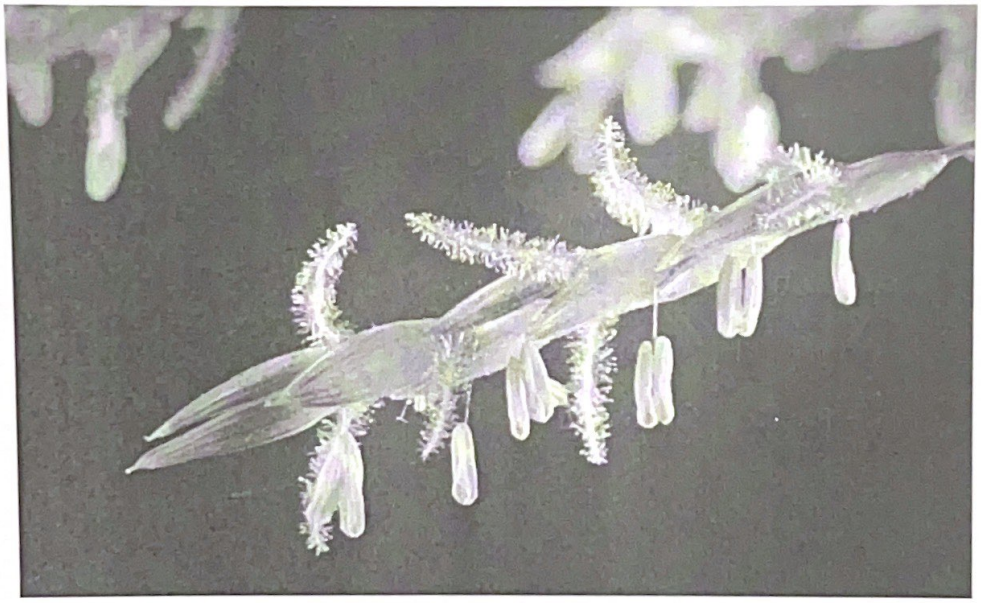


Fig. 4.1

Describe **two** features **visible in Fig. 4.1** that show that Johnson grass flowers are adapted for wind-pollination.

1 Feathery stigma/

Stigma with large surface area/

2 Stigma and anther hang outside the flower.

[2]

(b) Fig. 4.2 shows a section through a carpel shortly after pollination.

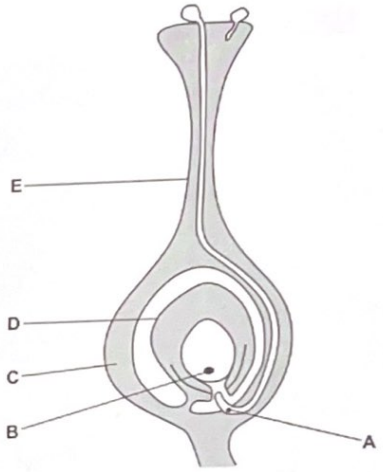


Fig. 4.2

- Name part E : Style.
- Describe what will happen after pollination .

A pollen tube will grow allowing the male gamete to pass through until it reaches the female gamete.

(c) Discuss the advantages of sexual reproduction to a wild population of flowering plants such as Johnson grass.

Genetic variation /

allow adaptation to new conditions /

New species can evolve /

Allow Natual selection to occur.

(d) Sexual reproduction in plants results in seeds being formed.

State **three** conditions needed for the germination of seeds.

Water, light and temperature

Question 3 :

Diagram 2 shows vertical sections of two different flowers. They are both pollinated by insects.

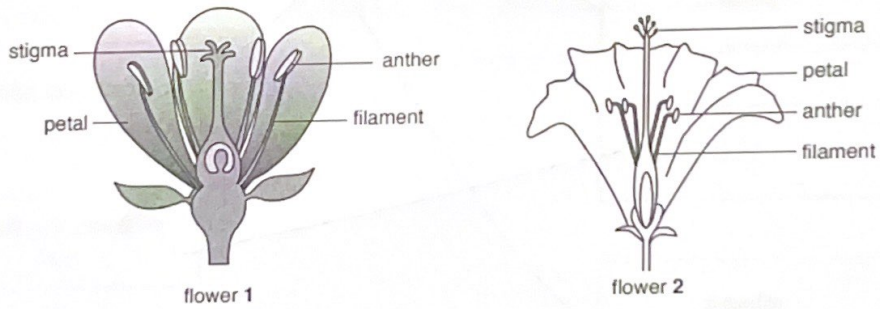


Diagram 2

- **Which flower would have less chance of self-pollination?** 2

  Explain your answer Stigma is higher than anther.

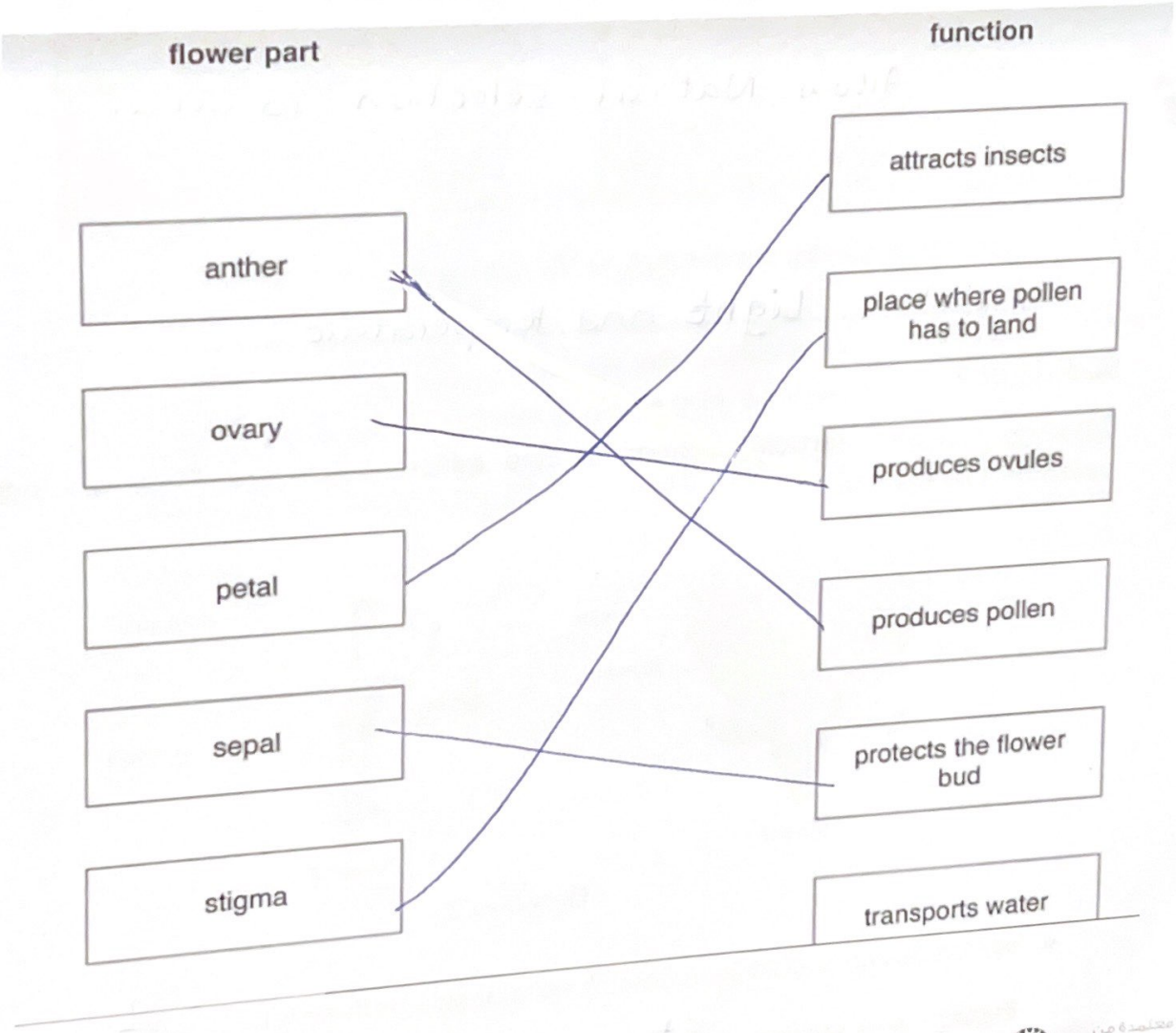
Question 4 :

The boxes on the left contain the names of flower parts.

The boxes on the right contain descriptions of the functions of the flower parts.

Draw **one** straight line from each box on the left to **one** box on the right to link the flower part to its function.

Draw **five** lines.

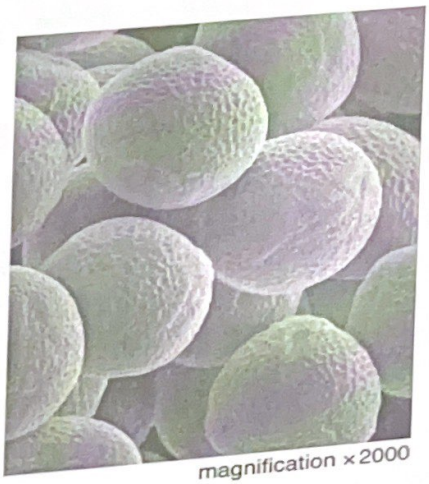


Question 5 :

Fig .2 shows two photomicrographs of pollen.

magnification ×1250

pollen from an insect-pollinated flower



magnification ×2000

pollen from a wind-pollinated flower

Describe, using your knowledge and the information in Fig. 2, how pollen from an insect-pollinated flower is different to pollen from a wind-pollinated flower.

Insect ⟹ spiky and sticky pollens

Wind ⟹ Light pallens

Question 6 :

(a) Some students investigated the conditions needed for the germination of maize seeds. They used maize seeds from a packet of seeds they had purchased in a shop.

Three dishes were used, each containing cotton wool and the same number of maize seeds, as shown in Fig. 1.

Fig. 1

Table 1 shows the conditions provided for each dish.

Table 1

conditions	dish		
	A	B	C
treatment of cotton wool	damp	dry	damp
temperature / °C	20	20	3
light or dark	light	light	dark

The seeds were left for five days and then observed.

The results are shown in Table 2

Table 2

dish	results
A	all seeds germinated
B	no seeds germinated
C	no seeds germinated

(i) Explain why the seeds in dishes **B** and **C** did not germinate.

Dish B is dry (No water).

Dish C (the temperature is low)

(ii) In a second investigation, maize seeds were placed in a dish containing damp cotton wool.

This dish was left in the dark for five days at 20°C.

Predict and explain the results.

The seed will germinate because it is exposed to wet (water), temperature (warmth) and oxygen.

Question 7 :

Some plant species are self-pollinated.

Discuss the long-term effects of self-pollination on the evolution of these plant species.

Limited variation / limited chance for evolution.