

# 9.4 Reproduction in Plants

## Question Paper

Course	DP IB Biology
Section	9. Plant Biology (HL Only)
Topic	9.4 Reproduction in Plants
Difficulty	Medium

**Time allowed:** 20  
**Score:** /10  
**Percentage:** /100

### Question 1

Which of the following is **not** involved with the control of flowering in plants?

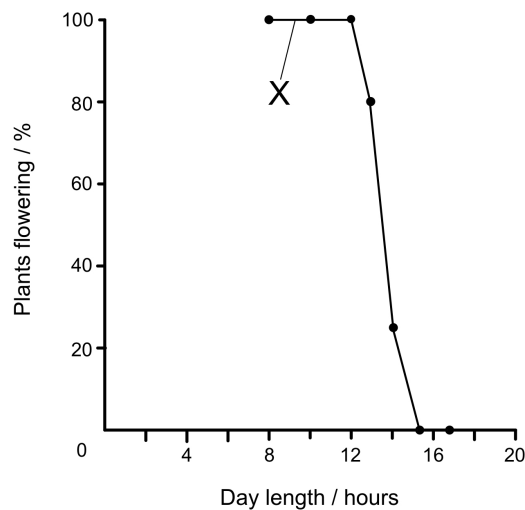
- A. The length of time for which it is dark in every 24 hour period.
- B. The amount of red light absorbed by a plant's cells
- C. The expression of certain genes.
- D. The concentration of both forms of phytochrome in a plant's cells.

[1 mark]

### Question 2

The graph below shows plant flowering at different day lengths in short day plants.

What is happening at the stage marked X?



- A. There are high levels of  $P_{FR}$  and therefore flowering is activated.
- B. Night length is shorter than the critical length.
- C. There are low levels of  $P_{FR}$  and therefore flowering is not inhibited.
- D. There are high levels of  $P_{FR}$  and therefore flowering is inhibited.

[1 mark]

### Question 3

Which of the following will induce flowering in long day plants grown during the winter?

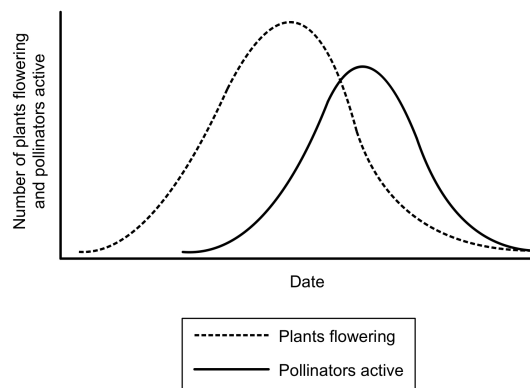
- A. Providing brighter light during the day.
- B. Providing equal day and night lengths.
- C. Providing a longer dark period.
- D. Providing periods of light during the night.

[1 mark]

### Question 4

The graph below shows a possible future consequence of climate change on plant flowering dates and the dates on which pollinators are active.

What would the consequence of the data shown in the graph be for plants and pollinators, and why?



	Consequence	Reason
<b>A</b>	No change in plant and pollinator populations	The same number of plants would be pollinated and pollinators would still get enough food
<b>B</b>	Decline in both plant and pollinator populations	Fewer plants would be pollinated and less food would be available for pollinators
<b>C</b>	Decline in plant population but not in pollinator population	Fewer plants would be pollinated but pollinators would still get enough food
<b>D</b>	Decline in pollinator population but not in plant population	The same number of plants would be pollinated but less food would be available for pollinators

[1 mark]

### Question 5

Which of the following statements about pollen transfer are correct?

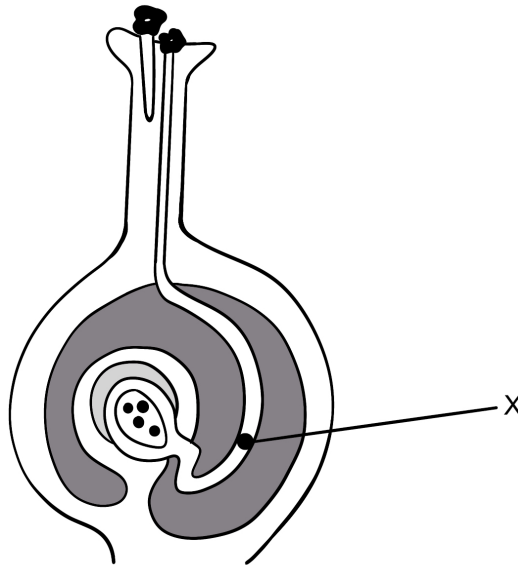
- I. Self pollination occurs when pollen is transferred between separate flowers on the same plant.
- II. Pollen transfer can be carried out by small mammals.
- III. Pollen can be transferred when birds consume fleshy fruits and then carry out egestion in another location.

- A. I only
- B. I and II only
- C. I and III only
- D. I, II, and III

[1 mark]

### Question 6

Which statement correctly describes the part labelled X in the image below?

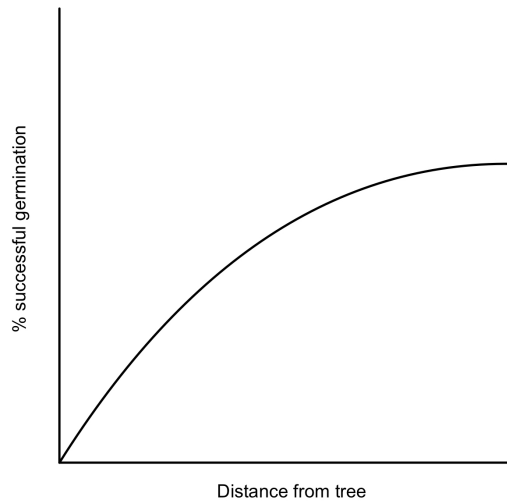


- A. Diploid pollen tube
- B. Haploid male nucleus
- C. Diploid zygote
- D. Haploid ovum

[1 mark]

### Question 7

The graph below shows the percentage of successful germination of seedlings in relation to the dispersal distance from the parent tree.



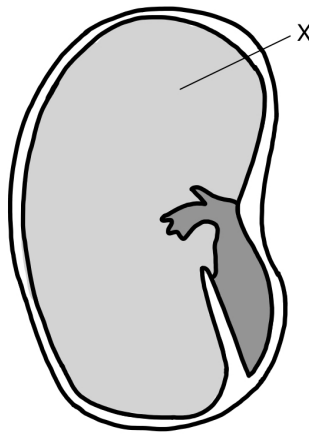
Which of the following explains the pattern shown in the data?

- A. Seeds that were dispersed closest to the tree were eaten by squirrels
- B. Seeds dispersed too far away from the parent tree were too exposed to germinate successfully
- C. Fewer seeds were dispersed in the area closest to the tree
- D. Seeds dispersed too close to the parent tree may not germinate due to competition

[1 mark]

**Question 8**

What is the name and function of the component labelled X on the seed diagram below?

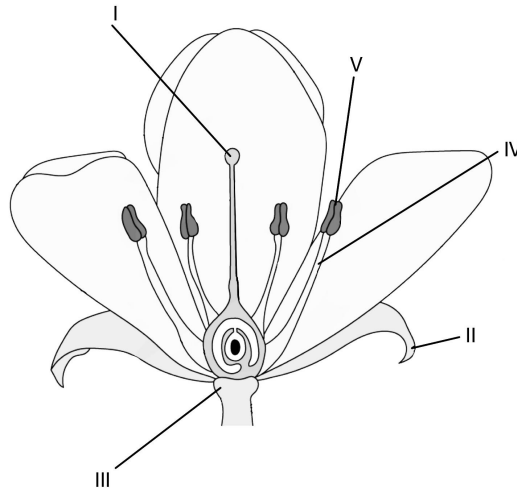


	Name	Function
A	Cotyledon(s)	Contain the endosperm and provide a food source for the germinating seed
B	Plumule	Develops into the first shoot of the seedling
C	Radical	Develops into the first root of the seedling
D	Endosperm	Develops into the first leaves of the seedling

[1 mark]

**Question 9**

The image shows an animal pollinated flower



Identify the correct labels required for the image above.

	I	II	III	IV	V
<b>A</b>	Stigma	Receptacle	Nectary	Filament	Anther
<b>B</b>	Style	Receptacle	Sepal	Anther	Filament
<b>C</b>	Ovary	Stamen	Sepal	Anther	Filament
<b>D</b>	Stigma	Sepal	Nectary	Filament	Anther

[1 mark]

### Question 10

The table below shows the effect of temperature on the germination of seeds. The seeds were first soaked in a range of temperatures before being germinated at either 20 °C or 35 °C.

Temperature at which seeds were soaked in °C	Percentage of seeds which germinated	
	At 20 °C	At 35 °C
20	100	91
25	100	45
30	43	3
35	24	0

Which of the following statements explains the results?

- I. Higher temperatures slows down or stops germination
- II. Enzymes are denatured when seeds are grown at higher temperatures
- III. Seeds that were soaked at 20 °C germinated more successfully than seeds soaked at 25 °C
- IV. Soaking seeds at 35 °C had a less negative impact on germination compared to germinating at 35 °C

- A. II and IV
- B. I, II and IV
- C. I, II, III and IV
- D. I and II

[1 mark]