8. Transport in plants

8.4 Translocation

Paper 1 and 2

Question Paper

Paper 2

Questions are applicable for extended candidates only

1 Which statement is correct for a flowering plant during photosynthesis?

A The flowers, fruits, leaves and roots are all sources of sucrose.

B The fruits are a source of sucrose and the flowers are a sink.

C The leaves are a source of sucrose and the fruits are a sink.

D The roots are a source of sucrose and the leaves are a sink.

2 Which statement describes translocation?

A the movement of amino acids and sucrose from the source to the sink in phloem

B the movement of amino acids and sucrose from the source to the sink in xylem

C the movement of amino acids and sucrose from the sink to the source in phloem

D the movement of amino acids and sucrose from the sink to the source in xylem

3 The table shows the transport tissues of plants and some substances that may or may **not** travel through these tissues.

Which row is correct for translocation?

	plant tissue	substance transported
A	phloem	maltose
B	phloem	sucrose
C	xylem	amino acids
D	xylem	water

4 Scientists investigated the movement of sucrose through a plant.

They used carbon dioxide containing radioactive carbon, ^{14}C.

They covered one leaf on a plant with a clear plastic bag containing $^{14}CO_2$.

After 24 hours, the plant was placed onto photographic film. The photographic film went black where the radioactive carbon was present.

Diagram 1 shows the plant at the start of the experiment, and diagram 2 shows the photographic film at the end of the experiment.

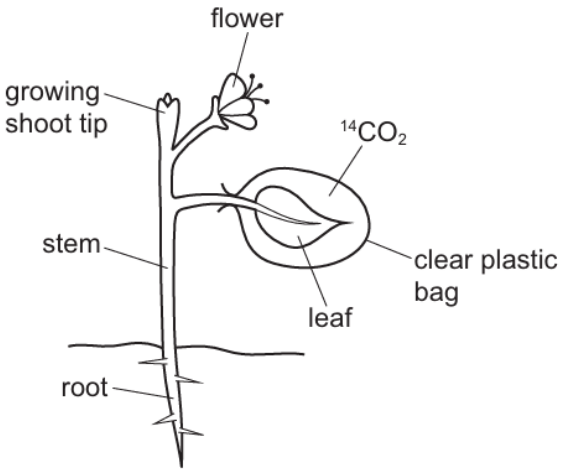


diagram 1

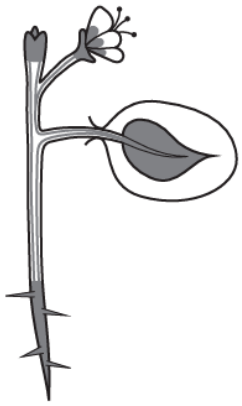


diagram 2

Which conclusions can be made from the experiment?

1 Translocation occurs in upwards and downwards directions.

2 The leaf and shoot tip are sources.

3 The roots and flowers are sinks.

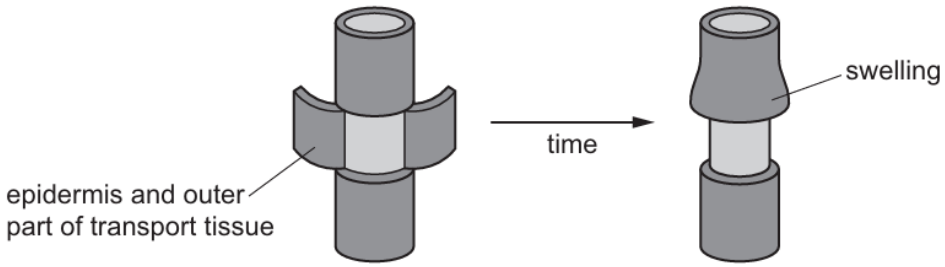
A 1, 2 and 3 **B** 1 and 2 only **C** 1 and 3 only **D** 2 and 3 only

5 Sucrose and amino acids move around a plant from sources to sinks.

Which row shows the sources and sinks?

	root cortex cells	xylem vessels	palisade mesophyll cells
A	source and sink	neither	source
B	sink	sink	source and sink
C	neither	source and sink	sink
D	source and sink	source	neither

6 During an investigation into the movement of substances in a plant, a ring of tissue containing the outer part of the transport tissue is removed, as shown.



Which statement explains why a swelling develops in the stem?

A Phloem has been removed causing a build up of sucrose and amino acids.

B Phloem has been removed causing a build up of water and mineral ions.

C Xylem has been removed causing a build up of sucrose and amino acids.

D Xylem has been removed causing a build up of water and mineral ions.

7 Translocation is the movement of sucrose and amino acids in the phloem tissue of a plant from source to sink.

Which organ can act as a source?

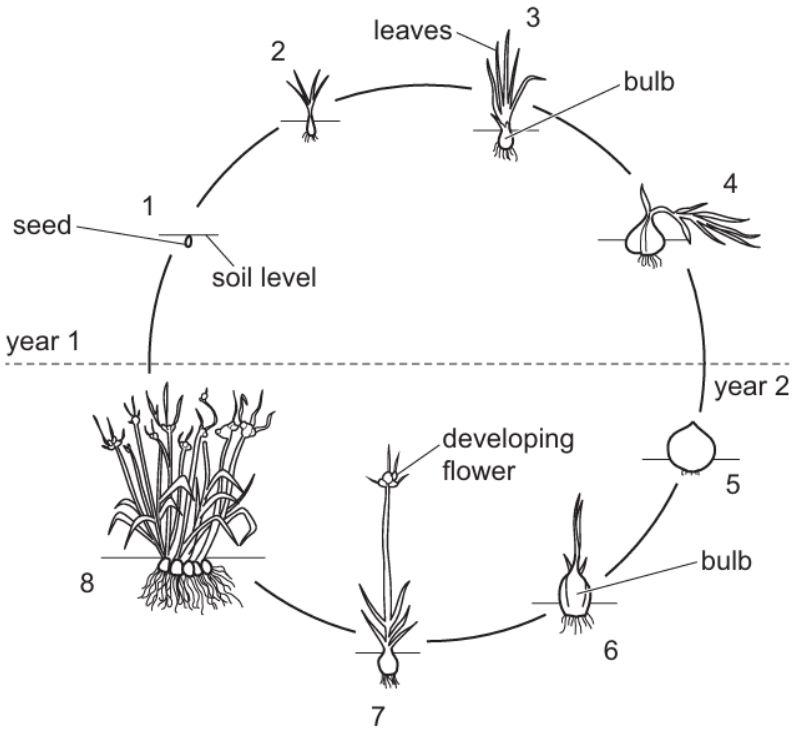
A flower

B growing shoot tip

C new developing root

D storage root

8 The diagram shows an onion plant that has been grown from a seed. Each onion plant takes two years to flower and produce more seeds.



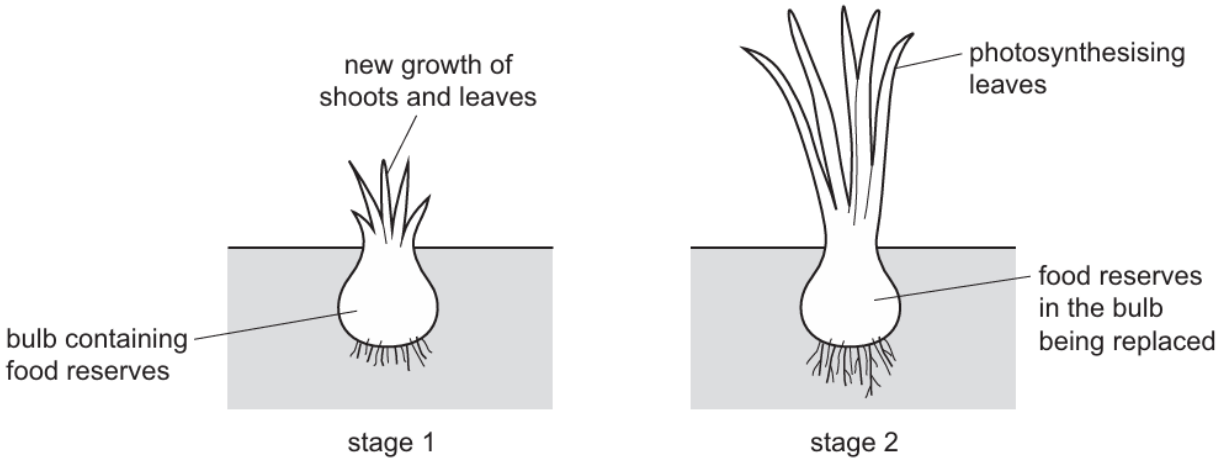
What is the onion bulb acting as in stage 3 and in stage 6?

	stage 3	stage 6
A	sink	sink
B	sink	source
C	source	sink
D	source	source

9 The diagram shows a plant at different times of year.

stage 1 At the start of the growing season, the plant uses the food reserves stored in the bulb for the growth of shoots and leaves.

stage 2 Later in the season, the leaves of the plant photosynthesise and the food reserves in the bulb are replaced.



What is the role of the bulb during stage 1 and stage 2?

	stage 1	stage 2
A	sink	sink
B	sink	source
C	source	sink
D	source	source

10 What is a function of phloem?

A transports minerals to the roots

B transports starch to the roots

C transports sugar to the roots

D transports water to the roots

11 Dodder is a plant that grows on other plants called the hosts. The dodder plant connects to the host's vascular bundles.

The dodder plant does not have green leaves or roots.

What correctly describes the regions for translocation?

	host leaves	dodder
A	sink	sink
B	sink	source
C	source	sink
D	source	source

12 In plants, what is transported by translocation?

A glucagon

B glycogen

C starch

D sucrose

13 Which description of translocation is correct?

A movement of glucose and amino acids from a sink to a source

B movement of glucose and amino acids from a source to a sink

C movement of sucrose and amino acids from a sink to a source

D movement of sucrose and amino acids from a source to a sink