

SCHOOL: **Your school name****SENIOR TWO BIOLOGY · UNIT 7 HOMEWORK****Transport in plants · FREE SAMPLE****MARKING SCHEME (TEACHER'S COPY)****Academic year:** 20..... – 20.....**Date:**/...../20.....**Duration:** Take-home**Total marks:** 18**INSTRUCTIONS**

1. Answer ALL questions.
2. Write your answers in the spaces provided.
3. This free sample is a short extract. A full homework sheet has 25 marks.

PART 1: OBJECTIVE QUESTIONS*Answer ALL questions. The marks are shown for each question.*

1. Leaves reduced to spines help a cactus to: (1 mark)

- A. reduce water loss
- B. attract insects
- C. absorb more light
- D. absorb more water

Answer: A. reduce water loss**Explanation:** Spines have a very small surface area.

2. Water lilies have stomata mainly on the: (1 mark)

- A. roots
- B. stem only
- C. upper surface of the leaf
- D. lower surface of the leaf

Answer: C. upper surface of the leaf**Explanation:** The lower surface rests on water.

3. Matching. Match each item in column A with the correct answer in column B. Write the letter in the answer column. (4 marks)

Column A	Answer	Column B
1. Plants adapted to very dry places are called:	c	a. translocation
2. The movement of food from sources to sinks is:	a	b. energy from living phloem cells
3. A sink for sugars in a plant is:	d	c. xerophytes
4. Translocation needs:	b	d. a growing fruit

Answer: 1 → c, 2 → a, 3 → d, 4 → b

Marking: 1 mark for each correct match (4 marks).

PART 2: SHORT ANSWERS

Answer in full sentences.

4. Explain why a potometer bubble moves faster on a hot, dry, windy afternoon than on a cool, humid morning. (4 marks)

Model answer: High temperature increases evaporation; dry air (low humidity) gives a steeper **water vapour gradient** between leaf and air; wind removes humid air near the stomata. All increase **transpiration**, so the shoot takes up water faster and the bubble moves faster.

Marking: 1 mark for each correct key point or step in the model answer, up to 4 marks. Accept any correct method.

PART 3: STRUCTURED QUESTION

Show all your reasoning.

5. **Transport in plants** (8 marks)

Explain the evidence that sugars are transported in the phloem.

Model answer: Ringing experiment: removing a ring of bark (with phloem) makes the bark above the ring swell with sugars. [2]

Aphids insert their stylets into phloem sieve tubes; the sap that flows out is rich in sucrose. [2]

Radioactive carbon given as CO₂ to a leaf appears later in the phloem, not the xylem. [2]

So the phloem carries sugars made in leaves to other parts. [2]

Marking: Give the marks shown in brackets [] for each step. Accept any correct equivalent answer.

Watch out: Do not use dye experiments here: dye in water shows xylem transport, not phloem.

END