Mark schemes

Q1.

(a) palisade (mesophyll / layer / cells)

1

spongy mesophyll / layer

1

meristem

must be in this order

*do **not** accept reference to a single cell, once only*

1

(b) lignin

ignore cellulose

1

(c) translocation

ignore active transport

1

(d) (permanent) vacuole

1

(e) (cell **X** contains) mitochondria

1

for (aerobic) respiration

*do **not** accept anaerobic respiration*

1

(mitochondria / respiration) releases energy

*do **not** accept energy produced / made / created*

1

<u>energy</u> needed to move (dissolved) **sugar(s)** against / up the concentration gradient

*allow <u>energy</u> needed to move (dissolved) **sugar(s)** from a low concentration to a high concentration*

1

by active transport

1

(f) any **one** from:

- loss of cytoplasm
- loss of nucleus
- loss of mitochondria
- loss of ribosomes
- loss of sub-cellular structures
- end walls become perforated

ignore description of a phloem cell

allow reference to sieve plate formation

allow cell walls form

allow (larger) vacuole forms

ignore reference to change in size / shape

1

[12]

Q2.

(a) guard (cells)

1

(b) any **two** from:

- transpiration (stream) involves xylem **and** translocation involves phloem

  *allow transpiration (stream) involves dead cells **and** translocation involves living cells*

- transpiration (stream) transports water (and minerals / ions) **and** translocation transports (dissolved) sugars

  *allow transpiration (stream) transports water (and minerals / ions) **and** translocation transports (dissolved) sucrose*

  ignore glucose / ions / minerals in translocation

- transpiration (stream) moves substances upwards **and** translocation moves substances upwards and downwards

  *allow transpiration (stream) moves substances unidirectionally **and** translocation moves substances bidirectionally*

  *allow transpiration (stream) does not require energy (to move substances) **and** translocation does (require energy to move substances)*

2

(c) warm with low humidity

1

(d) stomata (almost) close at (mid)night because there is no / less light for photosynthesis

ignore dark for no / less light

1

(closing stomata) reduces / prevents water loss

1

stomata open wide(st) at midday as maximum light intensity for photosynthesis

allow stomata open wider as light intensity increases throughout the morning for photosynthesis

1

(stomata open wide) to take in most / more carbon dioxide for photosynthesis

ignore (stomata open) to take in carbon dioxide unqualified

1

ignore values for time and width

(e) stomata are open wider **and** for more time

1

(so allows plant) to take in more carbon dioxide for photosynthesis

allow (so allows) plant to take in as much carbon dioxide as in normal conditions for photosynthesis

1

allow descriptions of the area of open stomata for width

[10]