Practice Question Set For A-Level
Subject : Biology
Paper-1 Topic: 3 Organism and substance exchange

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Name of the Student:_____
Max. Marks : 23 Marks **Time : 23 Minutes**

Mark Schemes

Q1.

(a) 1. water <u>evaporates / transpires</u> from leaves;
2. reduces water potential in cell / water potential / osmotic gradient across cells *(ignore reference to air space)*;
3. water is drawn out of xylem;
4. creates tension *(accept negative pressure, not reduced pressure)*;
5. cohesive forces between water molecules;
6. water pulled up as a column;

4 max

(b) (i) same surface area of leaf / number of leaves / age / thickness of cuticle;

1

(ii) (environmental conditions) affect rate of transpiration / evaporation;

1

(iii) presence of grease reduces water loss;

1

(c) (i) 1.2 / 1.3g;

1

(ii) more stomata on the lower surface;
(thicker) waxy cuticle on the upper surface;

2

[10]

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Q2.

(a) transmission / reflected / misses chlorophyll / chloroplasts / wrong wavelength;

1

(b) (larger area) to absorb light;
(larger surface area) to absorb carbon dioxide;
short diffusion pathway for gases / oxygen / CO_2;
light able to penetrate to all cells;

2 max

(c) effect;
detail;
effect on photosynthesis;
some effects are less light / light absorbed by water
different wavelength of light
temperature
availability of carbon dioxide
availability of water

(more than one effect award 1 mark only)

3

[6]

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Q3.

(a) (i) CO_2 is produced (in respiration);
forms carbonic acid / hydrogen ions released;
(*lactic acid produced negates both points*)

2

(ii) low pH because high rate of respiration;
cells need more O_2;
more O_2 released / O_2 released faster;

2 max

(b) (i) high altitudes have a low <u>partial pressure</u> of O_2;
high saturation / affinity of Hb with O_2 (at low partial pressure O_2);
so sufficient / enough O_2 supplied to cells / tissues;

2

(ii) difficult to unload / dissociate O_2 (at tissues);

1

[7]

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