DRC BIO ICSE CLASS 10 MOCK TEST SERIES

TOPIC: PLANT PHYSIOLOGY

ANSWER SHEET

GROUP A

Q1. i-F

ii-T

iii-T

iv-F

v-T

vi-F

GROUP B

2 , 3, 2, 3, 4, 4, 1, 4, 4, 4

GROUP C

1. Answer

Column I	Column II
(a) Xylem	(iv) upward flow of water
(b) Phloem	(iii) downward flow of sap
(c) Cell membrane	(i) semi-permeable
(d) Root pressure	(v) guttation
(e) Cell wall	(ii) permeable

2. ***Answer***

Column A	Column B
(a) Hydathodes	(v) Guttation
(b) Stomata	(i) Photosynthesis
(c) Cuticle	(iv) Reduces loss of water
(d) Lenticels	(ii) Respiration

Column A	Column B
(e) Guard cells	(iii) Regulates opening and closing of stomata

3. ***Answer***

Column A	Column B
Chlorophyll	Traps solar energy
Methylated spirit	Bleaches chlorophyll
Potassium hydroxide	Removes/absorbs CO_2
Iodine solution	Tests presence of starch
Water	Produces oxygen

GROUP D

Answer

(a) A plant used for experiments on photosynthesis should initially be placed in the dark for 24 to 48 hours to destarch the leaves. During this period, all the starch will be removed from the leaves and stored in the storage organs. The leaves will not show the presence of starch. So the various experiments on photosynthesis can be carried out effectively.

(b) If a green plant is kept in bright light, it tends to use up all the CO_2 produced during respiration, for photosynthesis. Thus, the release of CO_2 cannot be demonstrated. Hence, it is difficult to demonstrate respiration as these two processes occur simultaneously.

(c) Due to more amount of chlorophyll on the upper surface more light is trapped. The chloroplasts are concentrated in the upper layers of the leaf which helps cells to trap the sunlight quickly. The upper surface is more green and shiny because it has a waxy coating to prevent loss of water due to evaporation.

(d) During the starch test,

1. The leaf is boiled in water to kill the cells.
2. The leaf is boiled in methylated spirit till it becomes pale-white due to the removal of chlorophyll. The leaf now becomes hard and brittle.

(e) Guttation normally occurs during early mornings or late nights when there is least transpiration. The hydrostatic pressure built, forces out the excess water directly from the tips of veins in the leaf.

(f) Due to transpiration, huge quantities of water are released into the atmosphere by vast stretches of forests. Thus, transpiration increases the moisture in the atmosphere and brings more rain.

GROUP E

(a) Difference between stomata and lenticels

Stomata	Lenticels
They are minute openings in the epidermal layer of leaves.	They are minute openings on the surface of old woody stems.
Maximum transpiration occurs through stomata.	Lesser transpiration occurs through lenticels.

(b) Difference between Guttation and Bleeding

Guttation	Bleeding
It occurs from the edges of leaves by hydathodes in uninjured plants.	It occurs from any cut or injured part of a plant.
The exudate is mainly water with some dissolved mineral salts.	The exudate is mainly plant sap and sugars.
It occurs during early mornings or late nights.	It occurs at the time of injury.
It happens in certain plants like Banana, Nasturtium, Strawberry.	It occurs in all plants that have been cut or injured.

(c) Difference between Transpiration and Evaporation

Transpiration	Evaporation
It is the loss of water in the form of vapour from the aerial parts of the plant.	It is the loss of water from the surface of water bodies in the form of vapour.
It is a slow process.	It is comparatively a faster process.

(d) Differences between light reaction and dark reaction (end products) —

Light Reaction	Dark Reaction
THYLAKOID OR GRANUM ATP and NADPH are the end products of this reaction.	STROMA Glucose is the main product formed during dark reaction.
The water molecule split into hydrogen and oxygen.	No splitting of water.

(e)Osmosis — Osmosis is the movement of water molecules from their region of higher concentration (dilute solution or with a lower solute concentration) to their region of lower concentration (concentrated solution or with a higher solute concentration) through a semi permeable membrane.

Imbibition — Imbibition is a phenomenon by which the living or dead plant cells absorb water by surface attraction. Its the passive absorption of water by substances such as cellulose (in cell wall) and starch.

GROUP F

(a) Name of the apparatus is **Ganong's potometer**.

(b) Ganong's potometer is used to measure the rate of water intake by a plant.

(c) The air bubble which was introduced into the horizontal graduated capillary tube moves along as transpiration proceeds. As the water is lost from the twig, a suction force is set up which pulls the water from the beaker and the bubble in the capillary tube moves along.

(d) Reservoir is used to release the water into the capillary tube by opening the stop cock.

(e) The movement of air bubble is affected as follows:

1. If the apparatus is kept in the dark, there will be no transpiration as the stomata would be closed. As a result, there would be no movement of the air bubble and it would remain stable.
2. During the day, the stomata are open to facilitate the inward diffusion of CO_2 for photosynthesis. At night they are closed. Therefore, more transpiration occurs during the day. As a result, the movement of the air bubble would be larger since there would be more loss of water due to transpiration.
3. If the apparatus is kept in front of a fan, the rate of transpiration will be more. As a result, the movement of the air

bubble would be larger since there would be more loss of water due to transpiration as the velocity of wind/air increases