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NEET TRANSPORT IN PLANTS — PYQS

Max. Marks: 140 **Questions:** 35

Section A (MCQ) — 35 questions

Q.1 Movement and accumulation of ions across a membrane against their concentration gradient can be explained by [NEET (UG) 2023]

(1) Facilitated Diffusion
(2) Passive Transport
(3) Active Transport
(4) Osmosis

Solution

Q.2 Given below are two statements :
Statement-I: The forces generated by transpiration can lift a xylem-sized column of water over 130 meters height.
Statement-II: Transpiration cools leaf surfaces, sometimes 10 to 15 degrees, by evaporative cooling.

In the light of the above statements, choose the most appropriate answer from the options given below : [NEET (UG) 2023]

(1) Both Statement-I and Statement-II are incorrect
(2) Statement-I is correct but Statement-II is incorrect
(3) Statement-I is incorrect but Statement-II is correct
(4) Both Statement-I and Statement-II are correct

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Q.3 Match **List I** with **List II** : [NEET (UG) 2023]

List I		List II	
A.	Cohesion	I.	More attraction in liquid phase
B.	Adhesion	II.	Mutual attraction among water molecules
C.	Surface tension	III.	Water loss in liquid phase
D.	Guttation	IV.	Attraction towards polar surfaces

(1) A-IV, B-III, C-II, D-I
(2) A-III, B-I, C-IV, D-II
(3) A-II, B-I, C-IV, D-III
(4) A-II, B-IV, C-I, D-III

Solution

Q.4 "Girdling Experiment" was performed by Plant Physiologists to identify the plant tissue through which: [NEET (UG) 2022]

(1) water is transported
(2) food is transported
(3) for both water and food transportation
(4) osmosis is observed

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Q.5 Which of the following is not observed during apoplastic pathway? [NEET (UG) 2022]

(1) Movement of water occurs through intercellular spaces and wall of the cells
(2) The movement does not involve crossing of cell membrane
(3) The movement is aided by cytoplasmic streaming
(4) Apoplast is continuous and does not provide any barrier to water movement

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Q.6 Addition of more solutes in a given solution will: [NEET (UG) 2022]

(1) raise its water potential
(2) lower its water potential
(3) make its water potential zero
(4) not affect the water potential at all

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Q.7 When a carrier protein facilitates the movement of two molecules across the membrane in same direction, it is called [NEET (UG) 2022 (Phase 2)]

(1) Symport (2) Uniport
(3) Transport (4) Antiport

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Q.8 The ascent of xylem sap in plants is mainly accomplished by the [NEET (UG) 2022 (Phase 2)]

(1) root pressure
(2) size of the stomatal aperture
(3) distribution of stomata on the upper and lower epidermis

(4) cohesion and adhesion between water molecules

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Q.9 Match **List-I** with **List-II** :

List-I		List-II	
a.	Cohesion	i.	More attraction in liquid phase
b.	Adhesion	ii.	Mutual attraction among water molecules
c.	Surface tension	iii.	Water loss in liquid phase
d.	Guttation	iv.	Attraction towards polar surfaces

Choose the correct answer from the options given below. [NEET (UG) 2021]

(1) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)

(2) (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)

(3) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

(4) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)

Solution

Q.10 The process responsible for facilitating loss of water in liquid form from the tip of grass blades at night and in early morning is [NEET (UG) 2020]

(1) Transpiration (2) Root pressure

(3) Imbibition (4) Plasmolysis

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Q.11 What is the direction of movement of sugars in phloem? [NEET (UG) 2019]

(1) Downward

(2) Bi-directional

(3) Non-multidirectional

(4) Upward

Solution

Q.12 Xylem translocates: [NEET (UG) 2019]

(1) Water, mineral salts and some organic nitrogen only

(2) Water, mineral salts, some organic nitrogen and hormones

(3) Water only

(4) Water and mineral salts only

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Q.13 Stomatal movement is not affected by [NEET 2018]

(1) O_2 concentration (2) temperature

(3) CO_2 concentration (4) light

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Q.14 The water potential of pure water is [NEET 2017]

(1) less than zero

(2) more than zero but less than one

(3) more than one

(4) zero

Solution

Q.15 Which of the following facilitates opening of stomatal aperture? [NEET 2017]

(1) Decrease in turgidity of guard cells

(2) Radial orientation of cellulose microfibrils in the cell wall of guard cells

(3) Longitudinal orientation of cellulose microfibrils in the cell wall of guard cells

(4) Contraction of outer wall of guard cells

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Q.16 Water vapour comes out from the plant leaf through the stomatal opening. Through the same stomatal opening carbon dioxide diffuses into the plant during photosynthesis. Reason out the above statements using one of following options. [NEET 2016 (Phase 1)]

(1) The above processes happen only during night time.

(2) One process occurs during day time and the other at night.

(3) Both processes cannot happen simultaneously.

(4) Both processes can happen together because the diffusion coefficient of water and CO_2 is different.

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Q.17 A few drops of sap were collected by cutting across a plant stem by a suitable method. The sap was tested chemically. Which one of the following test results indicates that it is phloem sap? [NEET 2016 (Phase 2)]

(1) Acidic

(2) Alkaline

(3) Low refractive index

(4) Absence of sugar

Solution

Q.18 Root pressure develops due to [AIPMT 2015]

(1) passive absorption

(2) active absorption

(3) increase in transpiration

(4) low osmotic potential in soil.

Solution

Q.19 A column of water within xylem vessels of tall trees does not break under its weight because of [AIPMT 2015]

(1) lignification of xylem vessels
(2) positive root pressure
(3) dissolved sugars in water
(4) tensile strength of water.

Solution

Q.20 In a ring girdled plant [AIPMT 2015 (Cancelled)]

(1) the shoot and root die together
(2) neither root nor shoot will die
(3) the shoot dies first
(4) the root dies first.

Solution

Q.21 Transpiration and root pressure cause water to rise in plants by [AIPMT 2015 (Cancelled)]

(1) pushing it upward
(2) pushing and pulling it, respectively
(3) pulling it upward
(4) pulling and pushing it, respectively.

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Q.22 Which one gives the most valid and recent explanation for stomatal movement? [AIPMT 2015 (Cancelled)]

(1) Starch hydrolysis
(2) Guard cell photosynthesis
(3) Transpiration
(4) Potassium influx and efflux

Solution

Q.23 Which of the following criteria does not pertain to facilitated transport? [NEET 2013]

(1) Transport saturation
(2) Uphill transport
(3) Requirement of special membrane proteins
(4) High selectivity

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Q.24 Function of companion cells is : [AIPMT 2011 (Mains)]

(1) Providing water to phloem
(2) Loading of sucrose into sieve elements
(3) Loading of sucrose into sieve elements by passive transport
(4) Providing energy to sieve elements for active transport

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Q.25 Guttation is the result of [AIPMT 2011 (Mains)]

(1) diffusion (2) transpiration
(3) osmosis (4) root pressure

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Q.26 Guard cells help in [AIPMT 2009]

(1) transpiration
(2) guttation
(3) fighting against infection
(4) protection against grazing

Solution

Q.27 The rupture and fractionation do not usually occur in the water column in vessel/tracheids during the ascent of sap because of [AIPMT 2008]

(1) weak gravitational pull
(2) transpiration pull
(3) lignified thick walls
(4) cohesion and adhesion

Solution

Q.28 Two cells A and B are contiguous. Cell A has osmotic pressure 10 atm, turgor pressure 7 atm and diffusion pressure deficit 3 atm. Cell B has osmotic pressure 8 atm, turgor pressure 3 atm and diffusion pressure deficit 5 atm. The result will be [AIPMT 2007]

(1) no movement of water
(2) equilibrium between the two
(3) movement of water from cell A to B
(4) movement of water from cell B to A

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Q.29 The translocation of organic solutes in sieve tube members is supported by [AIPMT 2006]

(1) cytoplasmic streaming
(2) root pressure and transpiration pull
(3) P-proteins
(4) mass flow involving a carrier and ATP.

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Q.30 Potometer works on the principle of [AIPMT 2005]

(1) osmotic pressure
(2) amount of water absorbed equals the amount transpired
(3) root pressure
(4) potential difference between the tip of the tube and that of the plant.

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Q.31 Stomata of a plant open due to [AIPMT 2003]

(1) influx of potassium ions
(2) efflux of potassium ions
(3) influx of hydrogen ions
(4) influx of calcium ions

Solution

Q.32 Opening and closing of stomata is due to the [AIPMT 2002]

(1) hormonal change in guard cells
(2) change in turgor pressure of guard cells
(3) gaseous exchange
(4) respiration.

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Q.33 Glycolate induces opening of stomata in [AIPMT 2001]

(1) presence of oxygen (2) low CO_2 concentration
(3) high CO_2 (4) CO_2 absent

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Q.34 Loading of phloem is related to [AIPMT 2001]

(1) increase of sugar in phloem cell
(2) elongation of phloem cell
(3) separation of phloem parenchyma
(4) strengthening of phloem fiber

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Q.35 The movement of ions against the concentration gradient will be [AIPMT 2000]

(1) active transport (2) osmosis
(3) diffusion (4) all of the above

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ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	3	4	4	2	3	2	1	4	2	2	2
Ques.	12	13	14	15	16	17	18	19	20	21	22
Ans.	2	1	4	2	4	2	2	4	4	4	4
Ques.	23	24	25	26	27	28	29	30	31	32	33
Ans.	2	2	4	1	4	3	3	2	1	2	2
Ques.	34	35									
Ans.	1	1									

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