

QAD Series

Plant Physiology

- Diffusion is movement of
 - solvent from its higher concentration
 - solvents from its lower concentration
 - solutes from its higher concentration
 - solutes from its lower concentration
- Diffusion Pressure Deficit (DPD) depends on
 - solvent concentration
 - solutes concentration
 - diffusion pressure
 - types of membrane
- Osmosis is movement of
 - solvent from its higher concentration
 - solvents from its lower concentration
 - solutes from its higher concentration
 - solutes from its lower concentration
- Cell membranes are usually
 - impermeable
 - permeable
 - semipermeable
 - selectively permeable
- WP is a direct measurement of
 - Soil plant atmosphere continuum
 - Total soil moisture stress
 - Humus content of soil
 - Active absorption by roots
- Maximum imbibition of water is shown by
 - Lignin
 - Starch
 - Agar
 - Proteins
- Water potential and suction pressure of which one is always zero?
 - Isotonic solution
 - Pure water
 - Cytosol
 - protoplasm
- Evidences in support of active water absorption except
 - Root pressure
 - Bleeding
 - Guttation
 - Transpiration pull
- One of the following shows scotoactive stomata?
 - Barley
 - Bean
 - Opuntia
 - Equisetum
- Closure of stomata occurs when
 - pH of guard cells is low
 - TP of guard cells in high
 - Water enter into guard cells
 - ABA move out of guard cells
- Suction pressure is
 - OP - WP
 - OP × WP
 - OP + WP
 - WP - OP
- Zinc is required for:
 - Stomatal opening
 - Stomatal closing
 - Oxidation of carbohydrates
 - Biosynthesis of IAA
- Guttation occurs when
 - soil is moist
 - air is dry
 - air is wet
 - more than one is correct
- Which one of the following is not advantage of transpiration?
 - Ascent of sap
 - Cooling effect
 - Distribution of mineral salts
 - Translocation of hormones
- Which is possible for a fully turgid cell?
 - D.P.D = 10 atm, O.P. = 15 atm, T.P. = 5 atm
 - D.P.D = 0.2 atm, O.P. = 0.7 atm, T.P. = 0.5 atm
 - D.P.D = 0.0 atm, O.P. = 15 atm, T.P. = 15 atm
 - D.P.D. = 5 atm, O.P. = 12 atm, T.P. = 7 atm
- The soil water which is available to plants is
 - Capillary water
 - Hygroscopic water
 - Combined water
 - Gravitational water
- In *Nepenthes*, pitcher itself is the modification of a
 - Leaf base
 - Petiole
 - Leaf apex
 - Leaf lamina
- Plasmolysis in plant cells occurs when they are placed in:
 - isotonic solution
 - hypertonic solution
 - hypotonic
 - distilled water
- K⁺ exchange theory is concerned with:
 - Photosynthesis
 - Opening and closing of stomata
 - Transpiration
 - Guttation
- Rooting hormone is:
 - IAA
 - Ethylene
 - GA₃
 - Zeatin
- Response to touch or friction is known as
 - nyctinasty
 - thigmotropism
 - phototropism
 - nudation
- When a cell is kept in hypertonic sugar solution, it undergoes
 - Diffusion
 - Imbibition
 - Plasmolysis
 - Osmosis
- Rubber does not swell in water due to absence of
 - Diffusion
 - Imbibition
 - Plasmolysis
 - Osmosis
- Absorption of water by a root is increased by:
 - increase in rate of transpiration
 - increase in rate of photosynthesis
 - decrease in transpiration
 - decrease in salt uptake
- Best example for selectively permeable membrane is
 - plasmalemma
 - cell wall
 - mitochondrial membrane
 - chloroplast membrane
- Growth movement in response to light stimulus is called
 - photoperiodism
 - phototropism
 - photolysis
 - photosynthesis
- Which of the following is not naturally occurring plant hormone?
 - 2, 4 -D
 - GA
 - Gibberellin
 - IAA
- Hormone involved in phototropism is
 - IAA
 - Gibberellin
 - Kinetin
 - 2, 4 -D
- Hormone responsible for vernalization is
 - Florigen
 - Colchicine
 - Abscissic
 - Vernalin
- Cytokinins were discovered by
 - Thimman
 - Went
 - Skoog and Miller
 - Yabuta and Hayashi
- The best soil for healthy growth of plants is
 - loam
 - sand
 - clay
 - mud
- Which of the following forms a component of Apoplast?
 - Cell wall
 - Plasma membrane
 - Nucleus
 - Vacuole
- Which of the following acts as an Osmometer?
 - Xylem vessel
 - fibre
 - Root hair
 - Sclerids
- In a cell, Turgor pressure is always equal to:
 - Osmotic pressure
 - DPD
 - Suction pressure
 - Wall pressure
- In Hypertonic solution, a cell's water potential
 - increases
 - decreases
 - first increase then decrease
 - does not change
- Root pressure in a plant is measured by
 - Potometer
 - Manometer
 - Photometer
 - Barometer
- Pulsation Theory was proposed by:
 - J.C. Bose
 - Stephen Hales
 - Dixon & Jolly
 - Godlewski
- When a plant is girdled the
 - root dies first
 - shoot dies first
 - root and shoot will die at same time
 - neither root nor shoot will die
- Stomata control the exchange of
 - water vapour
 - water vapour and CO₂
 - CO₂ only
 - other gases only
- Guard cells differ from epidermal cells in having:
 - Mitochondria
 - Vacuole
 - Cell wall
 - Chloroplast
- Which of the following plants does not show any transpiration?
 - Nymphaea*
 - Hydrilla*
 - Typha*
 - Hibiscus*
- Different step in respiration are controlled by:
 - auxins
 - sugars
 - enzymes
 - coenzymes
- Hormone responsible for flowering is:
 - Florigen
 - Colchicine
 - Abscissin
 - Vernalin
- Movement in the leaf of *Mimosa* plant is:
 - Nyctinasty
 - Photonasty
 - Epinasty
 - Seismonasty
- IAA is synthesized from Amino acid
 - Phenyl alanine
 - Tryptophan
 - Glycine
 - Leucine
- Which one of the following is not affected by light?
 - Seed germination
 - Flowering
 - Fertilization
 - Fruit formation
- Which of the following inhibits germination?
 - Gibberellic acid
 - Ascorbic acid
 - Zeatin
 - ABA
- Photoblastic seed.....for germination.
 - O₂
 - light
 - temperature
 - water
- Fruit ripening is done by gaseous hormone:
 - Ethylene
 - GA
 - Auxin
 - ABA
- Hormone of flowering is long day plants
 - Ethylene
 - GA
 - Auxin
 - ABA
- Which of the following hormone is isolated and crystallized from milky endosperm of corn by Letham?
 - Kinetin
 - Zeatin
 - Gibberellin
 - Dormin

Respiration and Photosynthesis

1. The equation of respiration is

- a) $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + 686 \text{ kcal}$
 b) $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 12H_2O + \text{energy}$
 c) $6H_2O + 6CO_2 \rightarrow 6O_2 + C_6H_{12}O_6 + 686 \text{ kcal}$
 d) $6H_2O + 6CO_2 \rightarrow 6O_2 + C_6H_{12}O_6 + \text{Energy}$

2. Respiration is

- a) oxidation b) reduction c) metabolic d) anabolism

2. A carbohydrate that does not require further digestion in cell is

- a) Glucose b) Starch c) Sucrose d) Cellulose

3. In addition to ATP, what are the end products of glycolysis is

- a) CO_2 and H_2O b) CO_2 and pyruvate
 c) NAD and pyruvate d) H_2O , FADH₂ and citrate

4. Starting with one molecule of isocitrate and ending with fumarate, what is the maximum number of ATP molecules that could be made through substrate-level phosphorylation?

- a) 1 b) 2 c) 11 d) 12

5. Starting with one molecule of citrate and ending with oxaloacetate, how many ATP molecules can be formed from oxidative phosphorylation?

- a) 3 b) 4 c) 11 d) 12

6. Where do the catabolic products of fatty acid breakdown enter into the citric acid cycle?

- a) Pyruvate b) Acetyl CoA c) ketoglutarate d) Succinyl CoA

7. Fermentation takes place in the

- a) Cytosol b) cytozol
 c) cytoplasmic membrane d) mitochondrial matrix

8. End product of fermentation is

- a) lactic acid b) pyruvic acid c) acetic acid d) ethyl alcohol

9. Muscle cells in oxygen deprivation convert pyruvate to and in this step gain

- a) Lactate, ATP b) Alcohol, CO_2
 c) ATP, NADH₂ d) Lactate, NAD⁺

10. Substrate for photorespiration is:

- a) Serine b) Glycolate c) Indole acetic acid d) Malic acid

11. Which of the following is the main limiting factor for photosynthesis?

- a) Light b) temperature c) CO_2 d) H_2O

12. Which of following is responsible for quantum conversion?

- a) ATP b) Ribosomes c) Mitochondria d) Chlorophyll

13. Why is starch molecule suitable as storage product?

- a) Osmotically inactive b) Easily digested
 c) Forms colloids with water d) Forms globules

14. Dark reaction of plants is not associated with

- a) Cyclic phosphorylation b) Non cyclic phosphorylation
 c) Oxidative phosphorylation d) Photorespiration

15. The link between glycolysis and Krebs cycle is

- a) Citric acid b) acetyl CoA
 c) Succinic acid d) Fumaric acid

16. The reaction of Krebs cycle takes place

- a) in cytoplasm b) in ER
 c) in matrix of mitochondria d) on surface of mitochondria

17. Among them which process does not produce ATP?

- a) EMP pathway b) Oxidative phosphorylation
 c) Oxidative decarboxylation d) Krebs cycle

18. Oxidative phosphorylation and photophosphorylation both require:

- a) Oxygen b) CO_2 c) H_2O d) Cytochromes

19. In TCA cycle, FAD is reduced during conversion of:

- a) Malate to OAA b) Fumarate to Malate
 c) Succinate to Fumarate d) Succinyl CoA to Succinate

20. In TCA cycle, single ATP is produced in between

- a) Malate to OAA b) Fumarate to Malate
 c) Succinate to Fumarate d) Succinyl CoA to Succinic acid

21. Membrane bounded enzyme of Krebs cycle is

- a) citrate synthetase b) succinate thiokinase
 c) oxalosuccinate dehydrogenase d) succinate dehydrogenase

22. The importance of Krebs cycle is production of

- a) Amino acids b) CO_2
 c) NADH₂ and FADH₂ d) H_2O

23. In TCA cycle, net gain ATP through substrate level phosphorylation is

- a) 12 b) 24 c) 30 d) 2

24. Common phase between Aerobic and Anaerobic respiration is

- a) TCA cycle b) Oxidative phosphorylation
 c) Glycolysis d) Krebs cycle

25. Cellular respiration in the absence of molecular oxygen is

- a) photorespiration b) glycolysis
 c) Krebs cycle d) citric acid cycle

26. The initiation of citric acid cycle is with

- a) Succinic acid b) Malic acid c) Acetyl CoA d) Fumaric acid

27. In Glycolysis, number of ATP gained is

- a) 8 b) 6 c) 3 d) 4

28. During ATP synthesis, electrons pass through

- a) water b) cytochromes c) CO_2 d) O_2

29. Value of RQ in succulents is

- a) 1 b) >1 c) <1 d) 0

30. RQ value of aleurone layer of maize grain is

- a) 1 b) >1 c) <1 d) 0

31. During respiration the source of oxygen in CO_2 is

- a) oxygen b) water c) glucose d) atmosphere

32. Photosynthesis is

- a) oxidation of H_2O b) reduction of H_2O
 c) reduction of CO_2 d) photolysis of water

33. Light energy is converted into chemical energy during

- a) assimilation b) photolysis of water
 c) fermentation d) photorespiration

34. Photophosphorylation was discovered by

- a) Arnon b) Calvin c) Blackman d) Warburg

35. The first compound that accepts CO_2 during dark phase is

- a) NADP b) Ferredoxin c) RUBP d) cytochrome

36. Acceptor of CO_2 in C_4 plants is

- a) PEP b) OAA c) PGA d) PGAL

37. Calvin cycle occurs in

- a) chloroplast b) cytoplasm c) mitochondria d) glyoxisomes

38. Presence of 2 pigment system (PS I and PS II) in photosynthesis was discovered by

- a) Arnon b) Warburg c) Engelmann d) Emerson

39. Rate of photosynthesis is independent of

- a) light quality b) light intensity c) duration of light d) temp.

40. Photosynthesis is most active in:

- a) Red light b) Blue light c) White light d) Green light

41. Molecular formula of chlorophyll -b is:

- a) $C_{55}H_{72}O_6NaMg$ b) $C_{55}H_{70}O_6NaMg$
 c) $C_{50}H_{72}O_6NaMg$ d) $C_{50}H_{70}O_6NaMg$

42. Experimental organism used by Calvin is:

- a) *Chlorella* b) *Neurospora* c) *Acetabularia* d) *Rhizopus*

43. First stable product of photosynthesis in C_4 plants is

- a) OAA b) PEP c) PGA d) PGAL

44. Which is not limiting factor of photosynthesis?

- a) CO_2 b) O_2 c) Light d) Chloroplast

45. The photosynthesis unit is:

- a) photon b) photoson c) quantasome d) chlorophyll

46. Which pigment is absent in chloroplast?

- a) Chlorophyll b) Carotene c) Anthocyanin d) Xanthophyll

47. Which is a C_4 plant?

- a) Wheat b) Rice c) Pea d) Maize

48. Scientist who discovered role of sunlight in photosynthesis is:

- a) Ingenhousz b) Priestly c) Robert Meyer d) Sachs

49. Carbon fixation in C_4 pathway occurs in chloroplasts of:

- a) Palisade tissue b) Spongy mesophyll
 c) Bundle sheath d) Guard cells

50. Sugarcane show high efficiency of CO_2 fixation because of:

- a) Calvin cycle b) Hatch - Slack cycle
 c) EMP pathway d) TCA cycle

51. Phorphyrin head contain element giving green colour in chlorophyll

- a) N b) H_2 c) O_2 d) Mg

52. Which is considered as the first and final product of photosynthesis?

- a) RUBP b) PGAL c) PGA d) Sugar

53. Entire oxygen of the earth's atmosphere is derived from:

- a) algae b) BGA c) moss d) angiosperms

54. Which of the following is needed for both respiration and photosynthesis?

- a) Oxygen b) Chlorophyll c) Light d) Cytochrome

56. Ultimate acceptor of electron and proton in aerobic respiration is

- a) Oxygen b) chlorophyll c) water d) cytochrome