

PLANT RESPIRATION

1. Why do fruit juices turn bitter if kept in an open place for some time?
 - (A) Juices have something inside them which makes it bitter.
 - (B) It is due to fermentation brought about by yeast cells.
 - (C) It is due to the activity of fungi present in the atmosphere.
 - (D) All the above
2. Lowest rate of respiration will be in
 - (A) Collenchyma
 - (B) Leaf
 - (C) Dry seeds
 - (D) Germinated seeds
3. Slow respiring plants or plant tissues are
 - (A) Promeristems
 - (B) Cambium
 - (C) Leaf primordia and young plant
 - (D) Adult plants and matured tissues
4. Roots can take oxygen when it is in
 - (A) Gaseous form
 - (B) Solution with water
 - (C) Chemical combination with other compounds
 - (D) Liquid form

5. What is active glucose?
 (A) FAD-glucose (B) NAD-glucose
 (C) Phosphoglucose (D) Glycerophosphate
6. Robinson's ester is
 (A) Glucose 1, 6 diphosphate (B) Glucose-6-phosphate
 (C) Fructose-6-phosphate (D) None of the above
7. Which of the following is directly affected by deficiency of Fe
 (A) Glycolysis (B) Calvin cycle
 (C) DPD of cell
 (D) Oxidative photophosphorylation
8. Fruit keep better in refrigeration, this is due to
 (A) Non-availability of O₂ (B) Absence of moisture
 (C) Accumulation of O₂ (D) Inactivation of respiration
9. The organism in which Kreb's cycle does not occur in mitochondria is
 (A) Yeast (B) E. coli
 (C) Ulothrix (D) Mould
10. A characteristic feature of ripening of some fruits (like banana) is a sudden increase in respiration which is known as
 (A) Climactic (B) Anthesis
 (C) Climatic (D) Photorespiration

11. R.Q. is highest when respiratory substance is
(A) Fat (B) Maleic acid
(C) Glucose (D) Protein
12. An indispensable role in energy metabolism is played by
(A) Sodium (B) Phosphorus
(C) Calcium (D) Potassium
13. Fermentation is conducted by
(A) All fungi (B) All bacteria
(C) Some fungi and some bacteria
(D) All micro-organisms
14. Anaerobic respiration is also known as
(A) Intramolecular respiration
(B) Intermolecular respiration
(C) Extramolecular respiration
(D) Molecular respiration
15. Vant Hoff's law states that
(A) The respiration rate increases two or three times for every rise of 5° C.
(B) The respiration rate decreases two or three times for every rise of 10° C.
(C) The respiration rate does not increase or decrease with change in temperature.
(D) The respiration rate increases two or three times for every rise of 10° C.

16. How many ATP will be produced during the production of 1 molecule of acetyl CoA from 1 molecule of pyruvic acid

- (A) 3 ATP
- (B) 5 ATP
- (C) 8 ATP
- (D) 38 ATP

17. High fatty acids are breaking by

- (A) β -oxidation
- (B) α -oxidation
- (C) Glycolysis
- (D) All of these

18. Arachidonic acid is

- (A) Non-essential fatty acid
- (B) Essential fatty acid
- (C) Polyunsaturated fatty acid
- (D) Both (B) and (C)

19. Each molecule of NADH₂ release how many number of ATP molecules

- (A) 3
- (B) 2
- (C) 4
- (D) 5

20. Photorespiration is favoured by

- (A) Low light and high O₂
- (B) Low O₂ and high CO₂
- (C) Low temperature and high O₂
- (D) High O₂ and low CO₂

21. Which of the following is required, both in the process of respiration as well as photosynthesis?

- (A) Organic fuel
- (B) Green cells
- (C) Cytochrome

(D) Energy from carbon bonds

22. As a result of glycolysis

(A) CO₂ is liberated

(B) O₂ is absorbed

(C) Pyruvic acid is produced

(D) Acetyl CoA is formed

23. The net gain of ATP molecules during glycolysis is

(A) 2

(B) 4

(C) 6

(D) 10

24. Krebs' cycle starts with the formation of a 6 carbon compound by reaction between

(A) Malic acid and acetyl coenzyme A

(B) Succinic acid and pyruvic acid

(C) Fumaric acid and pyruvic

(D) Oxaloacetic acid and acetyl coenzyme A

25. Cytochromes in plant cells function mainly as

(A) Oxygen acceptor

(B) CO₂ acceptor

(C) Electron acceptor

(D) H₂O acceptor

26. In glycolysis high energy reduced compound formed is

(A) NADH₂

(B) NADPH₂

(C) ADP

(D) H-atom

27. Wounding of plant tissues will show

(A) Temporary increase in respiration

(B) Decreased rate of respiration

(C) Permanent increase in respiration

(D) No respiration

28. The role of FAD in respiration is
- (A) To oxidize organic food such as glucose
 - (B) To help in Krebs' cycle
 - (C) Accept H^+ from NADH or from succinic acid
 - (D) To accept the electrons
29. Which of the following reactions establish a link between glycolysis and Krebs' cycle?
- (A) Photophosphorylation
 - (B) Phosphorylation of glucose
 - (C) Acetylation
 - (D) Photorespiration
30. The amount of energy released during the hydrolysis of a high-energy bond of ATP is
- (A) 73 kcal/mol
 - (B) 0.73 kcal/mol
 - (C) 3.4 kcal/mol
 - (D) 8.9 kcal/mol
31. Evolution of CO_2 is more than the intake of O_2 when
- (A) Glucose is respired
 - (B) Sucrose is respired
 - (C) Organic acids are respired
 - (D) Fats are respired
32. The characteristic feature of ripening of some fruits (like banana) is a sudden increase in respiration which is known as
- (A) Climacteric
 - (B) Anthesis
 - (C) Climatic
 - (D) Photorespiration
33. In Krebs' cycle which one of the following enzymes make use of FAD
- (A) Malic dehydrogenase
 - (B) Succinic dehydrogenase

- (C) Isocitric dehydrogenase
- (D) α -ketoglutaric dehydrogenase

34. R.Q of sprouting potato tubers will be
(A) > 1 (B) 0 (C) < 1 (D) 1
35. Two enzymes common to EMP pathway and C3 cycle are
(A) Aldolase and triose phosphate isomerase
(B) Aldolase and enolase
(C) Cytochrome oxidase and enolase
(D) Phosphoglyceromutase and triose phosphate isomerase
36. Difference between photophosphorylation (PP) and oxidative photophosphorylation (OP) is
(A) In PP synthesis of ATP in light while in OP it is of ADP.
(B) In PP, O_2 is evolved while in OP, O_2 is used up
(C) PP occur in green leaves while OP cannot occur in green leaves
(D) All of the above
37. Choose the correct statement
(A) Respiration is carried out by only leaf cells
(B) End products of anaerobic respiration is CO_2 and pyruvic acid.
(C) Substrate phosphorylation occurs when succinyl CoA acid changes to succinic acid
(D) Dark respiration in plant occurs only in night.
38. In which step, CO_2 is not released
(A) Glycolysis

- (B) Lactic acid fermentation
- (C) Oxidation of malic acid into OAA
- (D) All of these

39. Which one of the following is responsible for transfer of electrons in electron transport system (E.T.S)

- (A) Fe-S
- (B) Phytochrome
- (C) F₀ particles
- (D) Cytochrome

40. Due to continuous increase in temperature

- (A) The rate of respiration decrease earlier than photosynthesis decreases earlier than photosynthesis.
- (B) Both decreases at the same time.
- (C) The rate of photosynthesis decreases earlier than respiration.
- (D) Both of these do not show any definite series of increase or decrease.

41. The number of glucose molecule required to produce 38 ATP molecules under anaerobic conditions by a yeast cell is

- (A) 38
- (B) 19
- (C) 1
- (D) 2

42. Cyanide kills the plants by

- (A) Reducing water potential
- (B) By increasing transpiration
- (C) By interfering in respiratory and food mechanism
- (D) None of these

43. The cut surface of an apple fruit turn brown when exposed. If cut surface is dipped on ascorbic acid (Vitamin C) browning does not occur. It is because
- (A) Ascorbic acid prevents release of polyphenols
 - (B) Ascorbic acid prevents oxidation of cut surface
 - (C) Ascorbic acid inhibits oxidase enzyme
 - (D) Ascorbic acid overcomes injury
44. The inner membrane of mitochondria is very selective in respect to entering molecule. A molecule that regularly enters in it is
- (A) Pyruvic acid
 - (B) Glucose
 - (C) ATP
 - (D) Oxaloacetic acid
45. R.Q in anaerobic respiration is
- (A) 0.8
 - (B) 0.9
 - (C) 1.0
 - (D) Infinite

ANSWERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
B	C	D	A	C	B	D	D	B	A	B	B	C	A	D	
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
A	A	B	A	D	C	C	A	D	C	A	A	C	C	D	
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	
C	A	B	D	A	B	C	D	D	C	B	C	C	A	D	

SOLUTIONS

2. Quantity of water is low for respiratory activities in dry seeds.
3. Because metabolic activity rates of adult plant and matured tissue are very low.
4. In halophytes, roots can take O₂ in gaseous form through pneumatophores.
8. Respiratory rate is low in refrigeration.
9. Because E. coli is a bacteria and mitochondria are not present in prokaryotes and process of Krebs's cycle takes place on plasma membrane.
10. Some fruits (e.g., banana and apple) show high rates of respiration during their ripening. This rise in respiratory rate is called climacteric.

11. Because maleic acid is an organic acid, which after oxidation produces more CO₂, due to which the value of R.Q. is four.
12. Because phosphorus produces energy coins ATP.
13. Fermentation is anaerobic breakdown of carbohydrates into alcohol, organic acids with the help of microorganisms (fungi, bacteria).
15. The respiration rate increases two or three times for every rise of 10°C called or Vont Hoff's law which is between 2 to 2.5.
16. During acetyl CoA formation by pyruvic acid, only one NADH₂ is formed by which 3 molecules of ATP are formed.
17. Fats hydrolyse in fatty acids and glycerol. Fatty acids after β-oxidation forms to acetyl CoA, and glycerol forms to triose phosphates.