

1. Which type of phosphorylation takes place in photosynthesis
(a) Cyclic (b) Non-cyclic
(c) Both (a) and (b) (d) None of the above
2. Unidirectional flow of electrons in photophosphorylation takes place in
(a) Cyclic (b) Non-cyclic
(c) Pseudocyclic (d) All the above
3. Dark reaction of photosynthesis is called
(a) Aphotic action (b) Black action
(c) Blackman's reaction (d) None of the above
4. In dark reaction, first reaction is the
(a) Carboxylation (b) Decarboxylation
(c) Dehydrogenation (d) Deamidation
5. Which one of the following is the product of dark reaction of photosynthesis
(a) CO₂ (b) ATP
(c) Pyruvic acid (d) Phosphoglyceraldehyde
6. CO₂ joins the photosynthetic pathway during
(a) Light reaction (b) Dark reaction
(c) Photosystem-I (d) Photosystem-II
7. The enzymes of dark reaction in C₄ plants are found in
(a) Bundle sheath chloroplast
(b) Mesophyll chloroplast
(c) Both (a) and (b)
(d) None of the above
8. In cold and foggy areas, the limiting factor is
(a) Temperature (b) Light
(c) Both (a) and (b) (d) None of the above
9. Photosynthesis takes place
(a) Only in sunlight
(b) Only in yellow light
(c) In the visible light obtained from any source
(d) Only in very high intensity of light
10. What is called Warburg's effect on photosynthesis
(a) Low rate of the process due to O₂ supply
(b) Low rate of the process due to CO₂ supply
(c) Both (a) and (b)
(d) None of the above
11. The most effective wavelength of visible light in photosynthesis is in the region of
(a) Violet (b) Green (c) Yellow (d) Red
12. Which one of the following is not a limiting factor for photosynthesis
(a) Oxygen (b) Carbon dioxide
(c) Chlorophyll (d) Light
13. If the rate of translocation of food is slow, what will be the effect on photosynthesis
(a) It will increase (b) It will remain same
(c) Becomes double (d) It will decrease
14. What will be the effect of intermittent light on photosynthesis
(a) It will increase (b) It will decrease
(c) Will not be effected (d) Process will stop

15. What will be the effect when very high intensity of light is supplied to a photosynthesis system

- (a) Process will increase
- (b) Process will decrease
- (c) Process will stop due to solarization
- (d) None of the above

16. Plant factors affecting photosynthesis include

- (a) number, age, size and orientation of leaves, mesophyll cells and chloroplast, internal CO₂ concentration and the amount of chlorophyll
- (b) nature of leaves, size of mesophyll cell and light
- (c) mesophyll cells distribution and temperature
- (d) quantity of chlorophyll, size of leaves and CO₂

17. The internal factors that affect photosynthesis of plant depend on the

- (a) morphological predisposition
- (b) genetic predisposition
- (c) temperature
- (d) environmental predisposition

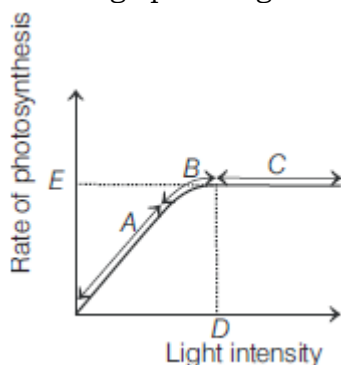
18. Law of limiting factor in relation to photosynthesis is proposed by

- (a) Blackman
- (b) Wiseman
- (c) Calvin
- (d) Emerson

19. Light compensation point is the point where

- (a) gaseous exchange occurs in photosynthesis
- (b) gaseous exchange does not occur in photosynthesis
- (c) gaseous exchange reduces in photosynthesis
- (d) light intensity become appropriate for photosynthesis

20. Study the following graph showing the effect of light intensity on the rate of photosynthesis. Which of the following option regarding this is correct ?



- (a) Light is a limiting factor in the region-A
- (b) Region C represents that rate of photosynthesis is not increased further by increasing light intensity because some other factor becomes limiting
- (c) Point D represents the intensity of light at which some other factor becomes limiting
- (d) All of the above

21. Light is rarely a limiting factor in nature except in

- (a) maize
- (b) sugarcane
- (c) *Sorghum*
- (d) plants in shade or in dense forests

22. Under normal condition, which one of the following is a major limiting factor?

- (a) Light
- (b) CO₂
- (c) Temperature
- (d) Chlorophyll

23. C₃ plants show optimum photosynthesis at

- (a) high O₂ concentration
- (b) high CO₂ concentration
- (c) low O₂ concentration
- (d) high temperature 45°C

24. The plants that respond to higher temperatures and show higher rate of photosynthesis are

- (a) C₄
- (b) C₃
- (c) CAM
- (d) Both (a) and (b)

25. I. Tropical plants have a...A...than plants adapted to temperate climates.

II. Water has a/an...B...effect on the rate of photosynthesis.

III. The optimum temperature for photosynthesis of different plants depends on ...C...

Identify A and B and choose the correct option.

- | A | B | C |
|--------------------------------|----------|---------|
| (a) higher temperature optimum | direct | habitat |
| (b) lower temperature optimum | indirect | water |
| (c) lower temperature optimum | direct | light |
| (d) higher temperature optimum | indirect | habitat |

26. I. Temperature

II. CO₂ concentration

III. Chlorophyll arrangement

IV. Water

Among the given factors, identify the external factors that affect the rate of photosynthesis and choose the correct option accordingly.

- (a) I, II and IV (b) I, II and III
(c) II, III and IV (d) I, III and IV
27. Light is rarely a limiting factor in nature except in -
(a) Maize (b) Sugarcane
(c) Sorghum (d) Plants in shade or in dense forests
28. Under the normal condition which one is the major limiting factor?
(a) CO₂ conc. (b) Light (c) Temperature (d) Chl. Conc.
29. Under water stress, the rate of photosynthesis declines because of -
(a) Stomatal closure leading to decrease in CO₂ supply
(b) Reduced water potential that decreases leaf surface areas for photosynthesis
(c) Both
(d) Turgidity of leaf
30. At higher light intensities the rate of photosynthesis decreases because of -
(a) Other factors becoming limiting
(b) Destruction / photoxidation of chlorophyll
(c) Both a and b
(d) Carotenoids are killed

1. (c)
2. (a)
3. (c)
4. (a)
5. (d)
6. (b)
7. (c)
8. (c)
9. (c)
10. (a)
11. (d)
12. (a)
13. (d)
14. (a)
15. (c)
16. (a)
17. (b)
18. (a) Law of limiting factor was proposed by FF Blackman (1905). It stated that, when a process is condition to its number of separate factors, the rate of the process is limited by the pace of the slowest factor (i.e. the factor present in minimum amount).
19. (b) There is a point in the light intensity, where there is no gaseous exchange in photosynthesis. It is called light compensation point.
20. (d) All options are correct. In the given graph, rate of photosynthesis initially increases with an increase in light intensity (region A) but soon it is levelled off. Thus, initially light intensity was limiting the rate of photosynthesis. However, when light intensity was present in sufficient amounts (region C), rate of photosynthesis did not increases further. This is due to the fact that in region C, some other factor (e.g. CO₂ concentration) becomes the limiting factor. At this region, the rate of photosynthesis could be further enhanced only by the increase in availability of other limiting factor (e.g. CO₂). Point D represents the intensity of light at which some other becomes limiting.
21. (d) In nature, light is rarely a limiting factor except for plants in shade or in dense forests. This because a limiting factor is the one which is least quantity in the plant and we know that sunlight is always in abundance to plants except for plants in shade or in dense forest.
22. (b) Carbon dioxide is usually a limiting factor in photosynthesis under normal conditions particularly, in clear summer days under adequate water supply.
23. (b)

24. (a)
25. (d)
26. (a) The external factors would include the availability of sunlight, temperature, CO₂ concentration and water. As a plant photosynthesises, all these factors will simultaneously affect its rate.
27. (d)
28. (a)
29. (c)
30. (b)