

Energetics Review Packet

Photosynthesis and cellular respiration

A. Energetics

1. Define nutrition:

2. Organisms that synthesize their own food are called _____ or

3. Organisms that must consume other organisms to obtain nutrition are called _____

or _____

4. Why do cells have to convert glucose to ATP?

5. What does ATP stand for? _____

6. Describe the relationship between ADP and ATP

7. What is the initial source of all energy on earth? _____

8. Draw an ATP molecule below and draw an arrow to where the energy is stored

B. Photosynthesis

9. Any organism that can synthesize organic compounds from inorganic compounds is called an

10. Define photosynthesis

11. Photosynthesis takes place in organelles known as _____

12. These organelles contain a green pigment called _____

13. Photosynthesis can be divided into two basic steps.

a. The first step is called _____ or

_____.

b. The second step is called _____ or

_____.

14. Define photolysis:

15. Write an equation that represents photolysis

16. Which wavelengths of light are absorbed by chlorophyll? _____

17. Which wavelength of light is reflected by chlorophyll? _____

18. Where in the chloroplast do the light reactions occur? _____

19. List the three products of the light reactions :

20. Briefly explain where each of the three products from above ends up:

21. Write an equation that represents carbon fixation:

22. Where in the chloroplast does the Calvin cycle occur? _____

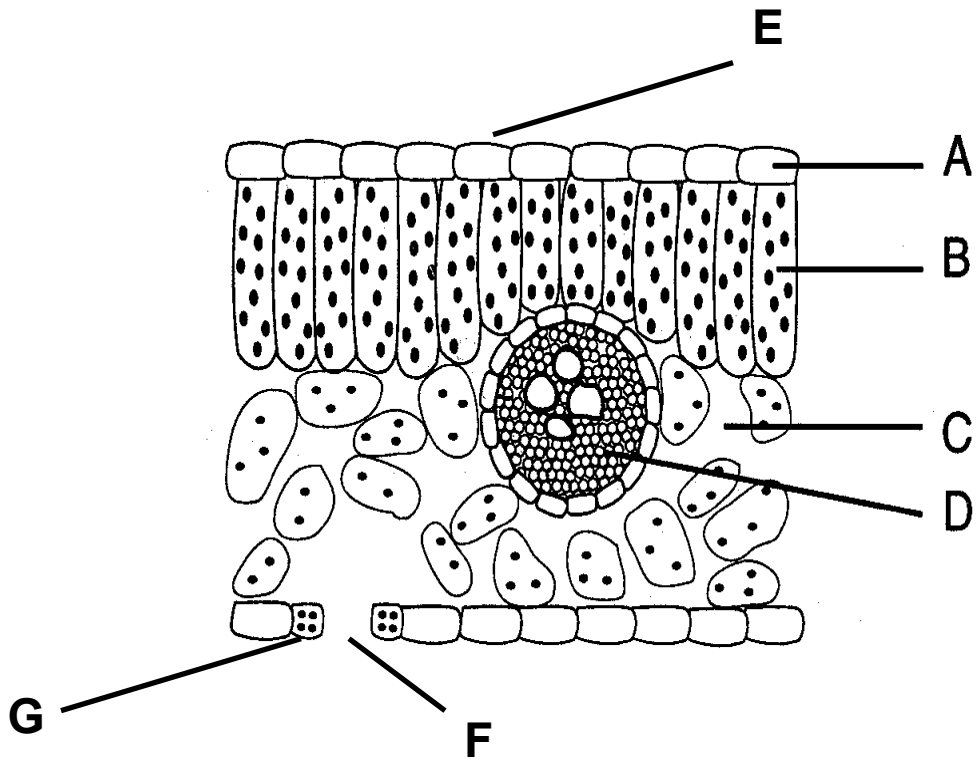
23. What important organic compound is synthesized from PGAL

24. List two reasons why autotrophic organisms are important to animals:

25. Draw and label a diagram of a chloroplast in the space below:

26. Write the overall equation for photosynthesis:

C. Structure of the Leaf



Identify the letter that represents the part of the leaf and describe its function:

_____ Cuticle: _____

_____ Epidermis: _____

_____ Palisades Layer: _____

_____ Spongy Layer: _____

_____ Guard cells: _____

_____ Stomate: _____

_____ Vein: _____

Xylem _____

Phloem _____

D. Cellular Respiration

27. Define cellular respiration

28. the two basic types of cellular respiration are _____ and

29. The energy rich molecule produced from respiration is _____

E. Anaerobic respiration

30. The splitting of glucose molecules is called _____, which takes place in the _____ of the cell.

31. Write the equation that shows this:

32. The process by which pyruvic acid is converted into alcohol and CO₂ is known as

33. Write the overall equation that shows this :

34. The process by which pyruvic acid is converted into lactic acid animal tissue is called

35. Write the overall equation that shows this:

36. What compound is responsible for muscle fatigue _____

37. The net gain of ATP from anaerobic respiration is _____

F. Aerobic respiration

38. Aerobic respiration requires _____

39. Aerobic respiration can be broken down into three steps

a. _____

b. _____

c. _____

40. _____ occurs in the cytoplasm, while the _____ and _____ occur with special enzymes in the mitochondrion.

41. Write the equations for each stage of aerobic respiration

42. The net gain of ATP from aerobic respiration of one glucose is _____

43. Explain the function of oxygen in the electron transport chain

44. Explain why aerobic respiration is more efficient than anaerobic respiration

45. Write the overall equation for aerobic respiration

46. Name two metabolic wastes that result from aerobic respiration

47. Explain the relationship between breathing and cellular respiration

G. Tie together

48. Explain how photosynthesis and cellular respiration work together and are cyclic. You can use words or a diagram, or both.