NUTRITION IN PLANTS & ANIMALS

KCSE QUICK REVISION

Compilation of Possible Questions in Biology Likely to be Examined in KCSE.

A Special Analysis of Prediction Questions that may be Tested in KCSE from this Topic in Form 1.

BIOLOGY

SERIES 1

For Marking Schemes

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NUTRITION IN PLANTS & ANIMALS

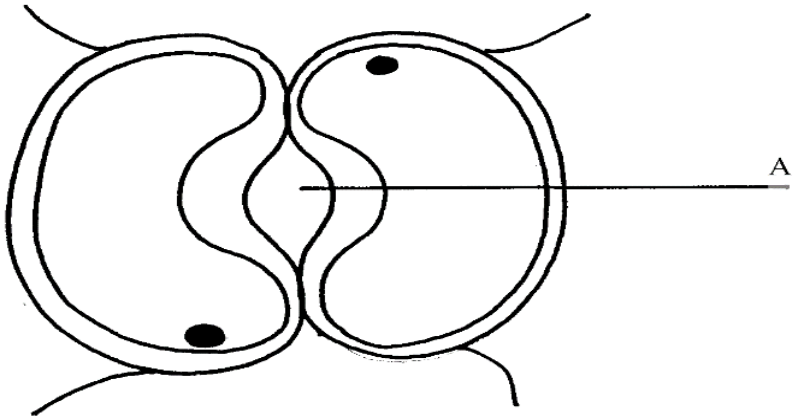
1. The chemical equation below represents a physiological process that takes place in living organisms:

   $C_6H_{12}O_6 + C_6H_{12}O_6 \xrightarrow{\mathbf{R}} C_{12}H_{22}O_{11} + \mathbf{Q}$

   (a) Name the process **R**

   (b) Name the substance **Q**

2. The diagram below shows cells in plants:-



   (a) Identify the cells shown above

   (b) Explain how the cells are adapted to their function

   (c) Explain how accumulation of carbon (IV) Oxide in the cells above would lead to the closure of structure **A**

3. **(a)** A leaf of a potted plant kept in darkness for 48hours was smeared with Vaseline jelly then exposed to sunlight for 8hours. Explain why the test for starch in the leaf was negative

   (b) Name **two** other processes that were interfered with in the plant

4. List **two** functional differences between plants and animals.
5. Explain how the guard cells are adapted to perform their function.
6. State the function of iron in the human body
7. What are the **two** functions of bile salts during the process of digestion?
8. State **three** adaptations of aquatic plants to photosynthesis
9. **A** biological washing detergent contains enzymes which remove stains like mucus and oils from clothes which are soaked in water with the detergent:-

   (a) Name **two** groups of enzymes that are present in detergent

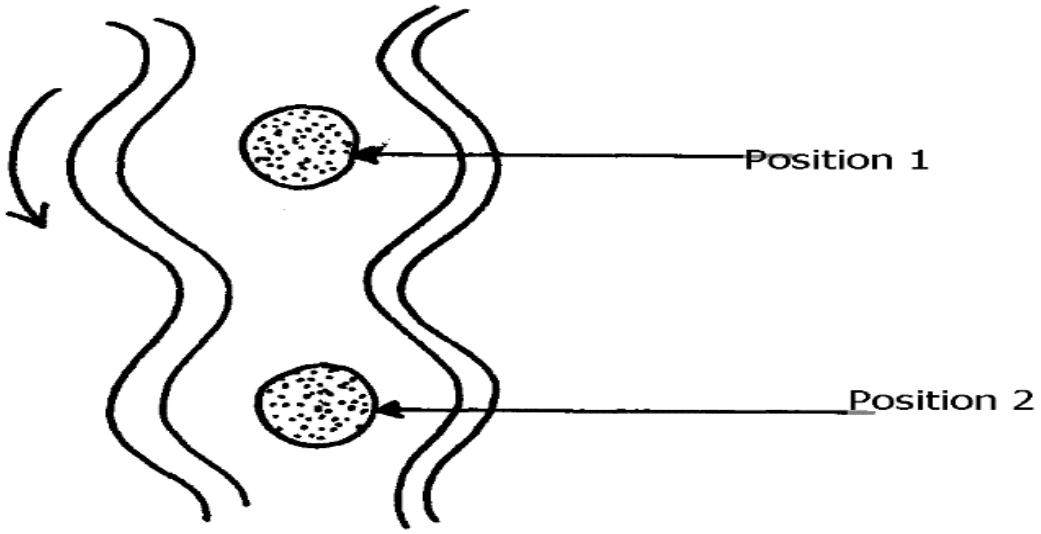
   (b) Explain why stains would be removed faster with the detergent in water at 35^oC rather than at 15^oC

10. Name the diseases caused by deficiency of : (a) Iodine

(b) Vitamin C

11. Name **two** enzymes and **one** metal ion that are needed in the blood clotting process

12. The diagram below shows how food boles move along the human oesophogus and the Intestine



(a) Identify the process illustrated in the diagram

(b) Briefly **state** how the movement of food boles from position 1 to position 2 is achieved

(c) Name **one** component of a persons diet that assists in the movement of food described in (b) above

13. State **two** adaptations of herbivores which enable them to digest cellulose

14. State **two** factors that affect the rate of osmosis

15. A certain organ **K** was surgically removed from a rat, later drastic increase in glucose level in the blood was reported but when substance **Q** was injected into the animal the whole process was reversed.

Identify: (i) Organ **K**

(ii) Substance **Q**

16. a) Name the component of a persons diet that is essential for peristalisis

b) Give **two** groups of food which are reabsorbed along the mammalion digestive system without undergoing digestion

17. State **three** roles of light in photosynthesis

18. State **two** ways in which the guard cells differ their adjacent epidermal cells

19. One of the components of bile is a chemical left over from destruction of red blood cells

i) Identify the chemical substance

ii) What is the role of bile in digestion

20. (a) What is peristalsis?

(b) Explain how the process above is brought about.

21. The following reaction may occur in a forward and backward direction.

Water + Carbon (IV) Oxide **Glucose + Oxygen + Energy**

(a) Name the organelle where the reaction occurs in:

(i) Forward direction

(ii) Backward direction

(b) Give **one difference** and **one similarity** for the two organelles named in **(a)** above

22. A solution of sugar cane was boiled with hydrochloric acid and sodium hydrogen carbonate was added to the solution, which was then boiled with benedicts solution. An orange precipitate was formed.

(a) Why was the solution boiled with hydrochloric acid and then sodium hydrogen carbonate added in it

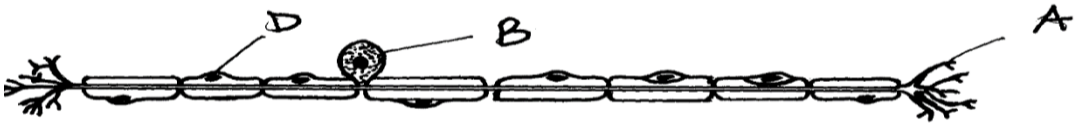
(b) To which class of carbohydrates does sugar cane belong?

(c) State the form in which carbohydrates are:

(i) Transported in animals

(ii) Transported in plants

23. The diagram below is of a certain type of neurons



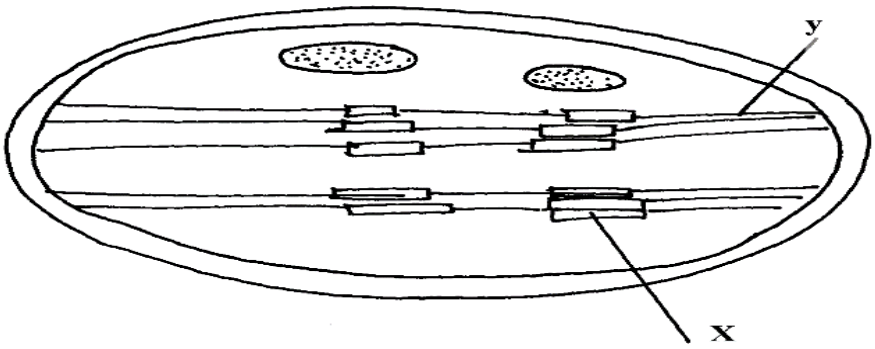
(a) Identify the type of neuron

(b) Give a reason for your answer in **(a)** above

(c) Give the functions of the parts labeled **A, B**, and **D**

24. a) The mitochondria organelle has cristae structure on the inner membrane. State the function of the cristae

b) The diagram below represents a cell organelle



i) Name the part labeled **Y**

ii) State the function of the part labeled **X**

25. a) State the role of emulsification in the digestion of fats in the alimentary canal

b) What is the function of hydrochloric acid in the alimentary canal

26. Briefly explain the effect of poisoning the roots hair on the uptake of nitrate by plants

27. Briefly explain the symbiotic relationship in the root nodule of a leguminous plant

28. Explain how saliva is important in digestion

29. What is the fate of excess glucose in plants?

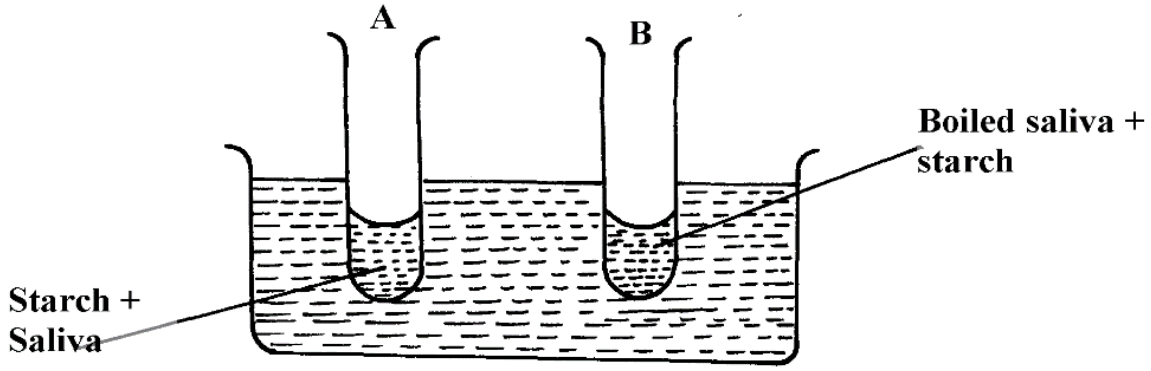
30. State **two** ways in which guard cells differ from other epidermal cells

31. Briefly explain the fate of the following products from the light stage of the process of Photosynthesis: (a) Oxygen

(b) Hydrogen

(c) ATP

32. In an experiment to investigate on aspect of digestion, two test tubes A and B were set-up as shown in the diagram below;



The test tubes were left in the bath for 30minutes.The content of each test tube was then tested for
starch using iodine solution:-

(a) What was the aim of the experiment?

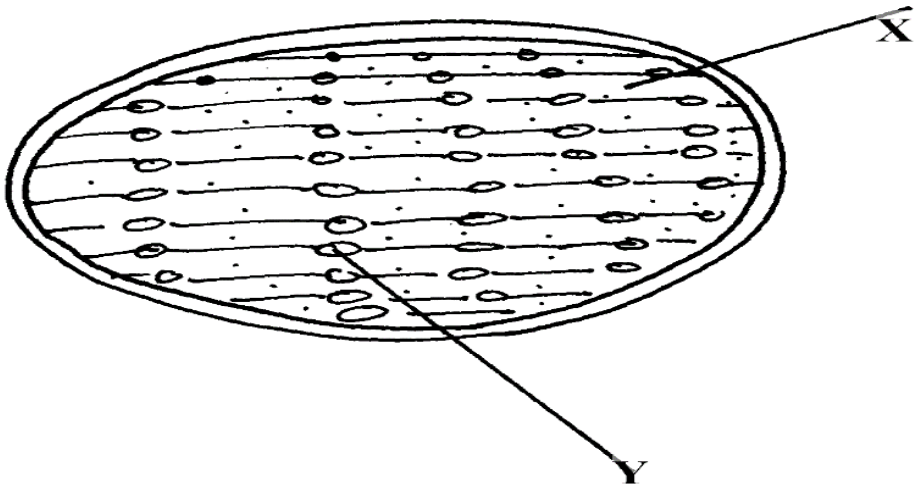
(b) What results were expected in test-tube **A** and **B**

(c) Account of the results you have given in **(b)** above in test tube **A** and **B**

33. [a]Name one salivary gland in humans

[b]State two functions of saliva

34. The diagram below represents a cell organelle



(i) Name the part labeled **y**

(ii) State the function of the part labeled **X**

(ii) State the function of the vitamin named in **(i)** above

36. (a) Name the disease caused by **schistosoma** parasites in man.

(b) How is **schistosome** adapted to its parasitic mode of life?

37. The table below shows **three** enzymes **A, B** and **C** and their respective optimum pH.

Enzyme	Optimum pH
A	6.8
B	2.0
C	8.0

(a) (i) Name the most likely region of the alimentary canal of a mammal where enzyme

B would be found.

(ii) Give a reason for your answer in (a) (i) above

38. [a]state two factors that affect enzymatic activities

[b]Explain how one of the factors stated in [a] above affects enzymatic activities

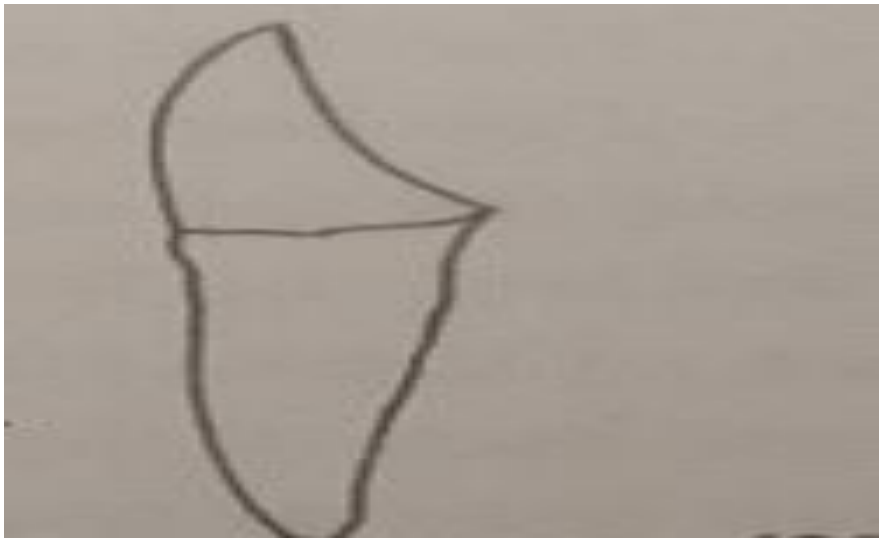
39. (a) Name the specific part of the chloroplast where the following processes occur.

(i) Carbon IV oxide fixation

(ii) Photolysis

(b) State **one** way in which the dark reactions of photosynthesis depends on light reaction.

40. The diagram below shows a human tooth



[a]Identify the tooth

[b]How is the tooth adapted to its function?

[c]State the role of the following vitamins in the human body

[i]C [ii]K

41.State **three** ways by which the rate of enzyme controlled reactions can be increased.

42. Study the dental formula given below:

I $\frac{0}{4}$; C $\frac{0}{0}$; PM $\frac{3}{3}$; M $\frac{2}{3}$

(a) Identify with reasons the mode of feeding of the animals whose dental formula is

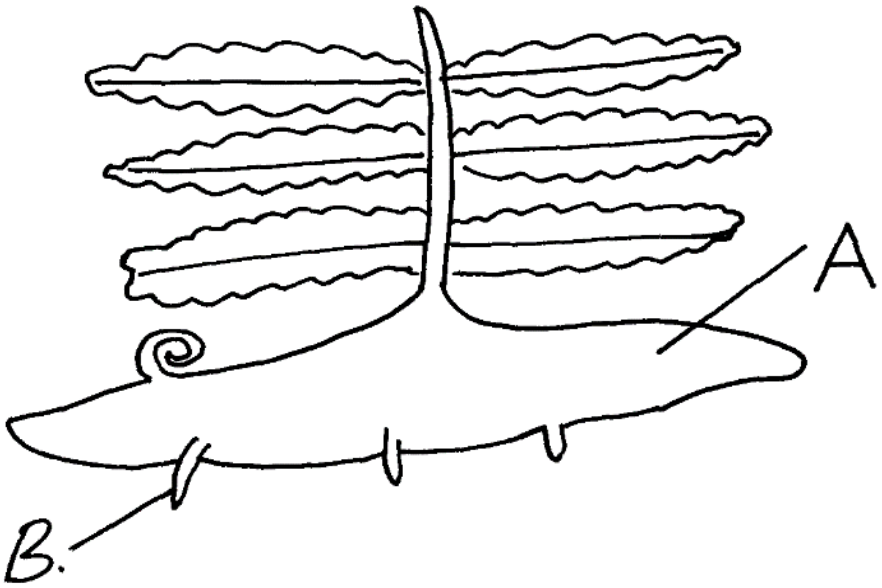
given above

(b) Calculate the total number of teeth in the mouth of the above animal

43. Explain why small mammals such as moles feed more frequently than larger ones such as elephants

44. State **three** ways by which plants compensate for lack of the ability to move from one place to another

45. Study the diagram below and answer the questions that follow



(a) Label the parts **A** and **B**

(b) State **one** observable difference between the structure above and the liverwort

46. What is glycolysis?

47. (a) State **two** difference between monosaccharide and polysaccharides

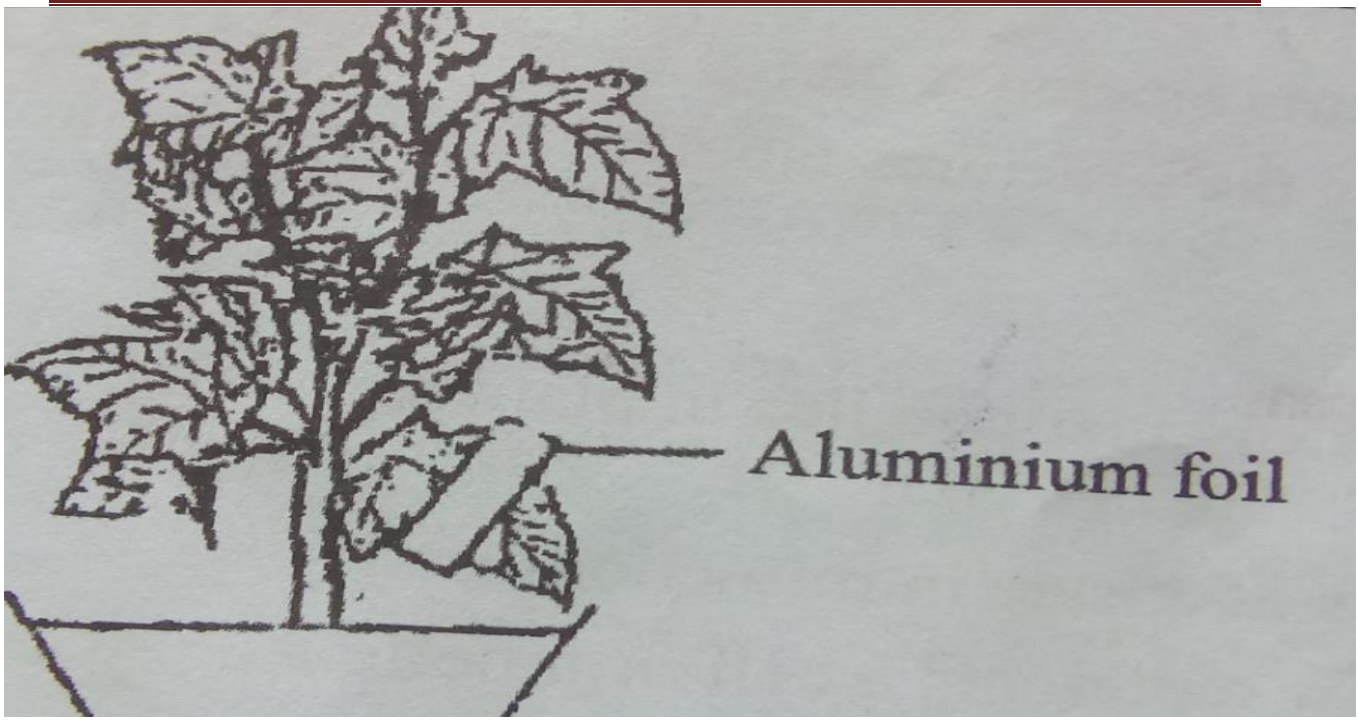
(b) Name the bond found in proteins

48. Name t**wo** products of light reaction used in the dark reaction

49. State **two** functions of the large intestine in humans.

50. The diagram below shows a leaf of a growing plant partly covered with aluminium foil.

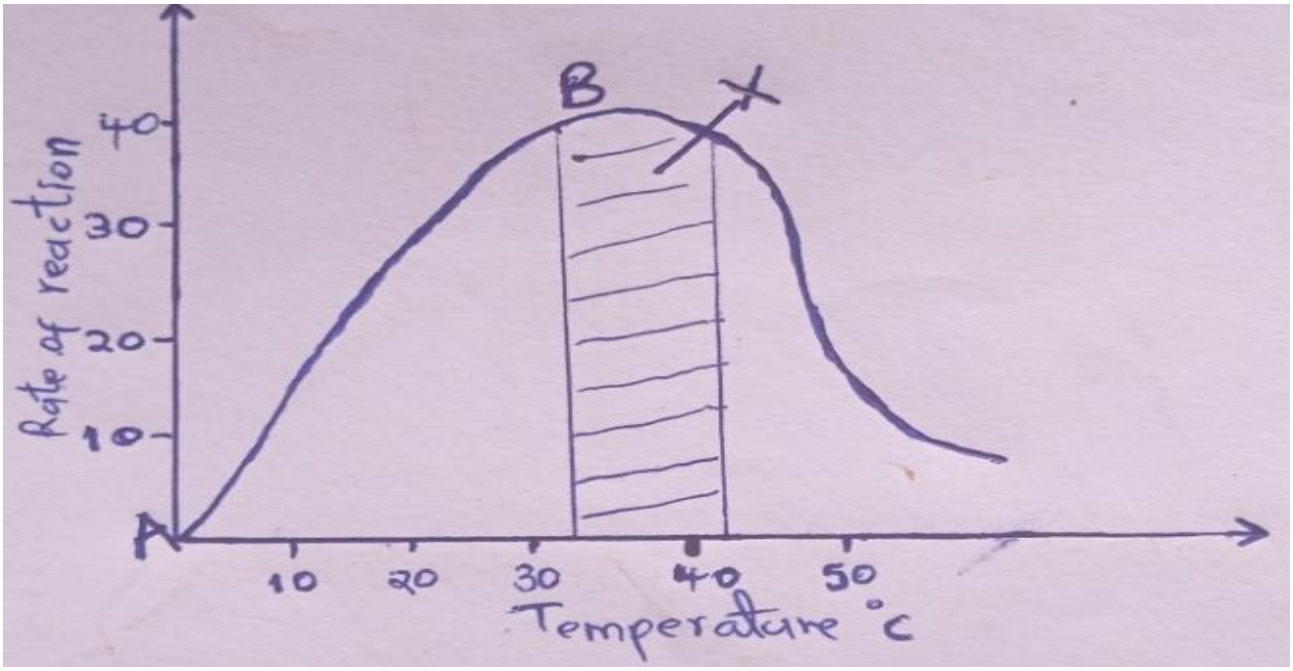
The plant was placed in the sun from morning to midday and then tested for starch.



(a) What was the aim of the experiment?

(b) State the observation made when the leaf was tested for starch

51. The figure shows the effect of temperature on an enzyme catalyzed reaction.

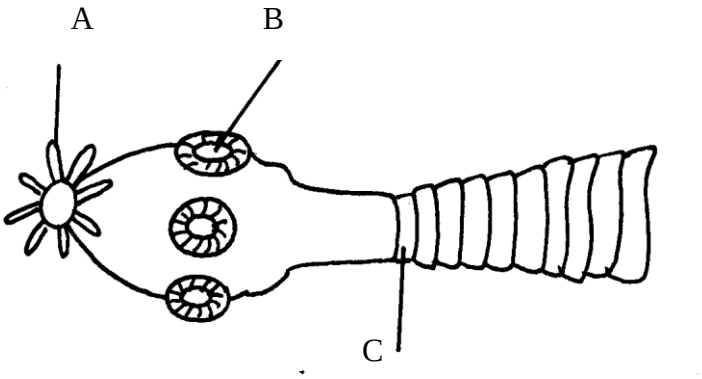


(a) Explain what happens between **A** and **B**

(b) What is **X**?

52. Name **two** mineral elements that are necessary in the synthesis of chlorophyll.

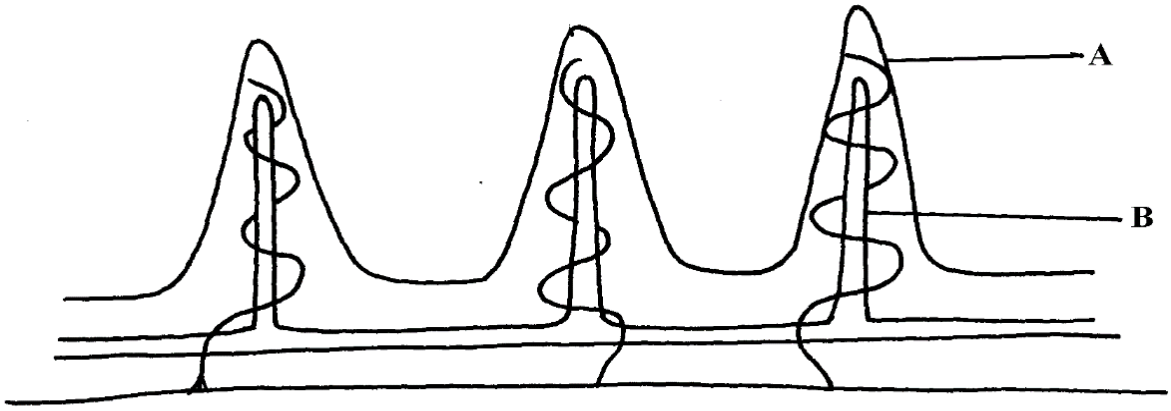
53. The figure below is a diagram of the anterior portion of the tapeworm. **<u>Taenia solium</u>.**



(a) Name the parts labeled **A, B**, and **C**

(b) What is the intermediate host of Taenia Solium?

54. The diagram below represents a longitudinal section through the ileum wall



a) Identify the structure labeled **A** and **B**

b) State **one** function of **A** and **B**

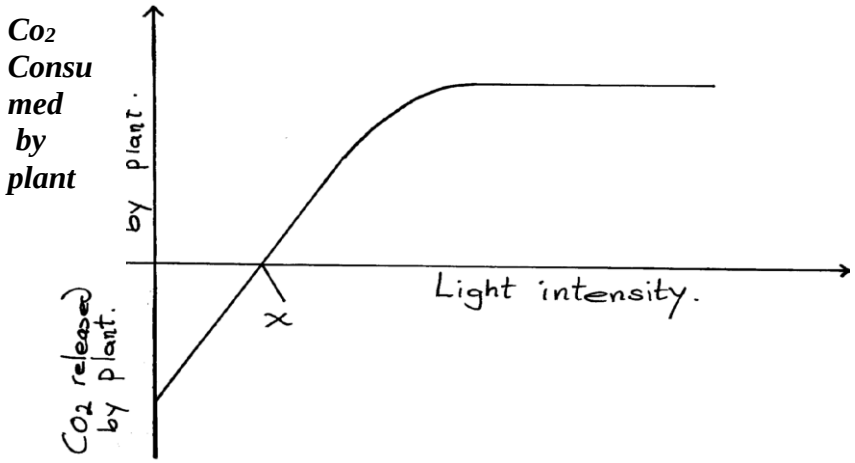
c) State **two** functions of the ileum

d) Explain the role of the liver in digestion

e) State the endocrine role of the pancreas in a mammal

55 Briefly describe the reactions during the light stage of photosynthesis

56. The diagram below shows the effect of varying light intensity on the exchange of carbon IV oxide between the leaves of a green plant and the atmosphere.



Light Intensity

a)What is the name given to the point marked x?

b) i) With reference to carbon IV oxide exchange state what happens at point **x**.

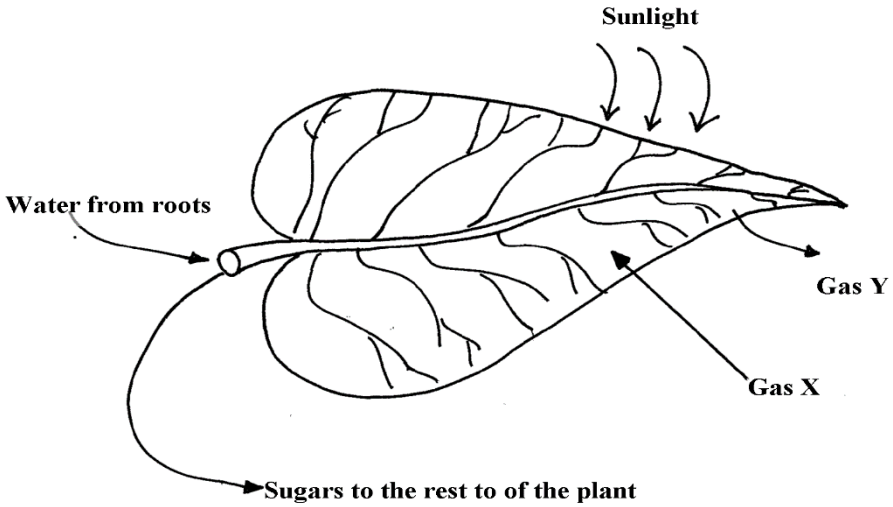
ii) Explain how the effect observed at point x occurs.

c) Explain why there is a net uptake of carbon IV oxide at light intensity above **x**.

d) What would happen to the plant if light intensity falling on it were maintained at **x** throughout?

e) What can you say about the exchange of oxygen between the plant and the surrounding air at intensities below **x**?

57. The following diagram of a leaf shows what happens in a pant leaf during photosynthesis:-



(a) Give **two** ways in which leaves are adapted to absorb light

(b) Name the gases labelled **X** and **Y**

(c) Name the tissue that transports water into the leaf and sugars out of the leaf

(d) Explain why it's an advantage for the plant to store carbohydrates as starch rather than as sugars

58. (a) What is meant by digestion?

(b) Describe how mammalian small intestine is adapted to its function

59. [a]The action of ptyalin stops in the stomach.Explain

[b]State a factor that denatures enzymes

[c]Name the features that increase the surface area of small intestines

For Marking Schemes/Answers

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