GASEOUS EXCHANGE 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 2.

BIOLOGY

SERIES 1

For Marking Schemes

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GASEOUS EXCHANGE IN PLANTS ANIMALS

1. a) Name the site of gaseous exchange during breathing in mammals.
   b) State **three** characteristics of the site named in **(a)** above.
2. Why would carboxyhaemoglobin lead to death?
3. State **two** causes of coronary thrombosis
4. What adaptation do red blood cells have for transportation of carbon (IV) oxide?
5. (a) What is Respiration Quotient (RQ)?
   (b) (i) Calculate the RQ of the food substance shown by the equation below.
   $2C_{51}H_{98}O_6 + 145\ O_2 \rightarrow 102CO_2 + 98H_2O$ + Energy
   (ii) Name the food substance being oxidized in b (i) above.
6. Outline **three** ways in which the gills of Tilapia fish are modified to perform their function.
7. **Identify** the surfaces of gaseous exchange in the following:-
   (i) Paramecium;
   (ii) Roots;
   (iii) Frog;
8. (a) Name **two** gaseous exchange surfaces in an insect
   (b) Explain how oxygen gets into the haemolymph of an insect
9. (a) Outline **two** physiological changes that occur in the body to lower the level of Carbon (IV)Oxide after vigorous physical exercise

(b) Name the site of respiration in a cell

10. What is the importance of counter current flow in the exchange of gases in a fish
11. State **four** ways in which red blood cells (**RBC**) are adapted to the their function
12. (a) (i) Where in a cell does glycolysis take place?
    (ii) Name the product of the above process
    (b) Briefly explain Kreb's cycle in a plant cell during anaerobic respiration
13. Describe the changes that occur to the rib cage and the diaphragm during inspiration
14. a) What is translocation
    b) Name **two** forces that maintain transpiration stream
15. Most carbon (IV) oxide is transported form tissues to the lungs within the red blood cells and not in the blood plasma. Give **two** advantages of this mode of transport
16. Give a reason why halophytes have pneumatophores

17. Give **two** characteristics of respiratory surfaces in animals

18. Give a reason for each of the following on mammalian Red blood cells

(a) Absence of the nucleus

(b) Biconcave shape

19. State **two** ways in which bodies of people living in high altitude areas respond to low oxygen concentration.

20. Explain what would happen to a mammalian Red blood cell 30 minutes alter being placed in distilled water.

21. (a) State **two** ways in which the surface area of the fish filaments is increased for efficient gaseous exchange.

(b) What is the importance of counter flow system in the filaments of a fish.

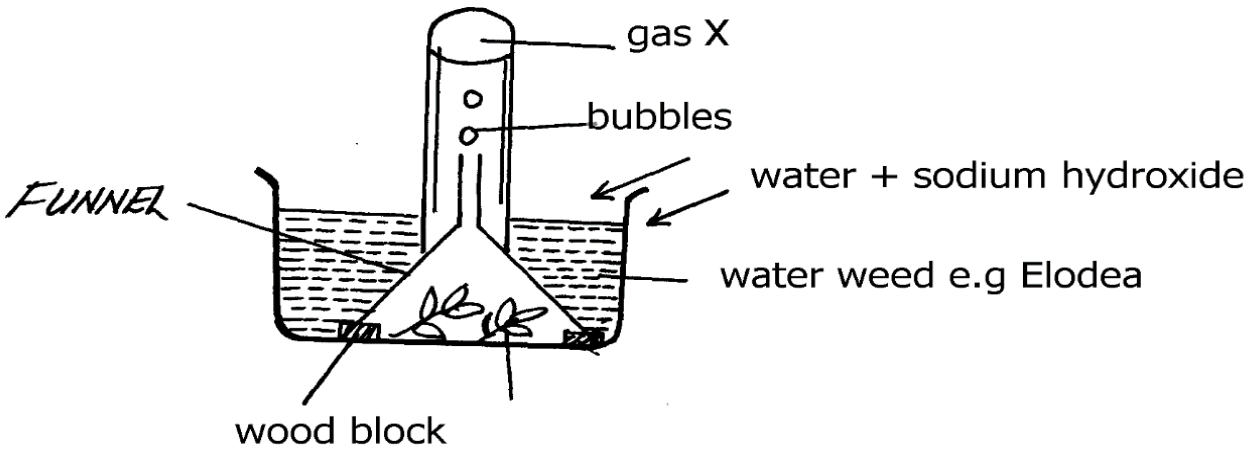
22. Name three sites where gaseous exchange takes place in terrestrial plants

23. Describe the path taken by oxygen gas from atmosphere to the tissues of an insect.

24. Why should respiratory surfaces be: (i) Moist

(ii) Thin

25. The set up below represents an experiment to investigate the process of photosynthesis. The set up placed in sunlight for six hours.



(a) Why was sodium hydrogen carbonate added to water in this experiment?

(b) Explain why the number of bubbles reduced by evening

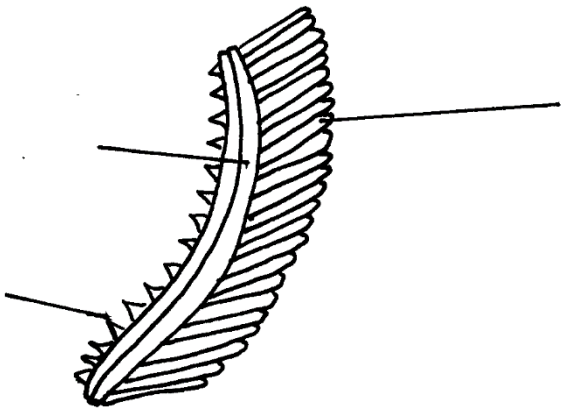
(c) Explain why the water was used in this experiment

(d) Explain why the water was used in this experiment

26. (a) State **two** adaptations of red blood cell to its functions

(b) Name **two** ways in which carbon (IV) Oxide is transported in mammalian blood

27. The diagram below represents an organ from a bony fish. Study the diagram and answer the questions that follow:



(a) State the functions of each of the following:

(b) How is the structure labeled **C** adapted to its function?

28. State how the tracheal system in insects is adapted for gaseous exchange.

29. Differentiate between active immunity and passive immunity

30. Name **three** sites where gaseous exchange takes place in terrestrial plants.

31. An athlete training to take part in an international competition moved to a high attitude area where he was to train for twelve days before the competition. He took his pulses per minute daily and tabulated them as shown below:-

a) Other than pulse rate, name **one** other process which was affected by change of altitude

b) Account for the change in pulse rate from:- i) Day 1 to day 7

ii) Day 8 to day 12

c) Explain the advantage this athlete has over the one who trains in a lower altitude area

d) The equation below represents a reaction which takes place during rapid muscular movements in humans.

Glucose → Lactic acid + 150KJ

i) State **two** effects of this reaction to an individual

ii) How is lactic acid finally eliminated from the muscle tissues of the human after the muscle

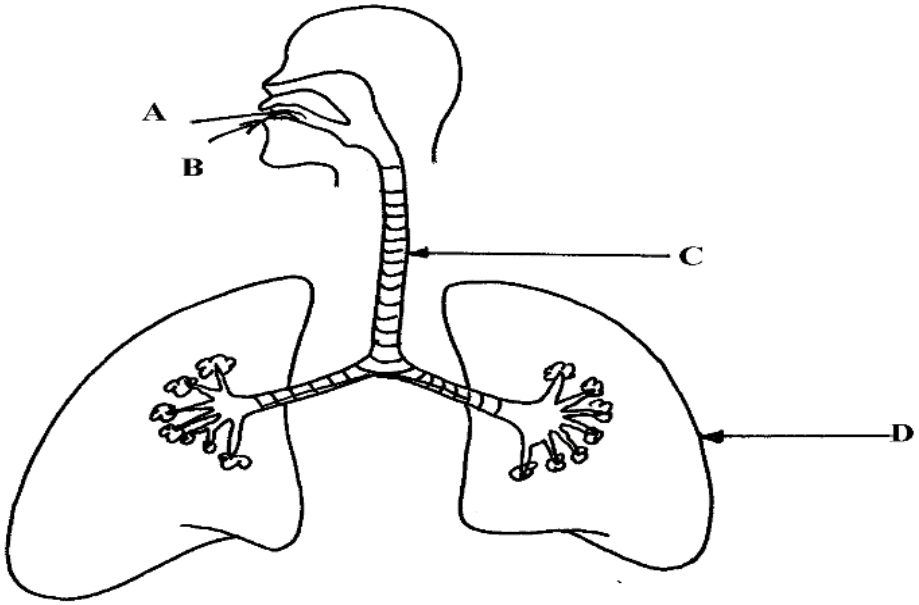
32. a) State any **two** structures used for gaseous exchange in plants.

b) Name any **two** sites where gaseous exchange takes place in a leaf of a terrestrial plant.

c) State any **two** types of leaves and their respective functions.

d) Briefly describe how stoma opens.

33. The diagram below represents a section of the human respiratory system:



(a) One can inhale through path **A**, or **B**. Giving reasons, state the more appropriate path.

(b) How is the part labbelled **C** adapted for its function?

(c) Explain the effect of regular tobacco smoking to the functioning on the organ labelled **D**

34. (a) How is the structure of mammalian gaseous exchange system adapted to its functions

(b) Describe the mechanism of opening and closing of the stomata using the photosynthetic theory

35. **(a)** Describe the mechanism of inhalation in man.

(b) Using photosynthetic theory explain the mechanism of opening of stomata.

36. In an experiment to investigate a certain processes in a given plant species, the rate of carbon (IV) oxide consumed and released were measured over a period of time of the day. The results of the

investigation are shown in the table below:

Time of the day (hours)	6	8	10	12	14	16	18	20	22	24
Carbon (IV) oxide consumed in mm^3/min	10	43	69	91	91	50	18	0	0	0
Carbon (IV) oxide released in mm^3/min	38	22	10	3	3	6	31	48	48	48

[a]Use the table above to draw a graph

[b) Name the biochemical processes represented by;

(i) Carbon (IV) oxide consumption

(ii) carbon (IV)oxide release

(c) Account for the shape of the curve for carbon (IV) oxide consumption between;

(i) 6-16 hours

(ii) 20-24 hours

(d) Account for carbon (IV) oxide released between 12-16 hours

(e) (i) What is compensation point?

(ii) From the graph state the time of the day when the plant attains compensation point

(f) Explain how high temperature above optimum affects the rate of carbon (IV) oxide consumption in the plant.

For Marking Schemes/Answers

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