

FORM TWO BIOLOGY **TOPICAL QUESTIONS**



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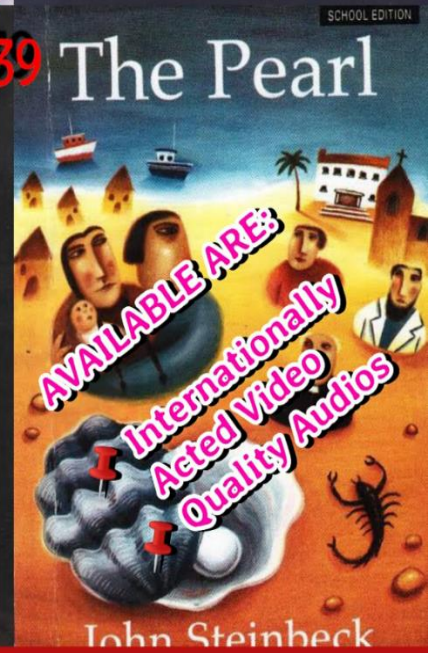
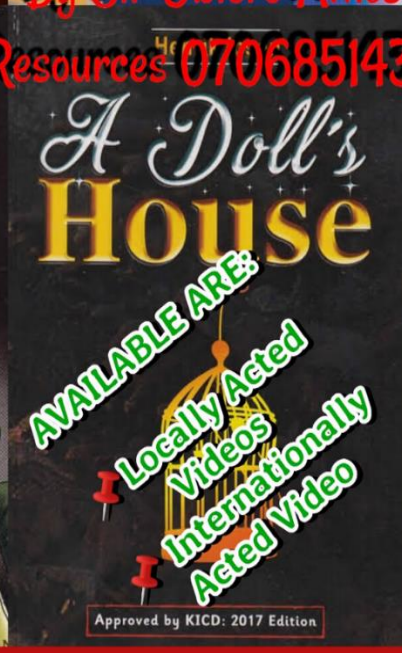
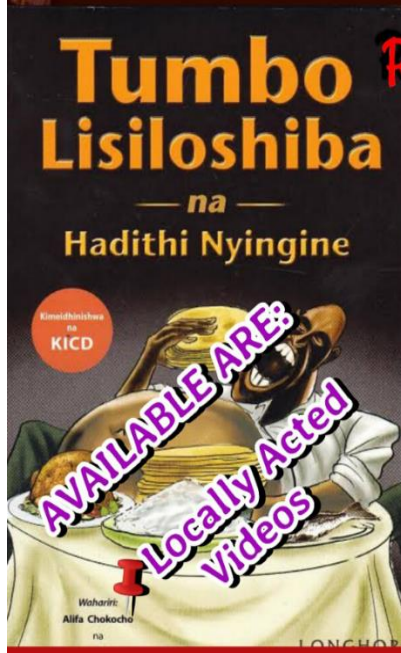
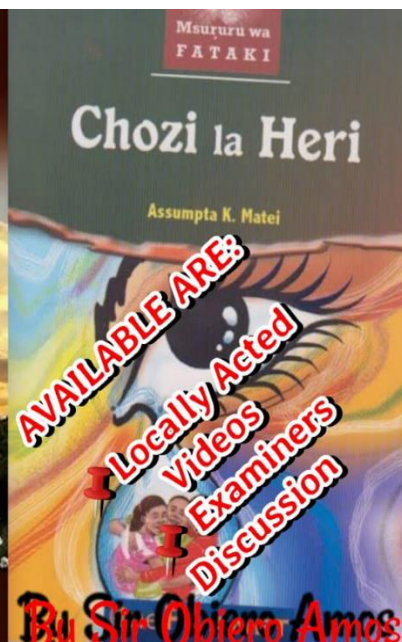
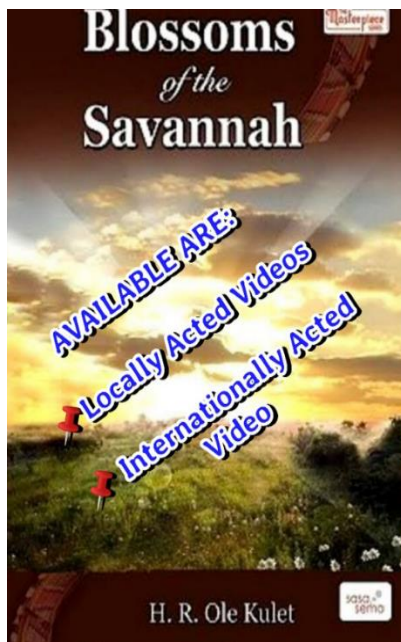
F2 BIOLOGY **TOPICAL QUESTIONS**

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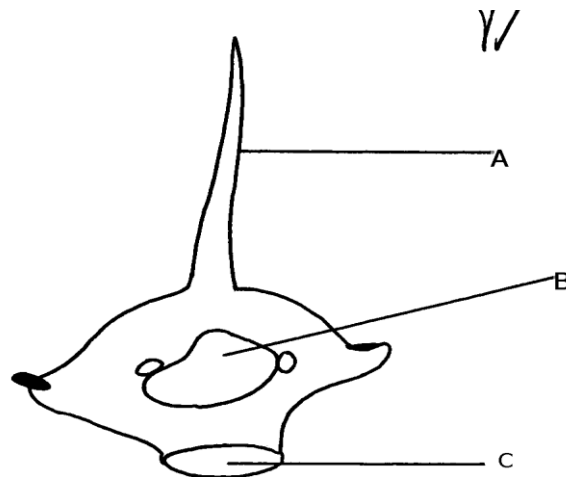
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Transparency, Honesty and Accountability Defined

5. TRANSPORT IN PLANTS & ANIMALS

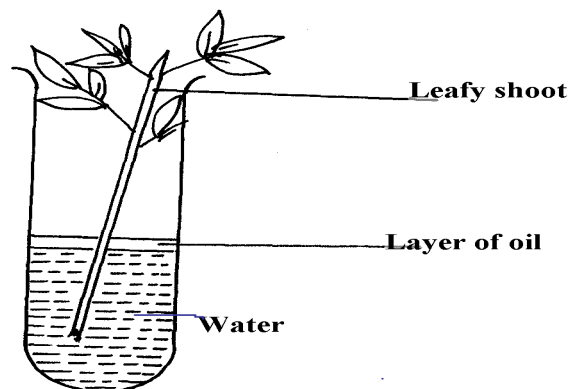
1. Explain why a fresh wound on the skin bleeds more on a hot sunny day than on a cold chilly day
2. State **three** adaptations of red blood cells to their functions.
3. How are sieve tube elements adapted to their function
4. Name the **polysaccharides** found in the following structures:-
 - (a) **Exoskeleton**
 - (b) **Xylem vessels**
5. State **three** factors that maintain transpiration stream
- 6.(a) List **three** forces that facilitate the transport of water and mineral salts up the stem.
(b) Name the tissue that is removed when the bark of a dicotyledonous plant is ringed.
7. Study the dental formula of an organism below.
 $I \frac{3}{3}, C \frac{1}{1}, Pm \frac{3}{2}, M \frac{1}{1} = x$
 - (a) (i) What is the total number of teeth this organism possess?

(ii) What is the mode of feeding of the organism?
 - (b) State **two** functions of mucus produced along the alimentary canal.

8. The diagram below shows a bone obtained from a mammal.



- (a) Name the part of the skeleton from which the bone has been taken.
- (b) Label the parts **B** and **C**.
- (c) State the functions of part **A**.
9. What is the destination of materials translocated in plants.
10. A person whose blood group is **AB** requires a blood transfusion, name the blood groups of the donors.
11. Explain why capillaries are: (i) Thin walled
(ii) Branched
12. An experiment was set-up as shown below to investigate a certain plant process:



- (a) What process was being investigated above?
- (b) What observation was made if;
 - (i) The experiment was left in strong wind for one hour?
 - (ii) All the leaves were removed from the plant?

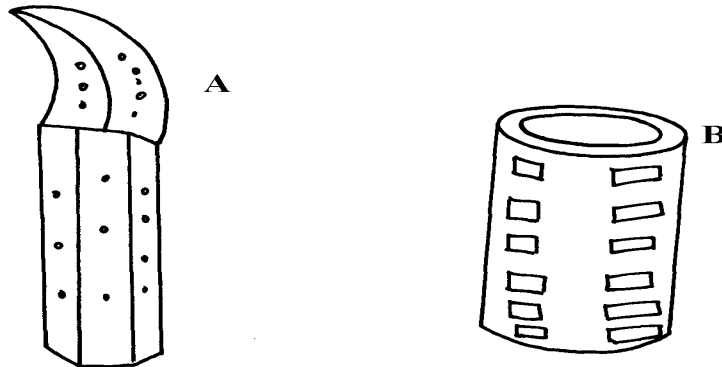
13. How is aerenchyma tissue adapted to its function
14. (a) State **three** structural differences between arteries and veins in mammals
(b) Name a disease that causes thickening and hardening of arteries
15. Identify **two** forces that help in upward movement of water in plants
16. State **three** ways in which red blood cells are adapted to their functions
17. (a) Distinguish between tissue fluid and lymph
(b) Explain why deficiency of vitamin **K** leads to excessive bleeding even from small cuts
18. Name the type of circulatory system found in the phylum Arthropoda
19. Name the blood vessel that nourishes the heart
20. a) In which form is oxygen transported in the blood.
b) Why do plants not take in oxygen during the day although they need it for respiration
21. Name a disease of the blood characterized by excessive production of white blood cells
22. Laboratory analysis of a patient's urine revealed the following concentration of various substances:

Blood proteins	0.00%
Water	50%
Glucose	48%
Salts	0.8%
Urea	1.2%

a) From the analysis above, which disease is the patient suffering from

b) Name **two** symptoms of the disease in **3(a)** above

23. The diagrams below show two conducting elements of the xylem tissue



a) Identify each of them A and B

b) What makes the cellulose side walls of both A and B able to prevent collapsing?

24. Explain why the rate of transpiration is reduced when humidity is high

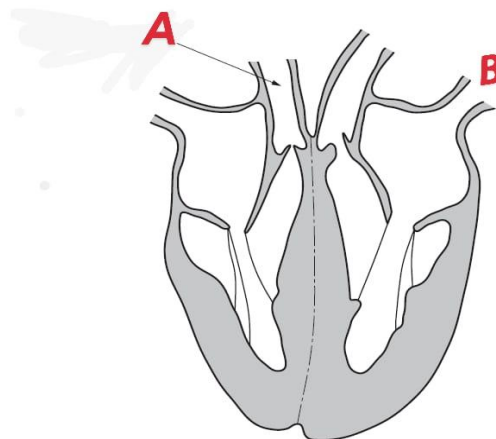
25. (a) State **two** functions of the xylem vessels,

(b) List **two** structural adaptations that make xylem vessels suitable to their function

26. (a) What is peristalsis?

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

27. The diagram below shows a part of a circulatory system. The arrows indicate the direction of the flow of blood;



(a) Identify the blood vessels labeled **A** and **B**

28. Name **four** methods plants employ to remove excretory waste products

29. a) State the form in which oxygen is transported in the mammalian blood

b) Why is it dangerous to sleep in an enclosed room with a burning jiko

c) Why do plants not take in oxygen during the day although they need it for respiration

30. Name a disease of blood characterized by excessive – production of white blood cells

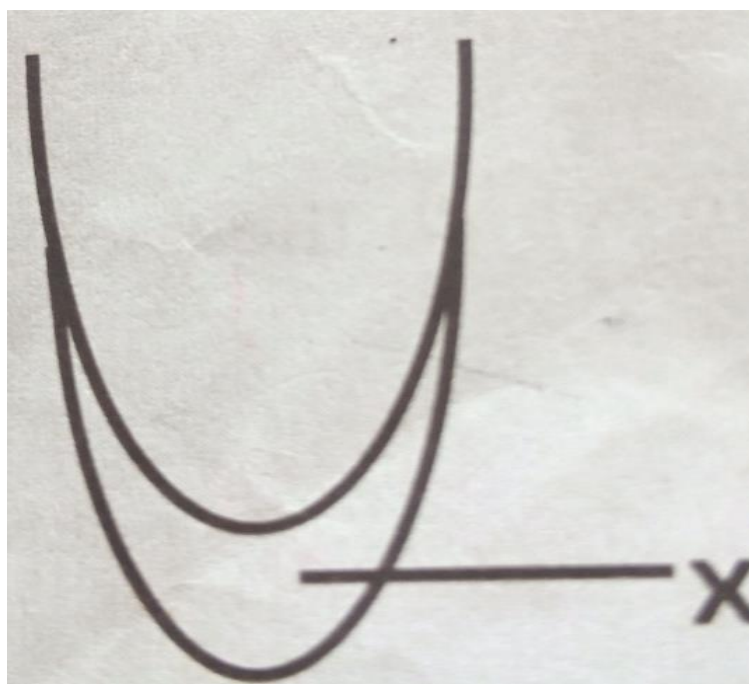
31. The table below is a representation of a chromosomal mutation

Before mutation	L	M	N	O	P	Q
After mutation	L	O	N	M	P	Q

(a) Name the type of chromosomal mutation represented above

(b) Name **one** mutagenic agent

32. The diagram below represents regions of a root tip



[a]Name the two regions above x in an ascending order

[b]State the function of part rebelled X

33. State **two** roles of transpiration to a plant

34. Uptake of water by plants is not affected by metabolic poisons. Explain.

35. Name the tissues in plants responsible for;

[a]Transport of water and mineral salts

[b]Transport of carbohydrates

[c]Primary growth

36. A woman gave birth to a child of blood group B+ (B positive). Name the two antigens that determined her child's blood group.

37. A transfusion of RH^+ blood was given to a patient with Rh^- blood. After one week a similar transfusion was given to the same patient. What was likely to be the effect of the second transfusion?

38. [a]How may excessive bleeding result in death?

[b]Name the process by which human body naturally stops bleeding

[c]How can low blood volume be brought back to normal?

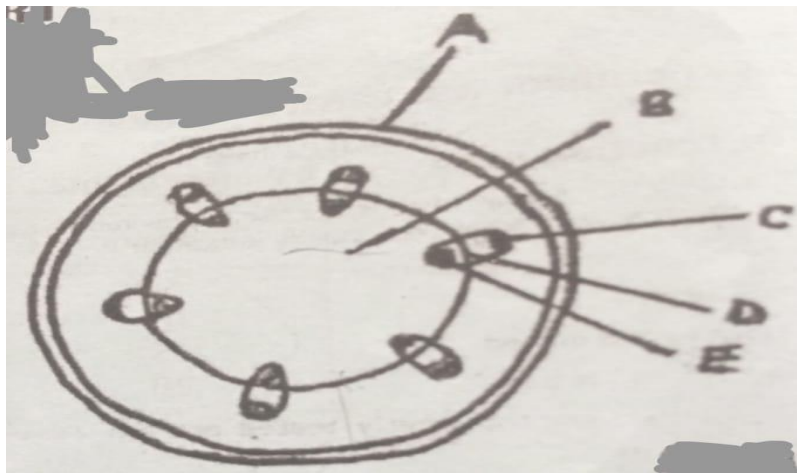
39. (a) Why are xylem vessels more efficient in the transport of water than tracheids?

(b) What is the significance of xylem vessels being dead?

40. Distinguish between guttation and transpiration

41. Other than transport, state one other function of xylem tissue in plants

42. State **two** functions of aerenchyma tissue in plants
43. (a) What is sickle-cell anaemia?
(b) Identify the part of the heart that initiates the heart beat
44. (a) Give a reason why the left ventricle muscles are thicker than the right ventricles muscles
(b) State the forms in which carbon (IV) oxide is transported in the blood
45. Explain how the following adaptation reduce transpiration in xerophytes
(a) Sunken stomata
(b) Thick waxy cuticle
46. Name the:
(a) Material that strengthens xylem tissue
(b) Tissue that is removed when the bark of a dicotyledonous plant is ringed
47. The diagram below shows the traverse section of a young stem.



- (a) What are the functions of the structures labeled **A** and **B**
(b) State the functions of the parts labelled C, D & E
(c) List three differences between the section shown above and one that would be obtained from the root of the same plant
48. Name the components of blood that do not enter the renal tubule in mammals

49 State one adaptation of xylem vessels to their function

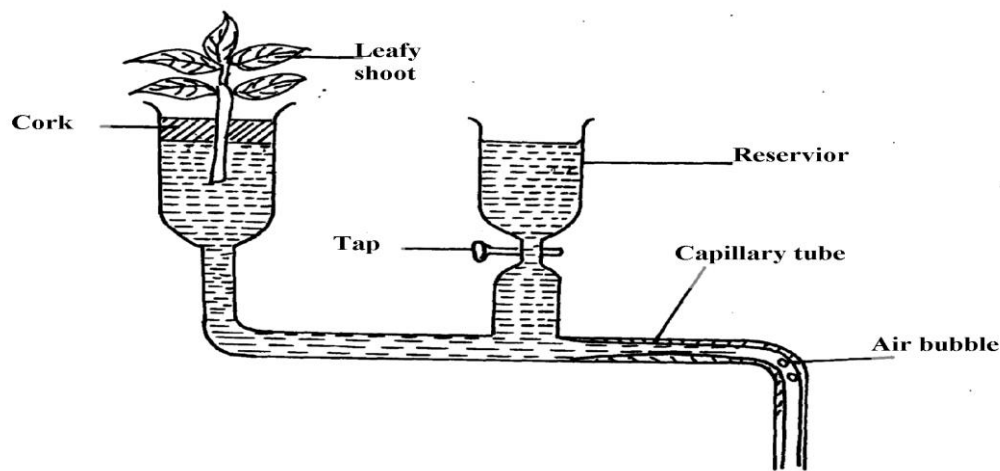
50. (a) An individual is of blood group B⁺ [Positive]

[i] Name the antigens in the individual's blood

[ii] Give the reason why the individual cannot receive blood from a blood group A donor

(b) Explain how blood clot is formed once a blood vessel is injured

51. The figure below represents a diagram of a photometer;



(a) What is the photometer used for ?

(b) State the precautions which should be taken when setting up a photometer

(c) Explain what you will expect if the set up was placed under the following environmental conditions;

(i) Dark room

(ii) Leafy shoot enclosed in polythene bag

(iii) In a current of air created by a fan

52. The amount of blood flow through various parts of the body of a mammal was measured in cm^3 per minute at rest and during different physical activities. Results are shown below.

	Blood flow in cm^3/min		
	At rest	During light Exercise	During strenuous Exercise
Heart muscles	200	300	1050
Gut	1300	1000	400
Skeletal muscles	1100	5050	23000
Kidneys	900	650	250
Skin	400	1300	600

a) Calculate the percentage change in blood flow through the skeletal muscles and gut when the mammal was exposed to strenuous exercise.

i) Skeletal muscles

ii) Gut

b) Account for the differences in amount of blood flow through the gut and skeletal muscles;

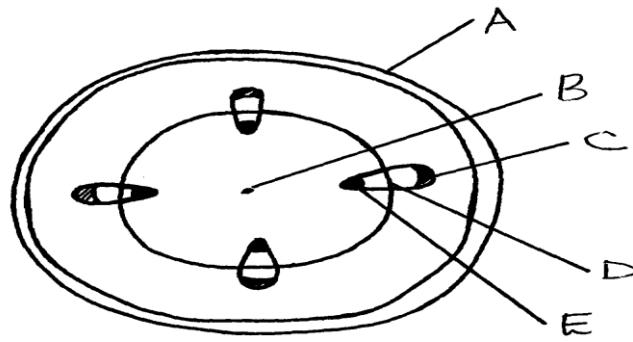
i) At rest

ii) During strenuous exercise

c) Account for the result obtained for the skin during light exercise

d) Name **two** substances which are removed from the body by the kidney

53. The diagram below represents a transverse section of a young stem.



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

(b) State the functions of the parts labeled **C** and **E**

(c) List **three** differences between the section above and the one that would be obtained from the root of the same plant

54. Describe the functions of the various components of the mammalian blood

6. GASEOUS EXCHANGE IN PLANTS

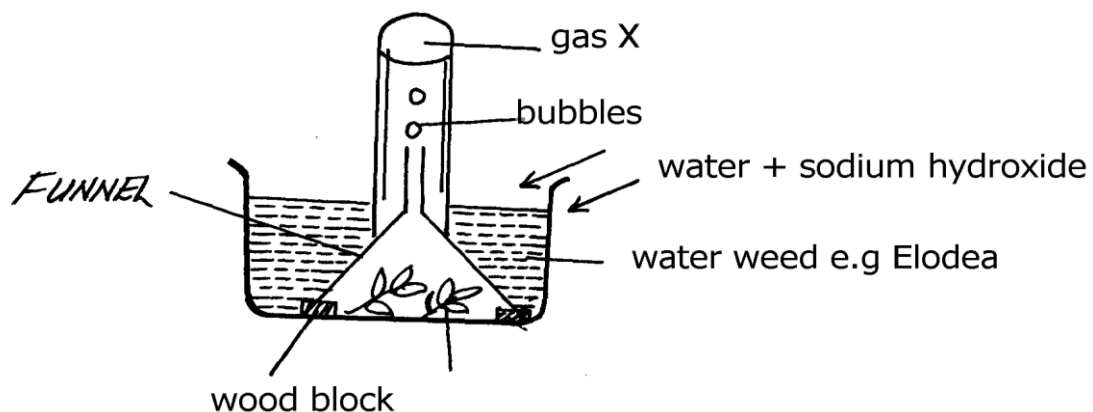
ANIMALS

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.
$$2C_{51}H_{98}O_6 + 145 O_2 \qquad 102CO_2 + 98H_2O + \text{Energy}$$

 (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

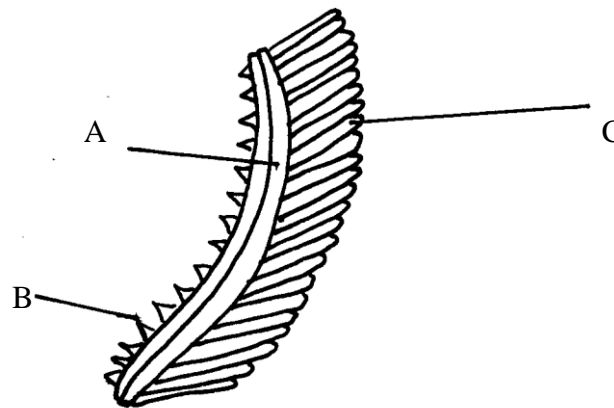
9. (a) Outline **two** physiological changes that occur in the body to lower the level of Carbon (IV) Oxide after vigorous physical exercise
(b) Name the site of respiration in a cell
10. What is the importance of counter current flow in the exchange of gases in a fish
11. State **four** ways in which red blood cells (**RBC**) are adapted to their function
12. (a) (i) Where in a cell does glycolysis take place?
(ii) Name the product of the above process
(b) Briefly explain Krebs'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 from 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 after 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 altitude 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

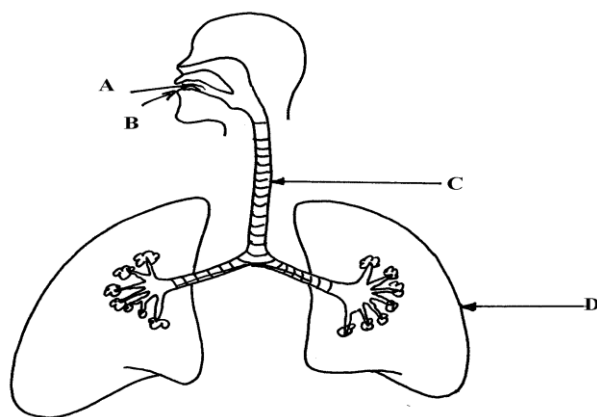
- c) Explain the advantage this athlete has over the one who trains in a lower altitude area
- d) The equation below represents a reaction which takes place during rapid muscular movements in humans.



- 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 labelled **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.

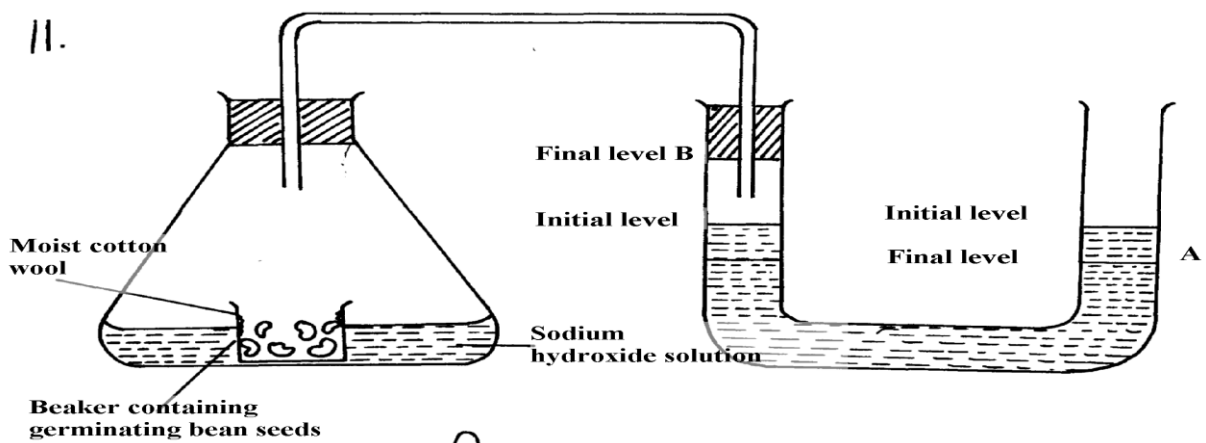
7. RESPIRATION

1. (a) Distinguish between gaseous exchange and respiration

(b) Name the products of anaerobic respiration in plants
2. (a) State **two** phases of aerobic respiration
(b) With a reason, state the phase that yields more energy
3. A process that occurs in plants is represented by the equation below:-
$$\text{C}_6\text{H}_{12}\text{O}_6 \longrightarrow 2\text{C}_2\text{H}_5\text{OH} + 2\text{CO}_2 + \text{Energy}$$

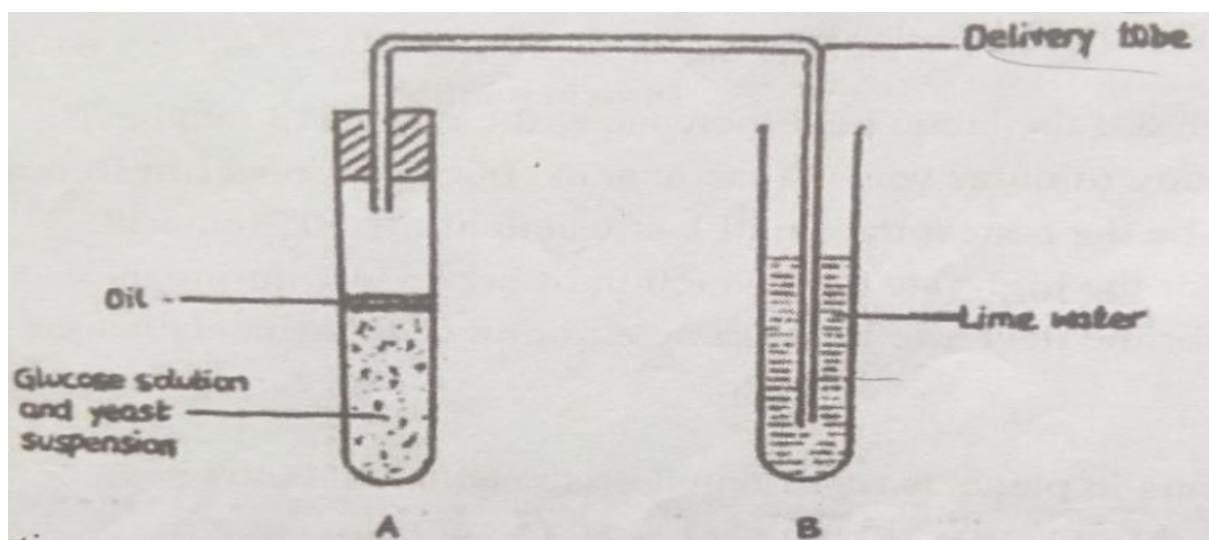
(Glucose) (Ethanol) (Carbon (IV) Oxide)

(a) Name the process
(b) State the economic importance of the process named in (a) above
4. Give a reason why it is difficult to calculate respiratory quotient (RQ) in plants
5. a) Explain what is meant by the term oxygen debt in human beings
b) What are the end products of anaerobic respiration in animals
6. The apparatus below was set up by a student to find out the changes in gases during germination



- a) After 48 hours the level of water in the U-tube at **A** and **B** was as shown. Explain the observation
- b) Calculate the respiration quotient (**RQ**) from the equation below:-
- $$2\text{C}_{51}\text{H}_{98}\text{O}_6 + 145\text{O}_2 \longrightarrow 102\text{CO}_2 + 98\text{H}_2\text{O} + \text{Energy}$$
- c) Identify the substrate being respired in the above equation
7. One molecule of lipid gives more energy than one molecule of glucose when respired aerobically but it is NOT always used as a respiratory substrate
- a) Give **two** reasons for this
- b) Name **two** disaccharides which are reducing sugar
8. (a) (i) Where in a cell does glycolysis take place?
- (ii) Name the product of the above process
- (c) Briefly explain Krebs's cycle in a plant cell during anaerobic respiration
9. How is the mammalian skin adapted to its protective function?
10. The oxidation state of a certain food is represented below by a chemical equation:-
- $$2\text{C}_3\text{H}_2\text{O}_2\text{N} + 6\text{O}_2 \longrightarrow (\text{NH})_2\text{CO}_2 + 5\text{CO}_2 + 5\text{H}_2\text{O}$$
- a) Calculate the respiratory quotients (RQ) of the food substrate
- b) Identify the food substrate
11. Whooping cough is a disease of the respiratory system name the causative agents and give **two** symptoms
12. How does the sunkenness of stomata help in minimizing the rate of transpiration in plants
13. State **two** roles of adrenaline in man
14. Explain why a rat, though small eats more frequently than an elephant

15. Active yeast cells were added to dilute sugar solution in a container. The mixture was kept in a warm room. After a few hours bubbles of a gas were observed escaping from the mixture
- Write an equation to represent the chemical reaction above
 - State **two** economic importance of this type of chemical reaction in industry?
16. (a) Give **two** reasons why fats are not the main respiratory substrates in the body of a mammal and yet they give a lot of energy when oxidized.
17. The equation below summarizes a metabolic process in plants.
- Glucose Ethanol + carbon (IV) oxide+ Energy
- State **two** industrial applications of the above equation.
18. (a) Differentiate between respiration and respiratory surface.
- Why is an effective respiratory system often associated with a circulatory system.
19. State **two** reasons why lipids are rarely used as a respiratory substrate compound to carbohydrates.
20. The equation below shows respiration for a certain food substrate. Study it and answer questions that follow:
- $$2C_{51}H_{98}O_6 + 145O_2 \longrightarrow 102CO_2 + 98H_2O$$
- Calculate the respiratory Quotient, RQ
 - Suggest with reasons the possible food substrate
21. The apparatus below was used to investigate anaerobic respiration:-



- (a) How would you remove dissolved oxygen from the glucose before the experiment commencing?
- (b) State what happens to the lime water as the experiment proceeds to the end
- (c) Describe the reactions in the experiment
- (d) Explain what would happen if the temperature of glucose solution and yeast was raised beyond 45°C ?

8. EXCRETION AND HOMEOSTASIS

1. Explain the following:-
 - i) Fresh water fish excrete ammonia
 - ii) Glucose is absent in urine yet present in glomerular filtrate

2.
 - (a) State **two** functions of the kidney
 - (b) Name **two** substances that are not found in urine of a healthy person
 - (c) Name **two** diseases that affect the kidney

3.
 - (a) State **two** structural modification of the kidneys of deserts animals like kangaroo rat.
 - (b) Describe how ingestion of very salty food may reduce the amount of water excreted in urine.

4. A student mixed a sample of urine from a person with Benedict's solution and heated, the colour changed to orange.
 - (a) What was present in the urine sample?
 - (b) What did the student conclude on the health status of the person?
 - (c) Which organ in the person may not be functioning properly?

5.
 - (a) If the human pancreas is not functional:-
 - (i) Name the hormone which will be deficient
 - (ii) Name the disease the human is likely to suffer from
 - (b) What is diuresis?

6. Name the nitrogenous wastes excreted by the following organisms:-

Animal	Nitrogenous Waste
(i) Desert mole	
(ii) Marine fish	
(iii) Tilapia	

9. The table below shows description of sizes of glomeruli renal tubules of two animals which are living in different environments

	Animal X	Animal Y
Glomeruli	Large and few	Small and many
Renal tubules	Short	Long

(a) Name the likely environment in which each animal lives:

(i) Animal X

(ii) Animal Y

(b) What role does vasoconstriction play in thermoregulation?

8. The table below shows the approximate percentage concentration of various components in blood plasma entering the kidney, glomerular filtrate and urine of a healthy human being

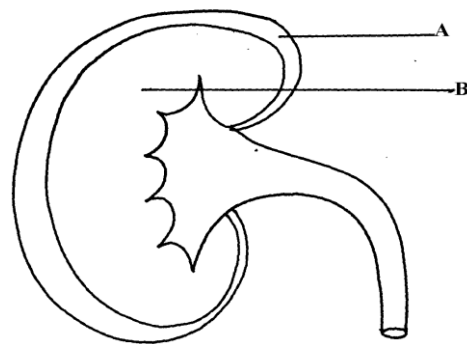
Component	Plasma	Glomerular filtrate	Urine
Water	90	90	94
Glucose	0.1	0.10	0.00
Amino acids	0.05	0.05	0.00
Plasma proteins	8.0	0.00	0.00
Urea	0.03	0.03	2.00
Inorganic ions	0.72	0.72	1.50

(a) Name the process responsible for the formation of glomerular filtrate

(b) What process is responsible for the absence of glucose and amino acids in urine?

(c) Explain why there are no plasma proteins in the glomerular filtrate?

9. What is the importance of sebaceous glands in the human skin?
10. Explain why sweat accumulates on a person's skin in a hot humid environment
11. Distinguish between diabetes mellitus and diabetes insipidus
12. State **two** processes through which plants excrete their metabolic wastes.
13. The figure below shows a vertical section through a mammalian kidney.



(a) Label the parts A and B

(b) Which part is the Bowman's capsule found?

14. (a) Explain the effects of the production of large amounts of Antidiuretic hormone in the human body
- (b) State **two** functions of the loop of Henle
15. [i]A person was found to pass out large volumes of dilute urine frequently.
Name the;

[a]Disease the person was suffering from,

[b]Hormone that was defficient.

16. State **three** importances of Osmosis in plants

17. A patient was complaining of thirst most of the times. A sample of the patient's urine was found not to contain a lot of sugar but was dilute:-

(a) Name the hormone the person's body was deficient of

(b) Which gland produces the above hormone

(c) Name the disease that the patient was most likely suffering from

18. State **two** features in the nephron that facilitate ultra filtration

19. The table below shows a description of size of glomeruli and renal tubules of two animals which are adapted to living in different environment:-

Animal A		
Animal B		
Glomeruli and many	large and few	small
Renal tubules	short	long

a) Name the likely environment in which animal **A** lives

b) Suggest the main nitrogenous waste produced by animal **B**

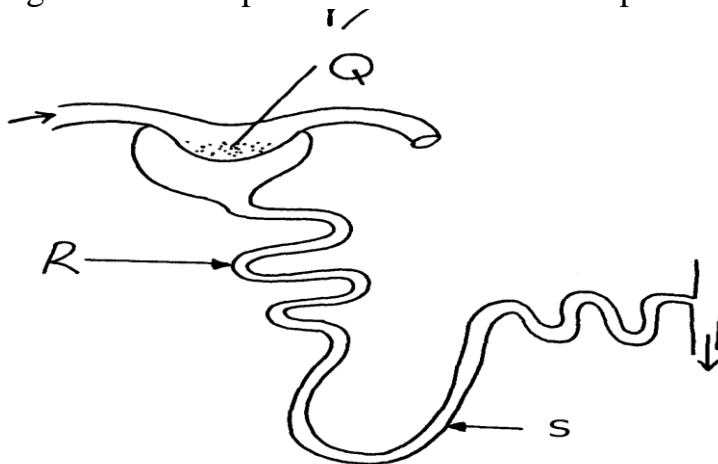
c) Name the organelle of osmoregulation in each of the following animal:

i) Paramecium

ii) Insects

20. What role is played by the liver in excretion?

21. The equation below represents a metabolic process that occurs in the mammalian liver: Amino acids → organic compound + urea
- a) Name the process
- (b) What is the importance of the process to the mammals?
22. A person was found to pass out large volume of dilute urine frequently. Name the:-
- (a) Disease the person was suffering from?
- (b) Hormone that was deficient
23. Explain the effects of the following on the quantity and composition of urine
- (a) Drinking large amount of clean water
- (b) Drinking very salty soup
- (c) Removal of pancreas
24. (a) Distinguish between **excretion** and **egestion**
- (b) State the importance of excretion in the bodies of living organisms.
25. What is the meaning of the following terms?
- [i] Homeostasis [ii] Osmoregulation
26. (a) What is poikilotherm?
- (b) State **two** classes of phylum chordata where all members are poikilothermic .
27. The diagram below represents a mammalian nephron



(i) Name the structure labelled **Q**

(ii) State **two** adaptations of part labeled **R**

28. Distinguish between internal environment and external environment as used in homeostasis

29. [a]Name the disease of the liver whose symptom is jaundice

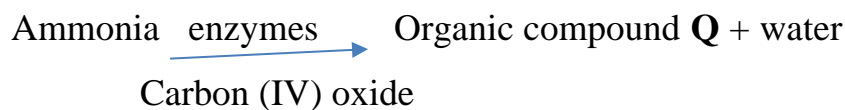
[b]State the causative agent of;

[i]Cholera

[ii]Candidiasis

30. Name the parts of the flower that are responsible for the production of gametes

31. The equation below represents a metabolic process that occurs in a certain organ in the mammalian body:-



a) Name the process represented in the equation.

b) Name the organ in which the process occurs.

c) Why is the process important to the mammal?

d) Identify the organic compound **Q**.

e) Explain the source of ammonia in the organ named in **(b)** above.

f) What happens to organic compound **Q**?

32. Kosgei and Onyancha collided during a football match and each got bruised.

Kosgei's bruise stopped bleeding after ten minutes while Onyancha's bruise continued bleeding and he had to be taken to hospital for treatment.

(a) Explain the process which brought about stoppage of Kosgei's bleeding

(b) Distinguish between blood clotting and haemagglutination.

(c) Name the disease, that Onyancha could be suffering from.

33. The table below shows the percentage of some substances in the glomerular filtrate and urine of a certain mammal:-

Substances	Contents in glomerular filtrate	Contents in urine
Water	90	90
Sodium ions	0.3	0.35
Chloride ions	0.37	0.60
Glucose	0.1	0.0
Urea	0.03	2.0
Proteins	0.0	0.0

(a) From the above table, account for ;

(i) The absence of glucose in urine

(ii) The absence of protein in both glomerular filtrate and urine

(b) Explain the significance of the flow system in the nephron where the glomerular filtrate flows in opposite direction to that of blood in the surrounding capillaries

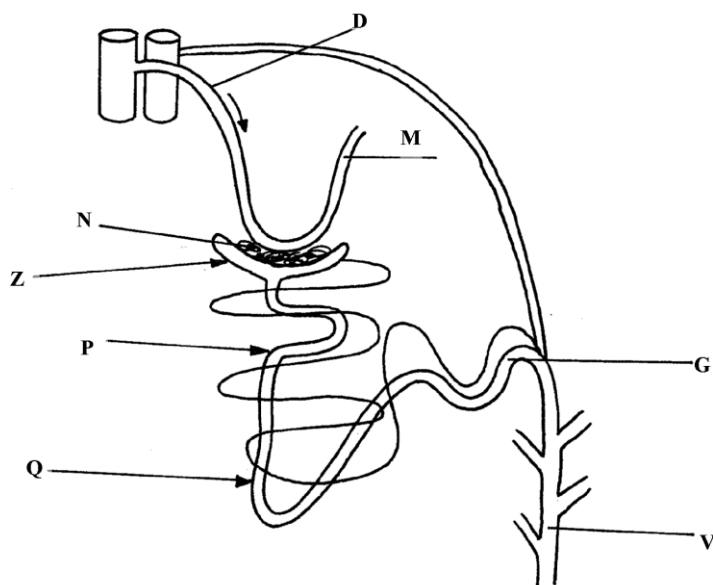
(c) Name the hormone that controls the percentage of water in urine and that which control the amount of salts

Percentage of water

Amount of salts

(d) List any **two** diseases /disorders of the kidney

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



(a) Name the structure represented by the diagram

(b) (i) Name the parts labelled **D** and **M**

(ii) Name the hormones whose sites of action are **Q** and **G**

(b) Name **one** substance that is present in part **N** but absent in part **Z**

(d) The contents of part **V** were boiled with Benedicts' solution and an orange precipitate was formed. Account for the results

35. In an investigation, two persons **A** and **B** drank the same amount of glucose solution. Their blood sugar levels were determined immediately and thereafter at intervals of one hour for the next six hours.

The results were as shown in the following table:-

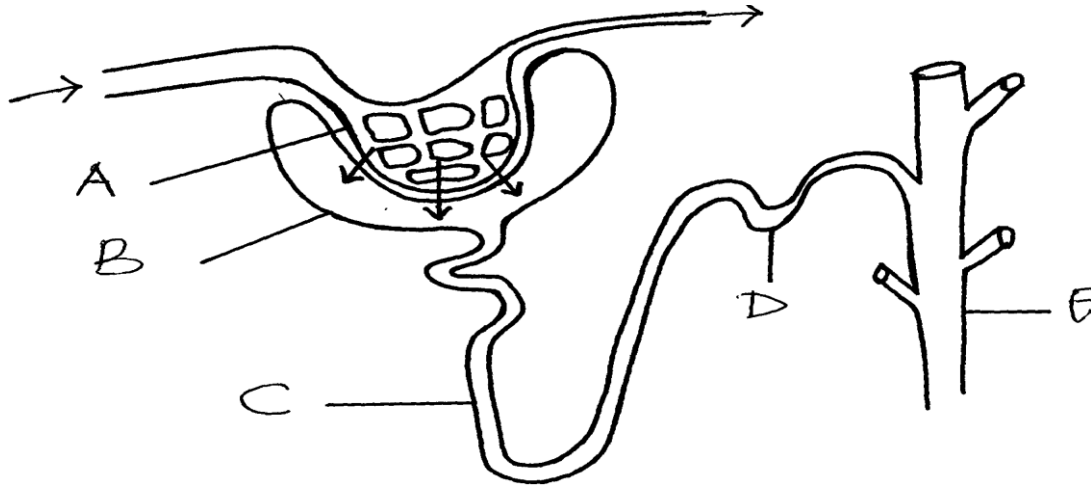
Time (hrs)	Blood glucose level (mg/100ml)	
	Person A	Person B
0	90	120
1	220	360
2	160	370
3	100	380
4	90	240
5	90	200
6	90	160

- (a) Draw a graph of blood sugar levels of persons **A** and **B** against time on the same axis
- (b) Explain each of the following observations;-
- (i) Blood sugar level increased in person **A** between 0 and 1 hour
 - (ii) The blood sugar level dropped in person **A** between 1 and 4 hours
- (c) From the graph, what is the normal blood glucose sugar level for human beings
- (d) Suggest a reason for the high sugar level in person **B**
- (e) How can the high blood sugar level in person **B** controlled?
- (f) What is the biological significance of maintaining a relatively constant sugar level in a human being
- (g) Account for the decrease in the blood glucose level of person **B** after 4 hours

36. a) Explain how urea is formed in the human body

b) Describe the path taken by urea from the organ where it is formed until it is released from the human body

37. The diagram below represents a mammalian nephron.



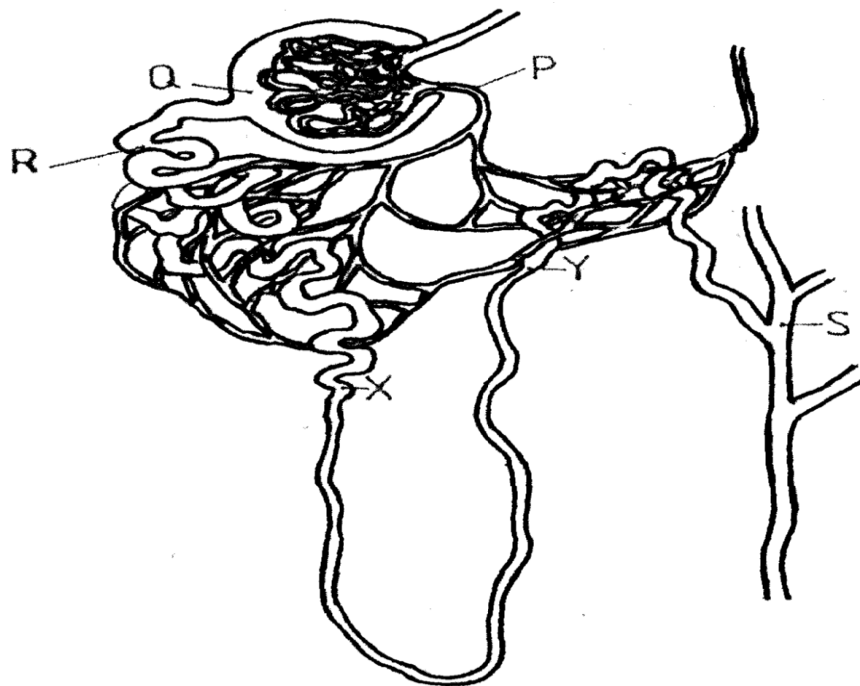
(a) Name the structures labeled **B**, **C** and **D**

(b) Name the process by which substances are reabsorbed from structure **C** into blood capillaries

(c) How is the pressure in structure **A** achieved?

38. How does an Endotherm respond to both heat gain and heat loss?

39. The diagram below represents a mammalian nephron



(a) Name the: (i) Structure labelled **P**

(b) State the structural modifications of the part label led **Q** for

(i) Desert mammals

(ii) Fresh water mammals

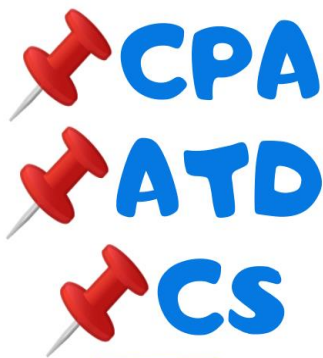
(c) (i) Name **one** substance present at point **R** but absent at point **S** in a healthy mammal.

(ii) The appearance of the substance you have named in (c)(i) above is a symptom of a certain disease. Name the disease

45. Describe how the mammalian skin regulates body temperature

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