

Name.....

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## MBOGO MIXED SECONDARY SCHOOL

### S.4 – BIOLOGY TOPICAL TEST - 2020

#### TRANSPORT IN PLANTS AND ANIMALS

TIME: 2HR

#### INSTRUCTIONS

- Attempt all questions in this paper
- Answers to be written on the space provided for section B.

#### SECTION A. Answer sheet

1		11		21		31	
2		12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28			
9		19		29			
10		20		30			

1. About 90% of plasma is composed of  
A. Salts      B. proteins      C. water      D. amino acids
2. The color of red blood cells comes from a pigment called.  
A. Thrombin      B. haemoglobin      C. globulin      D. albumin
3. The vitamin required for proper blood clotting is  
A. Vitamin A      B. Vitamin D      C. Vitamin E      D. Vitamin K
4. Circulation to and from the lungs is

A.coronary circulation  
B.jugular circulation

C.pulmonary circulation  
D.systemic circulation

5. Blood traveling to capillaries in the arm leave the heart from the  
A. left atrium    B. right atrium                      C. left ventricle    D. right ventricle

6. The blood cell fragments that play a role in blood clotting are the  
A. Erythrocytes              B. thrombocytes    C. mega karyocytes              D. leukocytes

7. The largest artery in the body is the  
A. pulmonary artery              B. coronary artery              C. hepatic artery    D. aorta.

8. During systoles, blood moves from the  
A. ventricles to the atria                      C. atria to veins  
B. atria to ventricles                      D. ventricles to the arteries

9. One of the functions of the lymphatic system is that it  
A. interacts with the respiratory system  
B. helps the body fight infections  
C. transports intercellular fluids away from the heart  
D. Consists of a series of two way vessels

10. The upper chamber of the heart are called  
A. Ventricles    B. atria                      C. septa                      D. valves

11. Oxygen rich blood enters the heart from the lungs through  
A. left atrium    B. right atrium                      C. left ventricle    D. right ventricles

12. The heart chamber that works hardest is the  
A. right atrium    B. left atrium    C. right ventricle    D. left ventricle

13. Red blood cells are produced in the  
A. Liver    B. thymus                      C. spleen                      D. bone narrows

14. People with blood group AB have  
A. antigen A                      B. antigen B    C. antibodies A and B    D. no antigens.

15. In the flowering plants translocation of the photosynthesis products is by the  
A. xylem vessels    B. sclerenchyma    C. sieve tubes    D. Companion cells.

16. Which of the following is the best description of the term double circulation in a mammal?  
A. blood flows into the two lungs and then into the body

- B. blood passes through the chambers of the heart
- C. blood passes through the heart twice in one circulation.
- D. Blood first flows through arteries and then through veins

17. The minerals responsible for blood clotting is

- A.  $\text{Na}^+$       B.  $\text{K}^+$       C.  $\text{Ca}^{2+}$       D.  $\text{Mg}^{2+}$

18. Which one of the following takes place by the process of active transport in plants?

- A. uptake of water      C. intake of carbon dioxide
- B. transportation      D. uptake of mineral salts

19. Which one of the following is not a property of a fully turgid plant cell?

- A. the vacuole has maximum volume
- B. there is no more absorption of water by the cell
- C. the cell wall resists further expansion of the vacuole
- D. the cytoplasm is only slightly separated from the wall.

20. Which one of the following cells could have their functions adversely affected by AIDS virus?

- A. Erythrocytes      B. blood platelets      C. leucocytes      D. thrombocyte

21. Which one of the following groups of animals possesses an open circulatory system?

- A. Amphibians      B. Insects.
- C. Mammals .      D. Fish.

22. A person of blood group A can be transfused with blood of,

- A. group A only.      B. group AB and only
- C. group A and O.      D. group B and AB.

23. In the process of blood clotting, thrombin acts as an enzyme to bring about conversion of ,

- A. fibrinogen to fibrin.      A. fibrin to fibrinogen .
- C. prothombin to thrombokinese .      D. fibrin to fibrinogen.

24. Which vessel empties fats into the right atrium of the mammalian heart?

A. posterior vena cava.

B. anterior vena cava.

C. pulmonary vein.

D. pulmonary artery.

25. Which one of the following has no effect on the rate of diffusion.

A density of diffusion

B. length of diffusing path way

C size of diffusing molecule

D. concentration gradient.

26 Which one of the following takes place by the process of active transport?

A. up take of water.

B. intake of carbon dioxide.

C. transpiration.

D. up take of mineral salts.

27. Why is a shoot being prepared for transpiration experiments normally cut under water?

A. avoid water loss which may cause wilting.

B. prevent loss of sap.

C. prevent air from entering the xylem vessel.

D. remove damaged tissue.

28. Decrease in the number of mammalian red blood cells could reduce the ability of the blood to ,

A. clot.

B. transport oxygen

C. destroy harmful bacteria.

D. distribute heat.

29 Individuals with blood group AB are said to be universal recipients because they have,

A.no antigens .

C.no antibodies.

B.both antigens and antibodies.

D.antibodies a and b.

30.Which of the following is true about arteries? They,

A. carries blood away from the heart.

B.carries deoxygenated blood.

C.carries oxygenated blood.

D.possess valves along their length.

31. Under what conditions is lactic acid likely to accumulate in man?

A. During sleep

B. When engaged in vigorous exercise

C. After breathing in carbon dioxide

D. After taking a deep breath

32. Which one of the following takes place by active transport in plant?

A. uptake of water

B. Uptake of mineral salts

C. Intake of carbon dioxide

D. Transpiration

33. Red blood cells are manufactured in the

A. Thyroid gland

B. Marrows of bones

C. Liver

D. Islets of Langerhans

34. What is the importance of Haemoglobin in man? It

A. readily combines with iron

B. gives blood the red colour

C. readily combines with oxygen

D. prevents sickness

35. Which of the following is not correct regarding blood flow in mammals?

- A. Blood flows to the kidney in the renal vein
- B. Blood flows to the lungs in the pulmonary artery
- C. Blood flows to the liver in the hepatic portal vein
- D. Blood flows to the veins from capillaries

36. In the process of blood clotting, thrombin brings the conversion

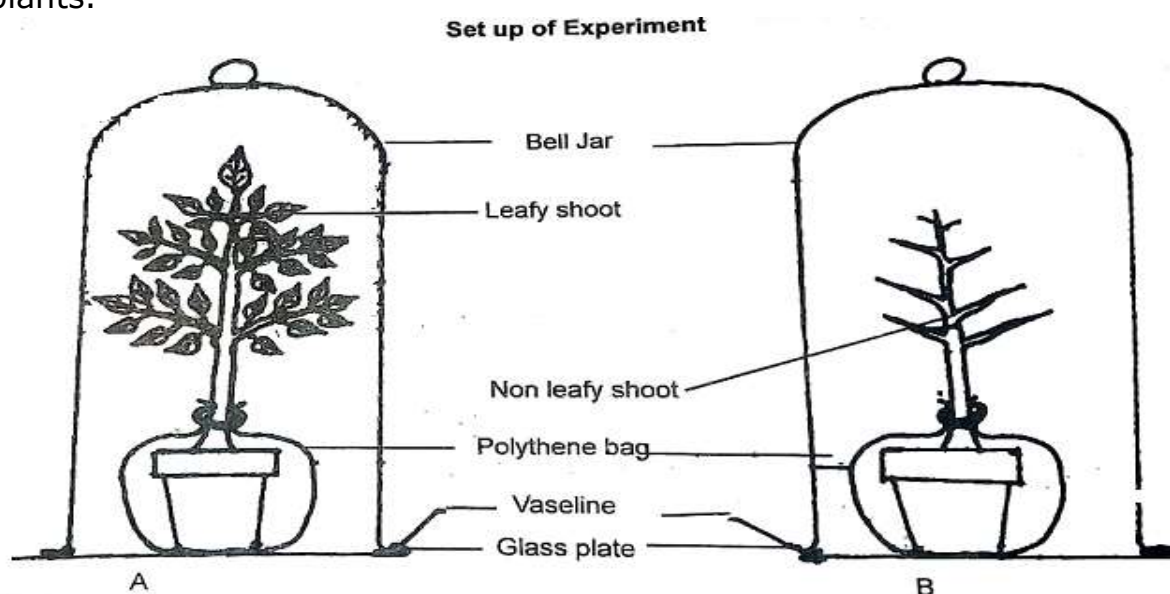
- A. Fibrinogen to fibrin
- B. Fibrin to Fibrinogen
- C. Prothrombin to thrombokinase
- D. Thrombokinase to prothrombi

37 Which one of the following is not an adaptation of plants to reduce transpiration?

- A. Fewer and smaller leaves
- B. Leaves reduced to spines
- C. Rolled up leaves
- D. Alternate leaf arrangement

## SECTION B

38. (a) The figure shows an experimental set up to demonstrate transpiration in plants.



(a) Explain why

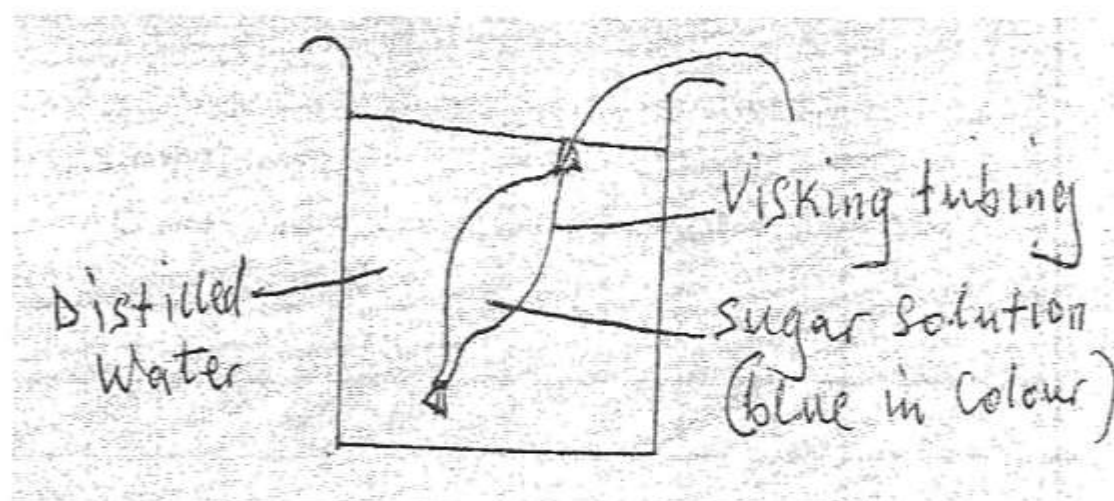
(i) Vaseline is smeared between the glass plates and the bell jar.(3mks)

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In an experiment, a visking tubing was half filled with concentrated sugar solution containing methylene blue dye. Both ends were tied well to prevent leakage. It was then rinsed with distilled water and immersed in a beaker containing distilled water. The set up is shown in figure below. After 6 hours, the water in the beaker turned blue and visking tubing was swollen with more solution.



(a) Explain why the visking tubing was swollen with solution at the end of the experiment.

(3 mks)

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(b) Name the process through which the water in the beaker turns blue. (1 mk)

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(c) Distinguish between osmosis and active transport. (3 mks)

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(d) State 3 roles of active transport in the human body (3 mks)

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40. (a) Briefly explain the following terms

(i) Hyper tonic solution

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(ii) Hypotonic solution

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(iii) Isotonic solution

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(b) The cell sap of root hair cells is hypertonic to the surrounding soil. Explain how this is important in absorption of water.5mks

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(c) State how the root hairs are adapted to absorption of water.6mks

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END