



*Dr. Bosa Science*

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NAME:.....

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## SENIOR FOUR

553/1

## BIOLOGY

## PAPER 1

## EXAM 17

TIME: 2 HOURS

### Instructions:

- Answer **all** questions in section A and B
- Answer **two** questions from section C
- Answers to section A should be written in the table provided.

### SECTION A:

Table for section A answers

	A	B	C	D		A	B	C	D
1					16				
2					17				
3					18				
4					19				
5					20				
6					21				
7					22				
8					23				
9					24				
10					25				
11					26				
12					27				
13					28				
14					29				
15					30				



11. Egg-white was placed into test tubes containing the following substances

- Tube 1 Dilute HCL
- Tube 2 Bile salts
- Tube 3 pepsin and dilute HCL
- Tube 4 Renin and dilute HCL

Which of the following test tubes will NOT show pink when heated with Millons reagent?

- A: tube 1
- B: tube 2
- C: tube 3
- D: ;tube 4

12. Holozoic nutrition involves 5 sequential stages. Which of the following sequences is correct?

- A: digestion – ingestion – assimilation – absorption
- B: ingestion – digestion – absorption – assimilation
- C: ingestion – digestion - assimilation – absorption
- D: assimilation – ingestion – digestion – absorption

13. Essential vitamins are those

- A: that can not be produced by the body and taken in diet
- B: that are produced in the body and not required in diet
- C: that are found in milk at birth
- D: obtained from fruits and prevent in man

14. The raw material of anaerobic respiration is

- A: oxygen
- B: carbon dioxide
- C: Alcohol
- D: Glucose

15. A muscle during anaerobic conditions

- A: accumulates inorganic phosphates
- B: uses up reserved glycogen
- C: sweet potato
- D: Adenosine triphosphate

16. The following are adaptations of plants to life in water except:

- A: small air spaces in stem and leaf
- D: thin layer of cuticle
- C: poorly developed xylem
- D: many stomata on lower surface than upper surface.

17. The non green parts of variegated leaves get sugar for respiration by

- A: Diffusion from the green parts
- B: transpiration pull
- C: translocation through the phloem
- D: Osmosis

18. Oxygen is normally transported in the

- A: plasma
- B: platelets
- C: leucocytes
- D: Erythrocytes

19. Which of the following is likely to happen to a man moving in the cold?

- A: perspiration
- B: vasodilatation
- C: palpitations
- D: vasoconstriction

20. A person with blood group O is said to be a universal donor because he

- A: lacks antigens in his red blood cells
- B: lack antibodies in his serum
- C: has both the antigens and antibodies in his blood
- D: has only antigen A in his red blood cells

21. Which of the following is not an advantage of vegetative propagation?

- A: maintenance of parental characteristics in the offspring
- B: Early maturity of the offspring
- C: production of more vigorous offspring
- D: increases the chances of colonising new areas

22. Menstruation may be defined as

- A: the release of an egg from the ovary
- B: the loss of uterine lining when an egg is not fertilised
- C: the fusion of the nuclei of the egg and sperm
- D: the production of a placenta to nourish the embryo.

23. A fruit containing many seeds and when ripe splits down both sutures is called...

- A: legume
- B: follicle
- C: capsule
- D: Schizocarp

24. Albinism is inherited through double recessive genes. If (A) stands for normal skin colour and (a) for recessive skin colour absence. Which of these parental crosses would produce 25% Albino offspring.

- A: AA x Aa
- B: AA x aa
- C: Aa x Aa
- D: aa x aa

25. Hinge joints may be found in each of the following place except the

- A: knee
- B: neural spine
- C: Elbow
- D: Finger

26. Which of the following structures/substances is responsible for hardness in wood?

- A: pith
- B: phloem
- C: xylem
- D: lignin

27. The rate of glomerular filtration is highest in

- A: man
- B: Amphibians
- C: fresh water fishes
- D: marine fishes

28. Which one of the following would lead to excretion of large quantities of sugar in urine of man?

- A: Removal of the pancreas
- B: drinking large quantities of water
- C: A hot day
- D: A meal rich in carbohydrates

29. A nocturnal bird was found to have a retina composed entirely of rods. This means that it

- A: has good colour vision
- B: has accurate vision in dim light
- C: can only focus on distant object
- D: can judge distance very well

30. Dwarfism may be caused by the lack of

- A: Adrenalin
- B: Thyroxin
- C: Insulin
- D: Graffian follicle

31. S4 students performed an experiment to find out the effect of saliva incubated at different temperature on starch. 5 cm<sup>3</sup> of saliva was added to 25 cm<sup>3</sup> of starch solution. Drops were withdrawn from the test tubes at 2 minutes intervals and amount of starch was tested.

Time (min)	Amount of starch (cm <sup>3</sup> ) (Arbitrary)		
	5°C	35°C	50°C
0	25	25	25
2	25	20	25
4	24	14	25
6	20	6	25
8	17	2	25
10	17	0	25
12	17	0	25
14	17	0	25

(a) Using a graph paper, plot a graph of amount of starch ( Y – axis) against time (x – axis)

(b) (i) Briefly describe the shape of the graphs at

5°C .....

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35°C .....

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50°C .....

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(ii) Explain each of the graphs above

5°C .....

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35°C .....

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50°C .....

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(c) (i) What was the effect of saliva on the starch

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(ii) Which of the above temperatures is suitable for the action of salivary amylase?

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

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(d) Another student tested the contents of the tube using benedicts solution. Explain what will be observed at time 0 and time 14

Time 0

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Time 14

5°C

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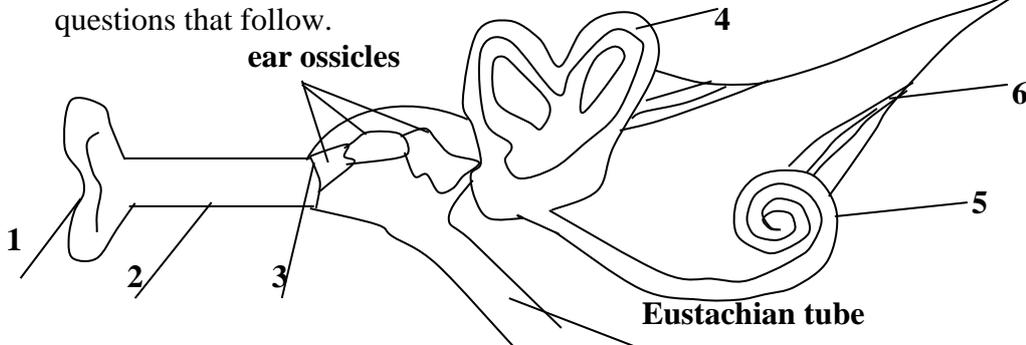
35°C

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50°C

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32. The figure below is a diagram showing the human ear. Study it and answer the questions that follow.



(a) (i) Label structures

- 1. ....
- 2. ....
- 3. ....
- 4. ....
- 5. ....
- 6. ....

(ii) What is the function of the substance produced by the structure 2?

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(iii) When mucus fills the Eustachian tube, hearing is impaired. Explain why.

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(b) In what ways do the following parts help the organism to hear?

(i) Ear Ossicles

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(ii) Structure 3

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(iii) Structure 6

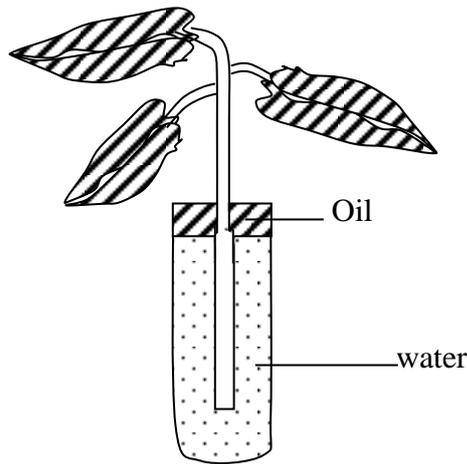
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33. S4 students arranged an experiment to investigate the factors affecting the rate of transpiration as shown below.



When the apparatus was weighed it was found to be 50g. It was then weighed at one-hour interval in the different environmental conditions and results are shown in the table below.

Table of results

Condition	Weight of apparatus (g)		
	1 hr	2 hrs	3 hrs
Windy	33	25	18

Darkness	47	44	42
Light	30	22	16

(a) (i) What was the purpose of oil in this experiment?

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(ii) In all the environmental conditions explain why the weight of the apparatus decreased with time.

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(b) (i) A large decrease in the weight of the apparatus was registered during light conditions than during darkness. Explain why.

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(ii) How does wind affect the results of the experiment?

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**SECTION C**

34. (a) What do you understand by the term osmosis?  
(b) An onion epidermis was placed in a strong/ concentrated sugar solution for 40 minutes. Another epidermis was placed in pure water for 40 minutes. Explain what happened in epidermis cells.
35. (a) What do you understand by the following terms  
(i) Heterozygote  
(ii) Co-dominance  
(iii) Sex linked genes  
(iv) Multiple alleles  
(b) Albinism is a condition where the skin fails to produce the skin pigment melanin. An Albino man married a normal woman and all their children were normal. One of the children married a woman whose mother was an albino and the father was normal. What is the phenotypic and genotypic ratio of their children?
36. (a) Give the structural differences between an artery and a vein  
(b) Describe blood flow through the mammalian heart
37. (a) Give the structural adaptations of the xylem and the phloem for their functions  
(b) Explain why plants do not have excretory organs.

END