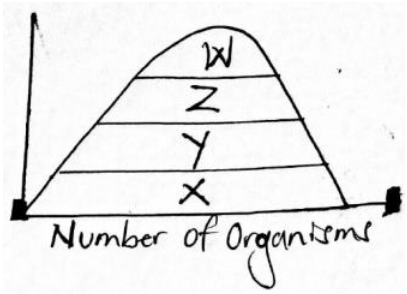
S.3 BIOLOGY ASSESSMENT TEST

TIME: 90 MINUTES INSTRUCTIONS: Attempt all questions.

SECTION A

1. A microscope has writing on the eye piece X5 and that on the objective lens X20. What is the magnification?
   A. X25 B. X1.5 C. X100. D. X200

2. **Figure 1** below shows the number of organisms in each taxonomic level.



   Which taxonomic level has the smallest number of organisms?
   A. X C. Y
   B. W D. Z

3. Which of the following is not a phylum?
   A. Arthropoda B. Mollusca C. Annelida D. Mammalia

4. When preparing to test for starch in aleaf, the leaf is boiled in alcohol in order to
   A. Burst chloroplasts
   B. Remove coloured material in a leaf
   C. Quicken the reactions of starch with Iodine.
   D. Soften the leaf

5. Which one of the following statements is **NOT** correct about photosynthesis?
   A. Water is required C. oxygen is a by-product
   B. Sugar is produced D. Carbon dioxide is produced

6. Which of the following soil types has the highest capillarity?
   A. Silt B. Clay C. Sand D. Loam

7. A vertical section cut, through the ground which shows different soil layers which differ in colour and particle size is called
   A. Soil profile B. Sediment C. Soil texture D. Soil structure

8. Which part of the leaf has the most chloroplasts?
   A. Upper epidermis C. Spongy mesophyll layer
   B. Palisade mesophyll layer D. Upper epidermis

9. The results of an experiment to determine the percentage of humus in a soil sample are shown below.

   Mass of crucible = 20g
   Mass of crucible + soil =40g
   Mass of crucible + soil (after drying) = 33g
   Mass of crucible + soil (after heating to red hot) = 30g

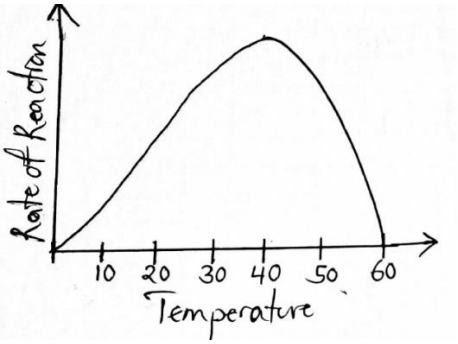
   What is the percentage of humus in the soil sample?
   A. 85.7 B. 33.0 C. 8.8 D. 15.0

10. At which of the following levels of classification can organisms interbreed and produce fertile offspring?
    A. Class B. Family C. Genus D. Species

11. Below are some parts of a cell.
    1. Cell membrane ***2. Cell wall*** ***3. Nucleus*** ***4. Chloroplast***

    Both plant and animal cells contain:
    A. (i) and (iv)
    B. (i) and (ii)
    C. (i) and (iii)
    D. (i), (ii), (iii) and (iv).

12. **Figure 2** below showing the effect of temperature (^{0}C) on the rate of reaction.



The optimum temperature of the enzyme in reaction shown in the figure 2 above is;
A. 20^{0}C
B. 60^{o}C
C. 40^{o}C
D. 30^{0}C

13. Which of the organism is not a heterotroph?
    A. Algae B. Mushroom C. Grass hopper D. Tick

14. Which of the following vectors transmits yellow fever?
    A. **Aedes** mosquito
    B. **Culex** Mosquito
    C. **Anopheles** mosquito.
    D. **Tiger** mosquito

15. In soil, nitrites are changed to nitrates by;
    A. Nitromonas
    B. Nitrobacter
    C. Azotobacter
    D. Haber process

16. Which of the following elements is required in the formation of chlorophyll?
    A. Copper B. Calcium C. Manganese D. Magnesium

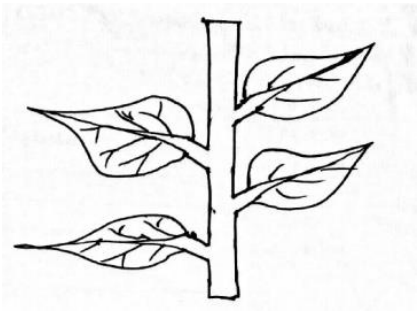
17. **Figure 3** below is a leaf type.

Which type of leaf is represented in the figure above?
A. Compound digitate
B. compound trifoliate
C. Compound pinnate
D. compound Bipinnate

18. The movement of water molecules from a region their high concetration to a region of their low concentration across a selectively permeable membrane is
    A. Active transport B. Osmosis C. Diffusion D. Cytosis.

19. The following pair of insects undergoes complete metamorphosis.
    A. Bee and Cockroach
    B. Termite and Housefly
    C. Mosquito and Housefly
    D. Locust and Mosquito

20. **Figure 4** shows leaf arrangement.



The type of leaf arrangement shown in the figure above is;

A. Alternate
B. Opposite
C. Whorled
D. Spiral

21. Which one of the following is a modified tap root?
A. Carrot tuber B. Cassava tuber C. Onion tuber D. sweet potato tuber.

22. A fruit containing many seeds and when ripe splits down both sutures is called.
A. Legume B. Follicle C. Capsule D. Schizocarp

23. The hardest part of the tooth is;
A. Enamel B. Dentine C. Pulp cavity D. Gum

24. What is the main function of the phloem in green plants?
A. Transporting water.
B. Supporting the plant.
C. Transporting mineral salts.
D. Transporting manufactured food.

25. Which one of the following fruits is an example of a drupe?
A. Avocado. B. Passion C. Tomato D. Orange

26. Photosynthesis is said to have a pair of raw materials, a pair of conditions and a pair of products. Which of those is the correct set?
A. Carbon dioxide and light, oxygen and sugar, water and chlorophyll
B. Water and Carbon dioxide, light and Chlorophyll, Oxygen and Sugars
C. Water and light, Carbon dioxide and Chlorophyll, sugars and oxygen.
D. Sugars and chlorophyll, water and oxygen, Carbon dioxide and Light.

27. Which one of the following sets of organisms belong to the same group?
A. Butterfly, beetle and starfish.
B. Crab, tapeworm and liver fluke.
C. Scorpion, mite and spider.
D. Jelly fish, slug and spider.

28. Which of the following parts of a plant cell provides shape and rigidity?
A. Protoplasm B. Nucleus C. Cell wall D. Cell membrane

29. Lack of Iodine in the human diet causes
A. Anaemia B. Goiter C. Scurvy D. Rickets

30. Which of the following farming practices would control soil erosion?
A. Application of artificial fertilizers.
B. Addition of compost manure
C. Terracing
D. Mixed farming.

SECTION B

31. An S3 student of Millennium SS carried out an experiment to find out the percentage of humus in a soil sample.

He recorded the following results;

(i) Weight of evaporating dish = 5g

(ii) Soil sample + evaporating dish (before heating) = 28g

(iii) Soil sample + evaporating dish (after heating gently) = 23g

(iv) Soil sample + evaporating dish (after heating strongly) = 21g

(a) (i). Why was the soil sample heated gently in the first time? ***(01 mark)***

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(ii) Why was the soil sample heated strongly in the second time? ***(01 mark)***

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(b) Calculate the;

(i) Weight of humus in the soil sample ***(02 marks)***

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(ii) The percentage of humus in the soil sample ***(02 marks)***

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(c) Calculate the amount of water in the soil sample? ***(02 marks)***

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(d) Define the following terms;

(i) Gravitational water ***(01 mark)***

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(ii) Capillarity water ***(01 mark)***

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32. Figure 2 shows an internal structure of a leaf.

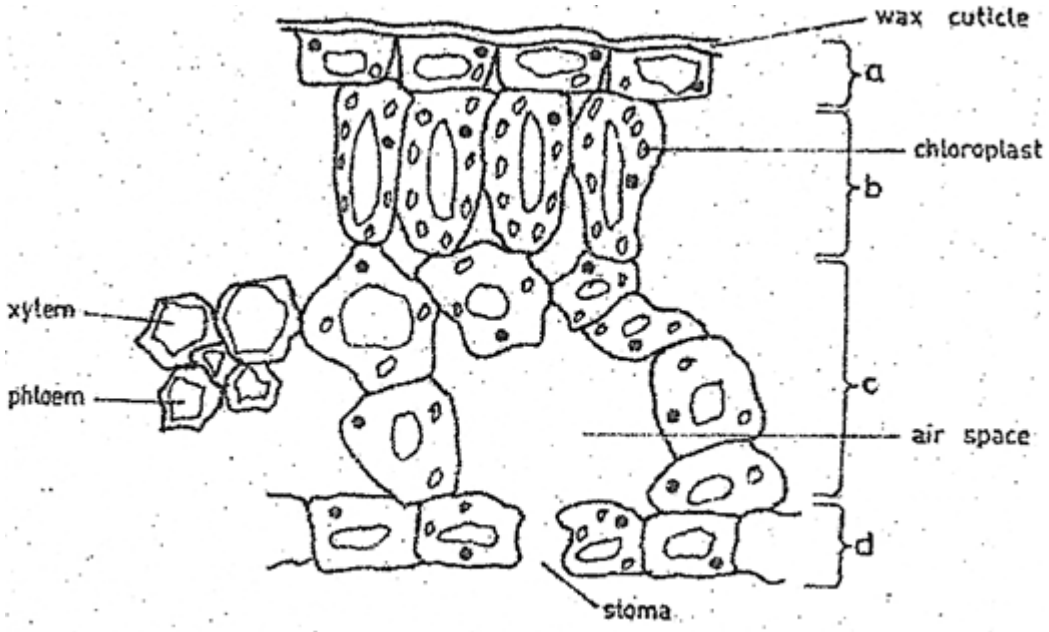

Fig. 2

(a) Label the layers marked a, b, c and d on the diagram. ***(02 marks)***

(b) Give three differences between layers b and c. ***(03 marks)***

Layer b	Layer c

(c) Using evidence from the diagram, describe how the structure of a leaf is suited for photosynthesis. ***(04 marks)***

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(d) What is the importance of wax on layer (a)? ***(01 mark)***

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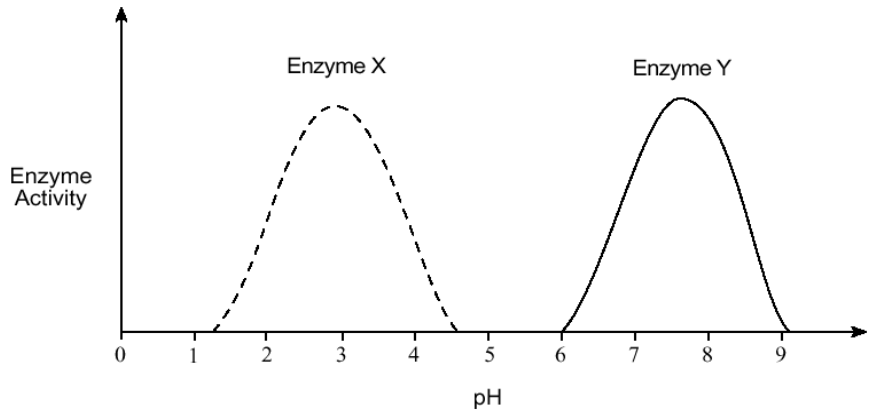
33. The graph below shows the effect of pH on the activity of enzymes X and Y.



(a) What is an enzyme? ***(02 marks)***

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(b) (i) Define the term optimum pH of an enzyme. ***(01 mark)***

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(ii) State the optimum pH for each enzyme. ***(02 marks)***

Enzyme X: …… **Enzyme Y**: ……

(c) (i) Give a reason for the pH of an enzyme being optimum. ***(01 mark)***

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(ii) Explain the effect of deviation from the optimum pH for each enzyme. ***(03 marks)***

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(d).Give any four properties of enzymes ***(04 marks)***

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END!!!!

"You will experience a painful sharpening from time to time, but this is required if you are to become a better pencil".