1. (a) What is meant by resolving power of a microscope.  
(b) State the reason behind the addition of iodine solution, to an onion epidermis on a slide while being observed on a light microscope.
2. a) It is necessary for large organisms to have an elaborate transport system. Explain why.  
b) Explain why an Amoeba does not require a transport system.
3. State the role of Hydrochloric acid in the stomach.  
4. Explain how presence of hairs on a leaf lowers the rate of transpiration.  
5. Account for the osmoregulatory changes that would take place in a marine amoeba if it was transferred to a fresh water environment.  
6. Identify the structural adaptation of a male and female parts of a flower, for wind pollination.  
7. Lamarcks theory of evolution has been rejected by scientist today. Explain why.  
8. State the role played by an exoskeleton in the class insecta.  
9. What is apical dominance?  
10. State the role of the following in digestion in a mammal:  
(a) Teeth  
(b) Enzymes  
11. When are the following hormones secreted?  
(a) Insulin hormone.  
(b) Anti-diuretic hormone. (ADH)  
12. A form three class set up the experiment shown below. Make a careful observation and answer the questions that follow.

If the set up was kept at a room temperature for one week,  
(a) What was the aim of the experiment?  
b) Account for the results at the end of the experiment.  
13. State the importance of sexual reproduction in living organisms.  
14. State the role of saprophytes in an ecosystem.  
15. List three characteristics that would place man in the class mammalia.  
16. Name two support tissues in plants.  
17. Study the diagram below and answer the questions that follow:
a) Identify the parts labeled: 

b) Explain how water from structure Q reaches structure T.

18. State how a root hair cell is adopted for its functions.

19. a) State two ways in which plants get rid of their nitrogenous wastes.
    b) State two adaptations of the nephron for selective re-absorption.

20. Describe any two ways in which an alveolus is adapted to its functions.

21. Account for the loss in dry weight of cotyledons in a germinating bean seed.

22. a) Name the type of responses exhibited by
    i) Movement of termites from dry soil towards moist soil.
    ii) Twinning stem on contact with a support.
    b) State the significance of the responses you have named in a) above.

23. Name the parts of the mammalian ear that are responsible for:
    a) Amplification of sound vibrations.
    b) Regulation of air pressure on both sides of the ear drum.

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

25. With reference to inheritance of genetic defects, state the meaning of the term carrier.

26. Chloroquin has been used for many years since its discovery, for the treatment of malaria, but it is no longer effective. Suggest why it is no longer effective.

27. Identify the type of muscle found in:
    a) Sweat duct.
    b) Heart

28. Give an account for each of the following:
    a) Xylem vessels do not collapse even when they do not contain water.
    b) A mature onion epidermal cell does not lose its shape even after losing water.

29. a) What are vestigial structures?
    b) State an example of a vestigial structure in man.

30. A student hammered a nail 1.5 meters high on the stem of a four-year-old tree. Suggest where you would expect to find the nail five years later when the tree will have grown further.

31. When is a plant cell said to be fully plasmolysed?

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32. Study the flow diagram showing the process of blood clotting and answer the questions that follow:

Vit K → Prothrombin → Thrombin

Ca^{2+} → X → Thrombin

Z ← Y ← platelets

a) Name the substance labeled X. 1mk

b) State the importance of the substance labeled Z. 2mks