1. What is active transport? (2mks)

2. What is meant by the terms
   (i) Hypogynous flower
   (ii) Pistillate flower

3. Distinguish between analogous and homologous structures.

4. (a) State the function of co-factors in cell metabolism. (1mk)
   (b) Give one example of a metallic co-factor. (1mk)

5. Suggest three measures that can be taken to control infection of man by protozoan parasites. (3mks)

6. Explain what would happen to onion epidermal cells if they were placed in distilled water. (5mks)

7. State the characteristics that can separate the following organisms into respective classes – millipedes, Tsetse fly and spider. (3mks)

8. Which type of a joint is found at the articulation of
   a) Pelvic girdle and femur.
   b) Humerous and ulna

9. Name the blood vessel that transports blood from
   (i) heart to the lungs.
   (ii) Small intestine to the liver

10. State three ways that the tracheole system in insect is adapted for gaseous exchange. (3mks)

11. a) State the role of light in the process of photosynthesis. (1mk)
    b) Name one of the end products of dark reaction in photosynthesis. (1mk)

12. State the role of the following hormones in the human body.
   a) Insulin
   b) Antidiuretic hormone

13. a) What happens to excess fatty acids and glycerol in the body? (2mks)
    b) State two functions of muscles found in the alimentary canal of mammals. (2mks)

14. a) Name the tissue that is responsible for secondary thickening in plants. (1mk)
    b) What is the role of water in a germinating seed? (2mks)

15. a) State two functions of synovial fluid in a joint in a mammalian skeleton (2mks)
    b) Name the three types of muscles found in a mammal. (3mks)

16. What is the function of the following cells in the retina of the human eye?
    a) Cones
    b) Rods

17. Name three types of chromosomal mutations. (3mks)
18. The graph below shows the effects of sewage on the population of a species of bacteria in a certain river.

Account for the changes in population of bacteria between 2 and 10 Kilometres down the river. (2mks) *BND*

19. Explain how tendrils of climbing plants coil around a support (3mks) *BND*

20. Name the spore producing structures in
   a) Bryophytes. (1mk) *BND*
   b) Pteridophytes (1mk) *BND*

21. a) During which phase of meiosis does crossing over occur. (1mk) *BND*
    b) How do identical and fraternal twins arise? (4mks) *BND*
       (i) Identical twins
       (ii) Fraternal twins

22. a) Account for the loss in dry weight of cotyledons in a germinating bean seed. (1mk) *BND*
    b) State three effects of gibberellins on shoots of plants. (3mks) *BND*

23. Which one of the cell organelles would be more numerous in;
   a) An enzyme secreting cell. (1mk) *BND*
   b) A rapidly respiring cell in comparison to other cells in the same organism? (1mk) *BND*

24. The figure below represents a transverse section of a young root.

   a) Identify parts labelled A and B. (2mks) *BND*
25. Give reasons for each of the following:
   a) Constant body temperature maintained in mammals. (3mks) *BND*
   b) Low blood sugar level is harmful to the body. (3mks) *BND*

26. State two ways by which leaves of plants are adapted to gaseous exchange. (2mks) *BND*

27. Other than Energy, name the other products of anaerobic respiration in plants. (2mks) *BND*