

DEPARTMENT OF BIOLOGY

Time: 2 ½ HOURS

INSTRUCTIONS: Attempt all questions in section A and B.

Answers to section A must be by ringing the letter before the correct alternative.

SECTION A (30 MARKS)

- Which one of the following blood vessels contains blood with the highest amount of oxygen?
 - Venacava
 - Hepatic vein
 - Pulmonary vein
 - Hepatic portal vein
- When testing for starch in a leaf, it is boiled in alcohol in order to
 - Kill the protoplasm
 - Make it permeable to iodine
 - Remove the chlorophyll
 - Make it soft
- Which one of the following cell structures is possessed by both animal and plant cells?
 - Chloroplast
 - Cell wall
 - Flagellum
 - Cell membrane
- Beans are usually included in crop rotation cycle because they
 - Act as cover crops
 - Improve water retention of the soil
 - Increase humus content in the soil
 - Restore nitrogen in the soil
- Which of the following are end products from digestion of cane sugar?
 - Sucrose and maltose
 - Glucose and fructose
 - Maltose and galactose
 - Fructose and galactose
- Which one of the following is a characteristic of the class insecta?
 - Cutaneous outer skeleton
 - Jointed limbs
 - Two pairs of wings
 - Three body parts

7. In grasses, the anthers hang out below the flower and the stigma is held out above the anthers. The importance of this arrangement is to
 - A. Improve the chances of pollination
 - B. Encourage cross pollination
 - C. Minimize waste of pollen grains
 - D. Encourage self-pollination
8. The best way to ensure that yeast added to sugar produces ethanol is by
 - A. Supplying a lot of oxygen to the mixture
 - B. Placing the mixture in warm conditions
 - C. Excluding air from the mixture
 - D. Using a lot of sugar in the mixture
9. Which of the following diseases are all transmitted by mosquitoes?
 - A. Elephantiasis, river blindness and yellow fever
 - B. Malaria, elephantiasis and river blindness
 - C. Yellow fever, river blindness and malaria
 - D. Yellow fever, malaria and elephantiasis
10. Which one of the following characteristics of an organism is most important in constructing a dichotomous key?
 - A. Body structure
 - B. Body colour
 - C. Body size
 - D. Age of organism
11. When 80 cm^3 of water was added to 100 cm^3 of soil, the volume of the mixture was 140 cm^3 . What was the percentage of air in the soil sample?
 - A. 20%
 - B. 40%
 - C. 60%
 - D. 80%
12. Which one of the following sets of characteristics of leaves enables them to absorb maximum light?
 - A. Broad lamina, tightly packed palisade cells
 - B. Being thin, possession of numerous stomata
 - C. Possession of numerous stomata, waxy cuticle
 - D. Being thin, large intercellular spaces
13. Figure 2 is a transverse section of a dicotyledonous root.

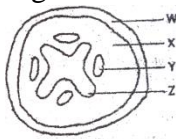


Fig. 2

Which one of the parts labelled, is responsible for the conduction of mineral salts and water?

- A. W
- B. X

- C. Y
- D. Z

14. Controlled feeding on food rich vitamin A may improve
- A. Calcium deposition
 - B. Number of red blood cells
 - C. Night vision
 - D. Healing of wounds
15. Which one of the following groups contains the largest number of organisms?
- A. Order
 - B. Species
 - C. Class
 - D. Phylum
16. People living at high altitudes have more red blood cells than those at lower altitudes in order to
- A. Breathe more quickly
 - B. Keep the body warm
 - C. Pump more blood
 - D. Absorb enough oxygen
17. The best description of the leaf in fig. 1 is

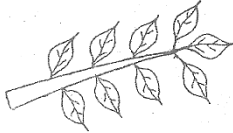


Fig. 1

- A. Pinnate and parallel veined
 - B. Palmate and net veined
 - C. Pinnate and net – veined
 - D. Bi pinnate and parallel veined
18. Which of the following parts of a microscope are adjusted in order to bring the specimen into focus?
- A. Eyepiece and coarse adjustment
 - B. Coarse and fine adjustment
 - C. Eyepiece and fine adjustment
 - D. Mirror and fine adjustment
19. P, Q, R and S are characteristics of insects
- P – undergo complete metamorphosis
 - Q – possess wings
 - R – have three pairs of legs
 - S – divided into three body parts
- Which of them are common to all insects?
- A. P and Q
 - B. R and S
 - C. Q and S

- D. P and R
20. Green plants give less carbon dioxide during day than at night because during day
- The rate of photosynthesis is low
 - Transpiration interferes with escape of carbon dioxide
 - Most stomata close
 - Some of the carbon dioxide produced is used for photosynthesis
21. Which one of the following structures of a flower develops into a seed coat after fertilization?
- Embryo sac
 - Integuments
 - Receptacle
 - Ovary
22. Which one of the following would happen to plasmolysed cells of a plant tissue that has been placed in water for some time?
- Their cell vacuoles would shrink
 - They would not experience any change in size
 - They would increase in volume
 - They would become shorter
23. When milk is the main food in the diet of a child, it should be supplemented with food rich in
- Iron
 - Calcium
 - Sugar
 - Vitamin D
24. Which one of the following is the least important function of humus in the soil?
- Improving soil aeration
 - Prevention of soil erosion
 - Water retention
 - Increasing soil fertility
25. The main reason why birds sit on their eggs during the incubation period is to ensure that
- Hatching occurs quickly
 - Rain does not destroy eggs
 - Eggs are kept at a constant temperature
 - All eggs develop chicks at the same time
26. Which one of the following pairs of organs is important in the digestion of fats?
- Stomach and liver
 - Pancreas and stomach
 - Liver and pancreas
 - Stomach and mouth
27. Which of the following is a likely effect of a decrease in the number of platelets in the blood?
- The blood may not be able to carry enough oxygen
 - There may be prolonged bleeding in case of an injury

- C. The body may not be able to fight disease
 - D. The body may not be able to distribute heat efficiently
28. Which one of the following characteristics may be used to determine whether leaves are compound?
- A. Nature of margin
 - B. Number of leaflets
 - C. Type of venation
 - D. Presence of leaflets
29. Which of the following parts of a microscope magnify the object?
- A. Eyepiece and mirror
 - B. Objective lens and mirror
 - C. Eyepiece and objective lens
 - D. Eyepiece and fine adjustment
30. While analyzing a soil sample, the following results were obtained:
Sand = 200 cm^3
Water = 300 cm^3
Water and sand after stirring = 450 cm^3
What was the percentage of air in the sand?
- A. 10%
 - B. 20%
 - C. 25%
 - D. 30%