

# BIOLOGY

## SECTION A: (20 Marks)

- Which of the following substances is not contained in the glomerular filtrate in the mammalian kidney?
  - Urea.
  - Plasma proteins.
  - Glucose.
  - Mineral salts.
- Which one of the following relationship is an example of mutualism?
  - Tapeworm living in a human gut.
  - Bacteria living in the gut of a cow.
  - Tick living on the skin of a pig.
  - Plasmodium living in human blood.
- Which of the following are not respiratory surfaces in animals?
  - Spiracles.
  - Tracheoles.
  - Gill filaments.
  - Alveoli.
- Strips W, X, Y and Z of the same size and shape were cut from a raw pawpaw, whose sap had a sugar concentration of 28%. The strips were then placed in sugar solution of different concentrations as shown in table I.

*Table I*

| Strip | Sugar concentration |
|-------|---------------------|
| W     | 15                  |
| X     | 25                  |
| Y     | 28.5                |
| Z     | 48                  |

- Which strip would be longest after 4 hours?
- X
  - W
  - Y
  - Z
- Which one of the following is the mode of feeding of a mould?
    - Holozoic.
    - Saprophytic.
    - Autotrophic.
    - Parasitic.
  - Which one of the following plant organs has a scattered arrangement of vascular bundles?
    - Root of a monocotyledonous plant.
    - Stem of a monocotyledonous plant.
    - Stem of a dicotyledonous plant.
    - Root of a dicotyledonous plant.
  - Which one of the following enzymes acts best in low pH?
    - Pepsin.
    - Peptidase.
    - Trypsin.
    - Lipase.
  - The part of the microscope used to make the image clear is the;
    - objective lens.
    - eye piece.
    - course adjustment.
    - fine adjustment.

9. The bacteria which converts ammonia into nitrates are called;
- putrefying bacteria.
  - nitrifying bacteria.
  - denitrifying bacteria.
  - nitrogen fixing bacteria.
10. Which one of the following foods is rich in iron?
- Milk.
  - Cheese.
  - Liver.
  - Butter.
11. Which one of the following conditions would lead to the highest transpiration?
- High light intensity and low temperatures.
  - Low light intensity and high temperatures.
  - Low humidity and high temperatures.
  - High humidity and low temperatures.
12. Which one of the following insects undergoes incomplete metamorphosis?
- Housefly and mosquito.
  - Butterfly and cockroach.
  - Honey bee and moth.
  - Cockroach and grasshopper.
13. Which one of the following occur in a flower after fertilisation?
- Petals, stigma and style persist.
  - Ovary develops into seed coat.
  - Ovary, petals and sepals dry and fall off.
  - Ovules develop into seeds.
14. Which one of the following is not a reproductive and storage organ of a plant?
- Yam rubber.
  - Ginger rhizome.
  - Cassava tuber.
  - Irish potato tuber.
15. Which of the following are not social insects?
- Ants.
  - Bees.
  - Termites.
  - Butterflies.
16. Which one of the following blood vessels has the highest level of nutrients?
- Mesentric artery.
  - Hepatic portal vein.
  - Renal artery.
  - Hepatic vein.
17. Which one of the following organisms has the largest surface area to volume ratio?
- Dog.
  - Frog.
  - Cockroach.
  - Ameoba.
18. Which one of the following is not an adaptation of a leaf for absorption of carbon dioxide?
- Its exposure in the air.
  - Presence of air spaces in the mesophyll layer.
  - Its being thin.
  - Presence of chloroplasts.
19. When test a leaf for starch, it is boiled in alcohol in order to;
- kill the protoplasm.
  - make it permeable to iodine.
  - remove the chlorophyll.
  - make it soft.
20. Which of the following organisms can reproduce both sexually and asexually?

- A. Amoeba.      B. Spirogyra.      C. Bacteria.      D. Yeast.

**SECTION B:** (19 Marks)

21. (a) State four ways in which a leaf is adapted for photosynthesis. (4 marks)

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- (b) State two ways in which food transported to growing region is utilized by the plant. (2)

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- (c) State two conditions that are needed for photosynthesis to occur? (2 marks)

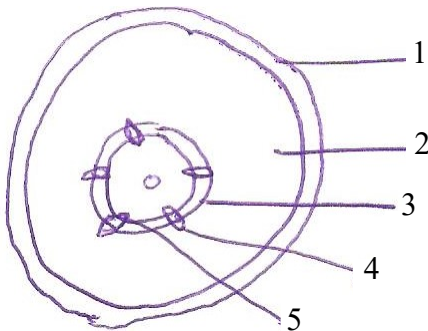
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22. (a) The figure below shows a cross section part of a plant.



Name the parts labeled 1 to 5.

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

4 \_\_\_\_\_

5 \_\_\_\_\_

- (b) Giving a reason, state the part of the plant from which the section was taken. (2)

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- (c) i) State the functions of parts labeled 3 and 4. (2 marks)

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4

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- ii) Give two similarities between the cells in part labeled 3 and those found at the tips a growing shoots. (2 marks)

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### **SECTION C:** (30 Marks)

23. (a) Name the components of the mammalian blood. (4 marks)
- (b) Give three structural differences between an artery and a vein. (3 marks)
- (c) Give the functions of blood circulation. (8 marks)
24. (a) Define diffusion. (1 mark)
- (b) State the factors that affect the rate of diffusion. (4 marks)
- (c) Explain an experiment that osmosis occurs in a living tissue. (10 marks)

***END.***