NAME: ………………………… ADM NO: ………….. CLASS: …………..
231/1
BIOLOGY
PAPER 1
FORM FOUR
ENDTERM 1 EXAM YEAR 2020
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

1. (a) State the functions of co-factors in cell metabolism. (1 mk)

   (b) Give one example of a metabolic co-factor. (1 mk)

2. Industrial wastes may contain metabolic pollutants,. State how such pollutants may indirectly reach and accumulate in the human body if the wastes were dumped into rivers. (3 mks)

3. The cell membrane is said to be polarized.   State the meaning and significance of a polarized membrane.
   (i) Meaning (1 mk)

   (ii) Significance (1 mk)

4. The diagram below represents an organelle.
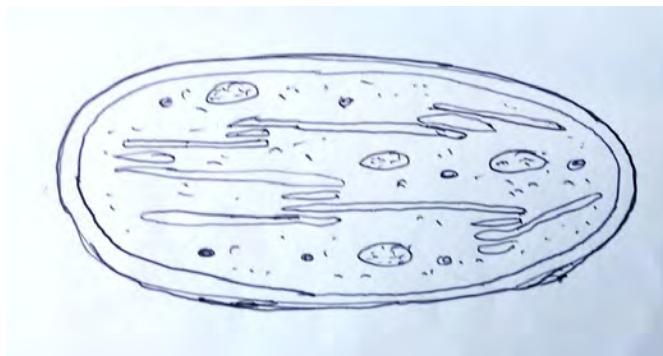
   (a) State the function of the organelle. (1 mk)

(b) Label on the diagram the parts of the organelle where:
    (i) Oxygen gas is produced as a byproduct.   (1 mk)

    (ii) Carbon (iv) oxide is fixed.   (1 mk)

5. State the functions of bile salts.   (2 mks)

6. State two ways in which pteridophyta differ from spermatophyte.   (2 mks)

7. Name the distinguishing features of class Aves.   (3 mks)

8 (a) Define the term "Alternation of generation".   (1 mk)

   (b) Name two plant divisions which exhibit alternation of generation.   (2 mks)

   (c) State the importance of gametophyte to a sporophyte.   (1 mk)

9. The equation below represents oxidation of a certain food substance

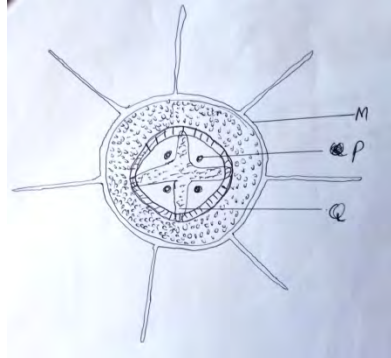$$C_{18}H_{36}O_2 \;+\; 26O_2 \qquad\qquad 18CO_2 + 18H_2O$$

(a) Calculate the respiratory quotient of the substance being oxidized.   (2 mks)

(b) Name the likely food substance being oxidized.   (1 mk)

(c) State one reason why respiratory quotient valves are important to work out.(1 mk)

10. Study the section below and answer the questions that follow.

(a) Identify the section.   (1 mk)

(b) Name the parts labeled M and Q.   (2 mks)

11. State two components of al phloem.   (2 mks)

12. Define the following terms as used in evolution and give an example in each case.
(a) Homologous structure -   (2 mks)

(b) Analogous structures.   (2 mks)

13. Explain comparative embryology as an evidence of organic evolution.   (3 mks)

14. State the demerits of Lamark's theory of evolution. (2 mks)

15. State the functions of the following parts of a germinating seed:
    (i) Coleorhiza - (1 mk)

    (ii) Coleoptile - (1 mk)

16. (a) Describe the role of hypothalamus in thermoregulation. (2 mks)

    (b) State the role of the following hormones in homeostasis:
    (i) Insulin - (1 mk)

    (ii) Glucagon (1 mk)

17. (a) State significance of al test cross in genetics. (1 mk)

    (b) State the function of Deoxyribonucleic acid DNA molecule. (1 mk)

18. What is adaptive advantage of sickle cell trait. (2 mks)

19. (a) Pregnancy continues if the ovary of an expectant mother is removed after the 4th month. Explain.

(2 mks)

    (b) What is the role of the testes in the mammalian reproductive systems? (2 mks)

20. (a) State two ways in which floating leaves of aquatic plants are adapted to gaseous exchange.

(2 mks)

    (b) Name two structures for gaseous exchange in aquatic plants. (2 mks)

21. The diagram below represents a nucleus:
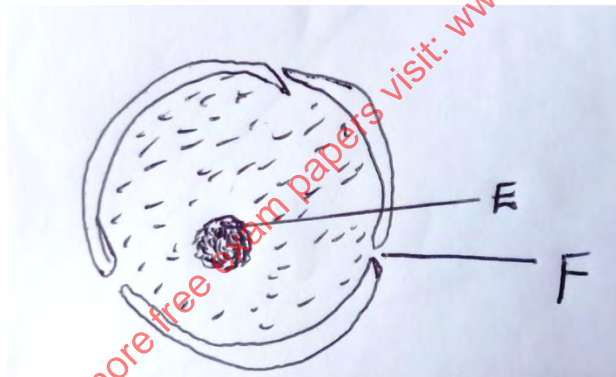

    (a) Name the structures labeled E and F. (2 mks)
        E –

        F –

    (b) State the function of F. (1 mk)

    (c) In reference to the nucleus, state one difference between an animal and a bacterial cell.

(1 mk)

22. State one use for each of the following apparatus in the study of living organisms.
    (a) Pouter -   (1 mk)

    (b) Pitfall trap   (1 mk)

23. (a) Name the substance which accumulates in muscles when respiration occurs with insufficient
        oxygen.   (1 mk)

    (b) In what form is energy stored in the muscles?   (1 mk)

24. Adult elephants flap their ears twice as much when it is hot. Explain.   (2 mks)

25. The diagram below represents a plant in the division Bryophyta
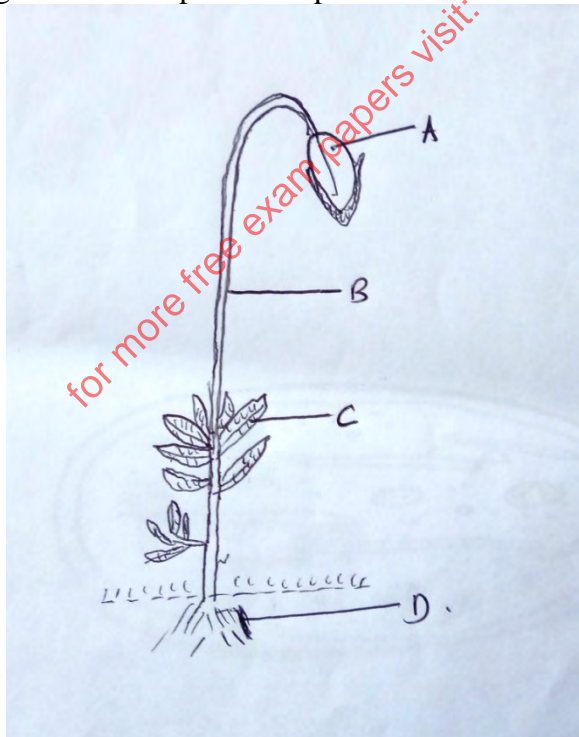
    (i) Name the parts labeled Band D .   (2 mks)
        B –

        D –

(ii) State one function for each of the parts labeled A and C.   (2 mks)

26. The   below represents a feeding relationship in an ecosystem.
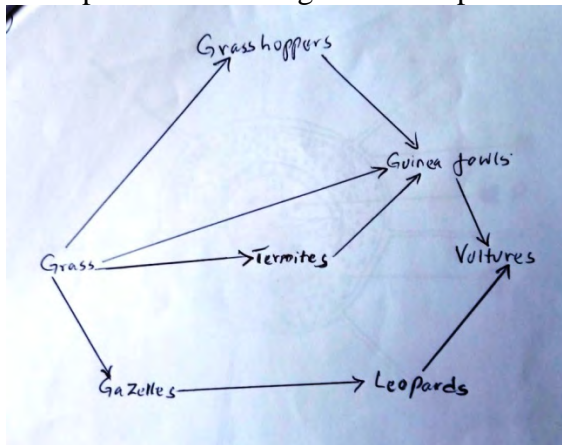
(a) Write down the food chains in which the guinea fowls are secondary consumers
                                                                                          (2 mks)

(b) What would be the short term effect on the ecosystem if lions invaded the areas?
                                                                                          (3 mks)

27. How is aerenchyma tissue adapted to its functions?

28. Explain how the following prevent self-pollination.
    (i) Protandry   (1 mk)

    (ii) Self sterility   (1 mk)

29. What name is given to response to contact with surface exhibited by tendrils and climbing stems
    in plants?   (1 mk)