NAME:……CLASS……ADM NO……

FORM 4 BIOLOGY PAPERS 1 (THEORY) 231/1

TIME:2 HOURS

80 MARKS.

ANSWER ALL THE QUESTIONS IN THE SPACES PROVIDED.

1. State the functions of the organelles below

a. Golgi bodies

b. Nucleolus(1mk)

2. State two adaptations of the xylem tissue.(2mks)

3. Below is a dental formula of a certain mammal;

   i $\frac{0}{3}c\frac{0}{1}$ pm $\frac{3}{3}$ m$\frac{3}{3}$

a. Work out the total number of teeth from the formula.(1mk)

b. State the likely mode of feeding for the mammal .Give a reason for your answer.(2mks)

4. (a) Name the gaseous exchange structures in insects.(1mk)

(b) State how the surface named in (4)(a) above is suited to is function.(2mks)

5. (a) Name the causative agent for each of the following diseases;

i. Tuberculosis

ii. Syphilis

6. State two reasons why accumulation of lactic in the tissues causes increased heart beat.(2mks)

7. Of late, Karimi has noted that he has been passing out large volumes of dilute urine frequently.

a. Name the likely disease he may be suffering from.(1mk)

b. State the hormone that is deficient.(1mk)

8. In a microscopy experiment, a light microscope was used to view epidermal cells of an onion. Students counted 40 cells across the field to view whose diameter was 4800 um.Work out the average length of each cell. Show your working.(2mks)

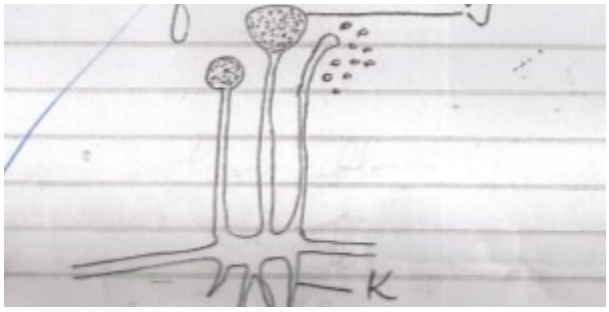
9. A person whose blood was B+ was transfused into one whose blood group was B-.The recipient died soon afterwards. Explain the cause of his death.(2mks)

10. State two differences between open and closed circulatory systems.(2mks)

11. (a) Explain why a goat requires less heat energy per day than a mouse.(2mks)

(b) Name the end product of respiration in animals when there is insufficient oxygen supply.(1mk)

12. The diagram below illustrations the structures of bread mould.



a. Name the part labeled J.(1mk)

b. State the functions of the structure labeled k.(2mks)

c. Name the kingdom to which bread mould belongs.(1mk)

13. In an ecological study in a school pond, students laid traps at random to catch frogs.

The students caught 500 frogs, marked them and then released them back into pond. After ten days, they laid traps and caught frogs. Out of the 380 frogs, 95 frogs were found to be marked.

a. Using this data, calculate the population size of the frogs in the pond.(2mks)

b. State two assumptions made in the study.(2mks)

14. State three characteristics that helps to promote cross-pollination in flowering plants.(3mks)

15. State two advantages of metamorphosis in the life of an insect. (2mks)

16. (a)Explain the meaning of the following terms ;

i. Hybrid vigour

ii. Polyploidy

(b) State two causes of chromosomal mutations.(2mks)

17. (a)State two advantages of natural selection to organisms. (2mks)

(b) Give a reason why organisms become resistant to chemicals.(1mk)

18. (a)Name the external feature which is common in birds ,fish and reptiles.(1mk)

(b) State two characteristics of fungi.(2mks)

19. List three symptoms of diabetes mellitus.(3mks)

20. (a) State two adaptations of mitochondria to their functions. (2mks

(b) Name the chemical substance that is oxidized to lactic acid in muscles in insufficient oxygen.(1mk)

21. (a) State what is tissue fluid.(1mk)

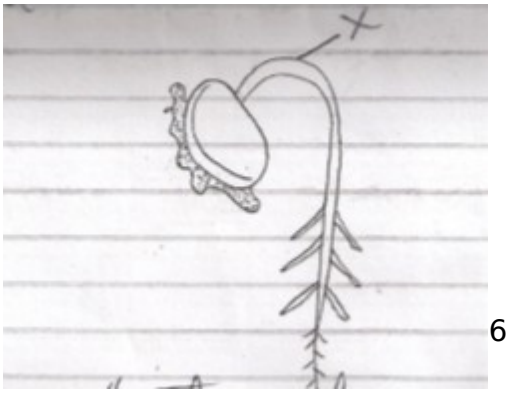
(b) What is the importance of the tissue fluids?(2mks)

22. Name three factors that may affect transpiration and absorption at any given time.(2mks)

23. (a) State two roles of mucus in the stomach (2mks)

(b) Give a reason why digestion of starch stops in the stomach.(1mk)

24. Below is a diagram of germinating seed.



a. Name the type of germination.(1mk)

b. State the functions of the part labeled x during germination.(2mks)

25. (a)Explain the meaning of the term non-disjunction.(1mk)

(b)Name two examples of continuous variations.(2mks)

26. (a) Name two ovarian hormones (2mks)

(b) What is the name given to male hormones that generally regulate reproduction?(1mk)

27. Name three characteristics of a population.(3mks)

28. Explain how the following factors determine the daily energy requirements in humans:
    a) Age(1mk)

    b) Occupation (1mk)

    c) Sex (1mk)

29. Explain how an increase in temperature affects the rate of active transport.(2mks)

30. (a) State the adaptation that enables red blood cells to move in blood capillaries.(1mk)

(b)How are red blood cells adapted to their function?(2mks)