FORM 3 END TERM 2 2020

BIOLOGY PAPER 1

1. Sate two ways in which the rough endoplasmic reticulum is adapted to its function.(2mks)

2. State three characteristics that are used to divide phylum arthropoda into classes.(3mks)

3. Distinguish between diffusion and active transport.(2mks)

4. An organism was found to have the dental formula:
   I $\frac{1}{1}$, $C\frac{0}{0}$ $PM\frac{3}{2}$,$m\frac{4}{4}$

   i. Calculate the total number of teeth in the organism.(1mk)

   ii. Giving a reason ,suggest the mode of feeding of the organism.(2mks)

5. a)Give a reason for the biconcave shape of the red blood cells.(1mk)

b) Name the enzyme that speeds up loading of carbon (iv) oxide in the red blood cells.(1mk)

6. a. Name the vitamin, an enzyme and a mineral element that are involved in blood clotting.(1½mks)

i. Vitamin

ii.Enzyme;

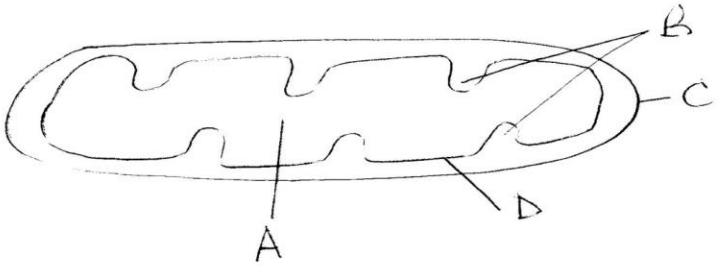
iii.Mineral element

b.Differenciate between heparin and histamine.(2mks)

7. a.Name the part of the brain that influences breathing rate.(1mk)

b.State two advantages of breathing through the nostrils instead of through the mouth in mammals.(2mks).

8. The diagram below resents a cell organelle.



a. Name the main product of the organelle's activity.(½mk)

b. Name the parts labeled A,B , C and D.(2mks)

A-

B-

C-

D-

9. a.State the cause of diabetes mellitus.(1mk)

b.How may the disease in (9)(a) above be tested in a School laboratory?(2mks)

10. a.Distinguish between ecological niche and habitat.(2mks)

b.State two reasons why plants are included in a fish pond other than provision of food.(2mks)

11. State the functions of the following parts of a light microscope.

a) Diaphragm.(1mk)

b) Objective lenses.(1mk)

12. a.Define the term respiratory quotient.(1mk)

b (i) After respiration of a certain substrate 50cm^3 of carbon (iv) oxide was produced and 70cm^3 of Oxygen was used .Calculate the respiratory quotient of the substrate.(1mk)

ii.Name the substrate in (12) (c) above. (1mk)

13. (a) If a person who lives at low attitude moves to a higher attitude, changes occurring his blood consumption. Name two of these changes.(2mks)

c. State the importance of these changes.(1mk)

14. How are leaves of submerged plants adapted for photosynthesis? (2mks)

15. Name the causative agents of the diseases below:-

a. Anthrax (1mk)

b.Gonorrhea (1mk)

C.Whooping cough(1mk)

16. Explain why plants in waterlogged soils dry up.(3mks)

17.a) Name the antigens that determine human blood groups(2mks)

c) Explain why people who have blood group AB are called universal recipients.(2mks)

18. Name three processes in the human body in which homeostasis is involved.(3mks)

19. a) How are root hairs adapted to their function?(2mks)

b) Name the process by which food is transported in plants.(1mk)

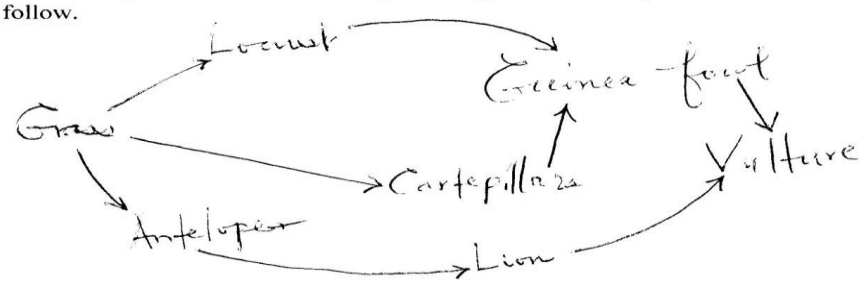
20. State the significance of the following adaptations in a leaf.

a. Thinness (1mk)

b.Presence of airspaces(1mk)

c.Stomata (1mk)

21. Study the food web below representing a certain ecosystem and use it to answer the questions that follow.



a. State the trophic level occupied by the lion in the food web.(1mk)

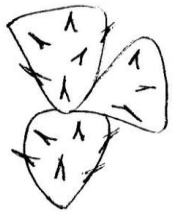
b. Write down a food chain in which the vulture is a tertiary consumer(1mk)

c. i.Name the organism with the largest biomass(1mk)

Ii.Give two reasons for your answer in (c)(i) above.(2mks)

22. Explain how temperature affects an enzyme controlled reaction.(3mks)

23. The diagram below represents a certain plant.



a. What is the likely habitat of the plant?(1mk)

b.Give two reasons for your answer in (a) above.(2mks)

24.The number of stomata on the lower and upper surfaces of two leaves from plant species x and y were counted under the field of view of a light microscope. The results were as shown below.

Leaf	Number of stomata	
	Upper surface	Lower surface
x	4	12
x	20	23

a. Which of the two leaves would be expected to have a lower rate of transpiration?(1mk)

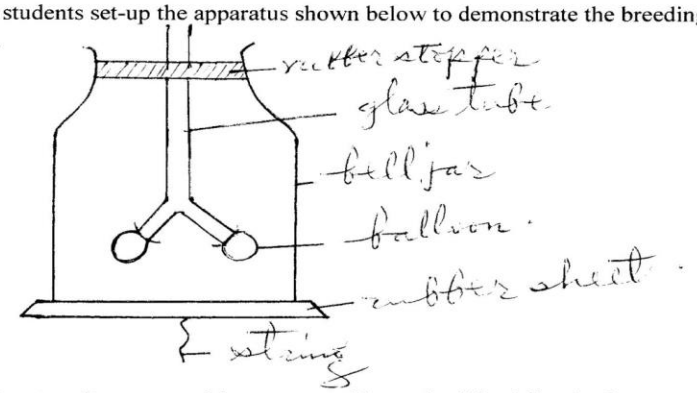
b. Give a reason for your answer in (a) above.(1mk)

25.Construct a dichotomous key for the animals listed below. Part of the key has already been constructed.Bird,Snake,Lizard,Hyena.(4mks)

a. Animal a mammal,…….. Hyena.
b. Animal not a mammal….. go to R.

26. Other than transport of substances, state two other functions of mammalian blood.(2mks)

27.Some students set-up the apparatus shown below to demonstrate the breeding mechanism in a mammal.



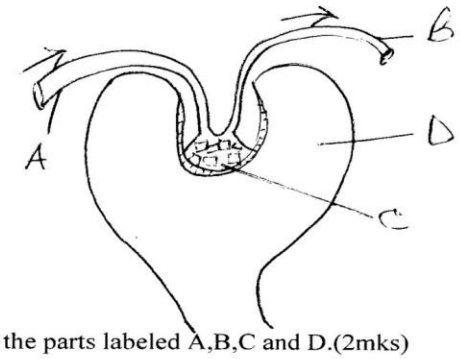
a. What structure in a mammal is represented by each of the following?

i. The glass tube.(1mk)

ii.The ballons.(1mk)

iii.The bell jar.(1mk)

28.The diagram shown below represents a part of the nephron.Use it to answer the questions that follow .



a. I)Name the parts labeled A,B,C and D.(2mks)

A-

B-

C-

D-

ii.Name the fluids found in C and D.(2mks)

C-

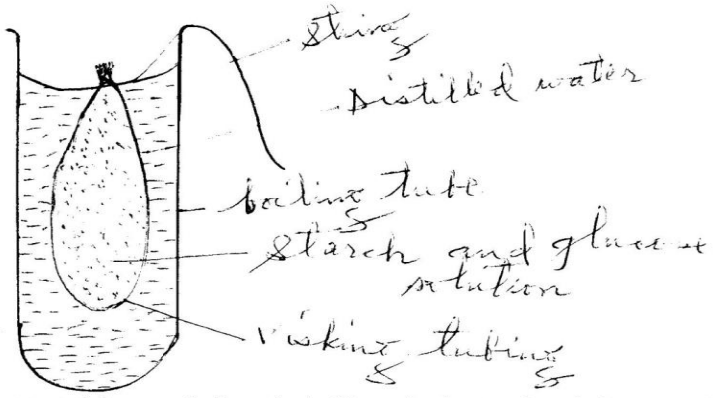
D-

iii.Name the process by which the fluid found in D is formed(1mk)

iv.Mention one difference in the composition of the fluids in C and D.(1mk)

29. Apart from having many features in common, state another characteristic of members of a Species (1mk)

30.An experimental set-up shown below was used to investigate a certain process.



After 20minutes, a student tested the sample from the boiling tube for starch and glucose and recorded the results as shown in the table below.

	Start	After 20 minutes
Start	Absent	Absent
Glucose	Absent	Present

a. Explain the presence of glucose in the water sample.(2mks)

b. What change occurred in the volume of liquid in :
   i. The boiling tube(1mk)

   ii. The visking tube(1mk)

31.State and explain how respiratory surfaces are adapted for gaseous exchange.(3mks)

32.The equation below shows a process that takes place in mammals.

Amino acids ⟶ Organic Compound + Urea

a. Identify the process(1mk)

b. State the importance of this process to a mammal.(1mk)

c. In which organ does this process take place? (1mk)