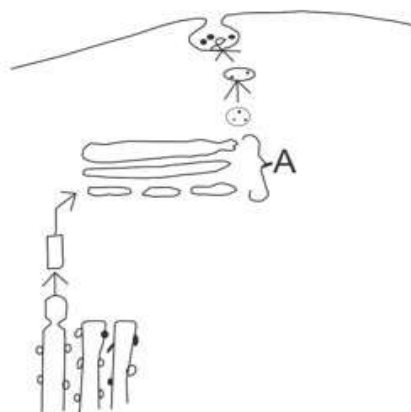


FORM FOUR CLUSTER KCSE MODEL5

BIOLOGYPAPER 1 QUESTIONS

1. When is glycogen which is stored in the liver converted into glucose and released into the blood.
.....
2. Name three sites where gaseous exchange takes place in terrestrial plants.
.....
.....
3. a) What causes the following diseases?
i) Diabetes mellitus
.....
ii) Diabetes insipidus
.....
4. To estimate the population size of crabs in a certain lagoon, traps were laid at random; 400 crabs were caught marked and released back into the lagoon. Four days later, traps were laid again and crabs were caught out of the 374 crabs, 80 were found to be marked. Calculate the population size of the crabs in the lagoon.
.....
.....
5. a) What is the biological importance of the larval stage during metamorphosis?
.....
.....
b) State two advantages of metamorphosis to the life of insects.
.....
.....
6. Adult elephants flap their ears twice as much as their calves in order to cool their bodies when it is hot. Explain
7. Study the diagram below and use it to answer the questions.



a) Identify the organelle marked A.

.....

b) Give three functions of the organelle named in (a) above.

.....

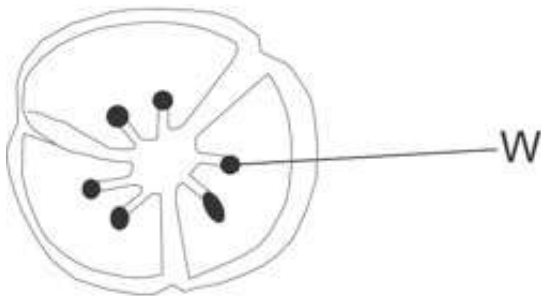
8. a) What is adaptive radiation?

.....
.....

b) Give a reason why organisms become resistant to drugs

.....

9. The diagram below represents a transverse section of an ovary from a certain flower



a) i) Name structure labelled W

.....

ii) Name the type of placentation illustrated in this diagram.

.....

b) Give an example of a plant whose flowers have the type of placentation named in (a) ii) above.

.....

10. It was found that during germination of pea seeds 9.3cm³ of carbon (IV) oxide was produced while 9.1cm³ of oxygen was used up.

a) Calculate the respiratory quotient (RQ) of the reaction taking place.

.....
.....
.....

b) Identify the type of food substance being metabolized.

.....
.....

11. Identify the nucleic acid whose base sequence is shown below

G-A-C-U-A-G-A-C-G

i) Identify the type of nucleic acid shown above.

.....

.....

ii) Give reason for your answer in (i) above.

.....
.....

iii) Write the base sequence of a DNA strand for the nucleic acid shown above.

.....
.....

12. a) State one similarity between diffusion and osmosis.

.....
.....

b) State two factors that can reduce the rate of active transport.

.....
.....

13. Besides the abdomen, name the other body part of members of Arachnida.

.....

14. How are leaves of submerged plants adapted for photosynthesis?

.....
.....

15. a) What is the effect of contraction of the diaphragm muscles during breathing in mammals?

.....
.....

b) Name two structures of gaseous exchange in aquatic plants.

.....

16. a) Pregnancy continues if the ovary of an expectant mother is removed after four months. Explain

.....
.....

b) What is the role of testes in the mammalian reproductive system?

.....
.....

17. a) Name the products of anaerobic respiration in

i) plants

.....

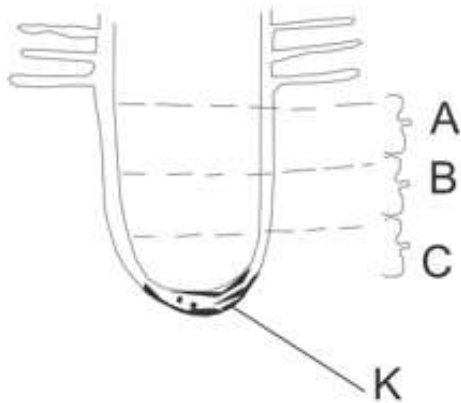
ii) animals

iii)

b) What is oxygen debt?

.....
.....

18. The diagram below shows regions of growth in a root. Study it and answer the questions that follow.



a) Name the zone labelled B

.....

b) State the function of part K.

.....

c) State two characteristics of cells found in zone C.

.....

19. State one survival value for each of the following in plants.

a) Thigmotropism in stems

.....

b) Hydrotropism in roots

.....

20. State one use for each of the following apparatus in the study of living organisms.

a) Pooter

.....

b) Pitfall traps

.....

21. a) Name two types of chromosomal mutations (abberations)

.....

b) Give an example of a sex – linked trait in humans on

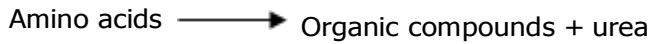
i) Y – chromosome

ii) X- chromosome

22. Explain why Larmarks theory of evolution is not accepted by biologists today.

.....
.....

23. The equation below represents a metabolic reaction that occurs in the mammalian liver.



a) Name the process

.....

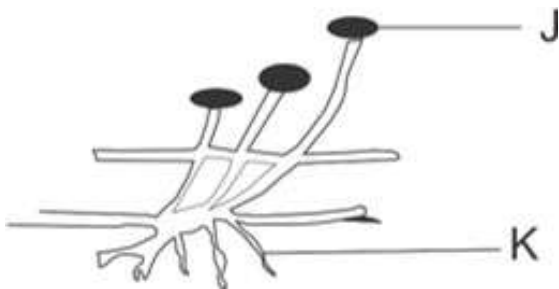
b) What is the importance of the process to the mammal?

.....

c) What is the source of amino acids in this process?

.....

24. The diagram below illustrates the structure of bread mould



a) Name the part labelled J.

.....
.....

b) State the function of the structure labelled K.

.....
.....

25. What is the role of bile salts in humans?

.....
.....

26. What is the role of the following to a germinating seed?

a) Oxygen

.....

b) Cotyledons

.....

c) Water

.....

27. The table below shows the transportation of substances in human body.

Substance	Transported by blood	
	From	To
Oxygen	M	Whole body
N	Liver	Kidneys
P	Intestine	Whole body

Name the substances represented by

M.....

N.....

P.....

28. a) State two ways in which chloroplasts are adapted to their functions.

.....

b) Name the chemical used to test for the presence of starch in a food substance.

.....

29. The table below shows the concentration of some ions in pond water and in the cell sap of an aquatic plant growing in the pond.

Ions	Concentration in pond water	Concentration in cell
Sodium	50	30
Potassium	2	-
Calcium	15	1
Chloride	180	200

a) Name the process by which the following ions could have been taken up by this plant.

i) Sodium ions

.....

ii) Potassium ions

.....

b) For each processes named in (a) (i) and (ii) above state one condition necessary for the process to take place.

i)

ii)