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KCSE REVEALED 2021

BIOLOGY

PAPER I

This PDF consists of two sample exams that contains questions that are expected in the national exams 2021

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SAMPLE I

FORM FOUR

Kenya Certificate of Secondary Education

231/1 BIOLOGY

PAPER ONE

TIME: 2HRS

INSTRUCTIONS

Answer **ALL** the questions in spaces provided.

SECTION A

1. A young scientist observed a bird laying her eggs in a nest and later the eggs hatched into chicks. Name three characteristics shown by the chicks that show a chick is a living thing but an egg is not
   (3mks)

   ……

   ……

   ……

2. Which organelles should be abundant in;
   i) Skeletal muscle (1mk)

   ……

   ii) Palisade tissue (1mk)

   ……

3. A form 1 student was preparing temporary slides in the laboratory, in the course of preparation he carried out the following processes;
   i) Sectioning
   ii) Fixation
   iii) Staining

   State the importance of the above processes
   (3mks)

   ……

   ……

   ……

4. Why are lysosomes many in phagocytic cells
   (2mks)

   ……

   ……

5. Differentiate between guttation and transpiration (2mks)

   ……

……

……

6. a) Give a reason why xylem vessel should be dead (1mk)

……

b)What is the role of lignin in the wall of the xylem vessel (1mk)

……

7. Name the disease of the blood characterized by,

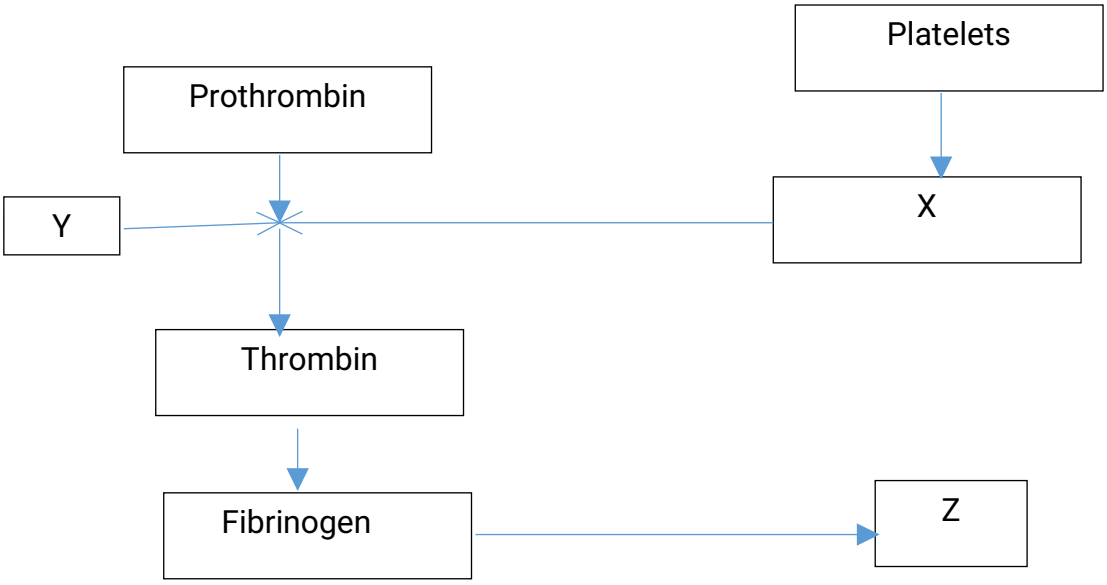
a) Abnormally large number of white blood cells (1mk)

……

b) Cresent –shaped haemoglobin (1mk)

……

8. The chart below is a summary of blood clotting mechanism in a man.



Name;

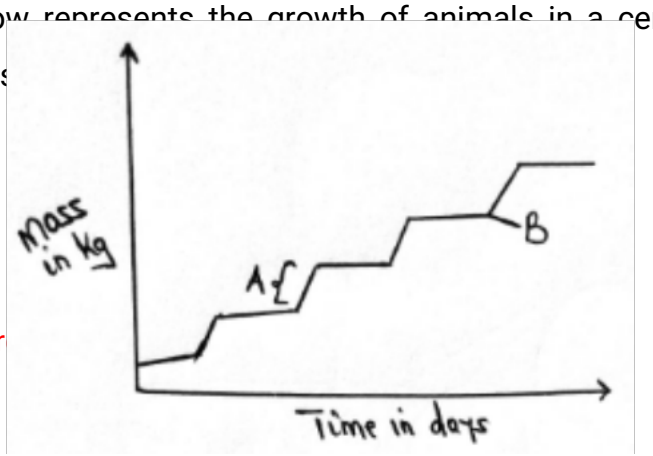
i) The metal ion represented by Y (1mk)

……

ii) The end product of the mechanism represented by Z (1mk)

……

9. The graph below represents the growth of animals in a certain phylum. Study it and answer the ques



a) Name the type of growth pattern shown on the graph (1mk)

……

b) Identify the process represented by letter B (1mk)

……

c) Name the hormone responsible for the process in (b) above (1mk)

……

10. Explain why a mule is infertile (1mk)

……

……

11. Phylum Arthropoda is the most successful of invertebrates. Explain two characteristics that make them most successful
(2mks)

……

……

……

12. Name phylum whose members possess a notochord
(1mk)

……

13. a) Define evolution and homologous structures (2mks)

……

……

……

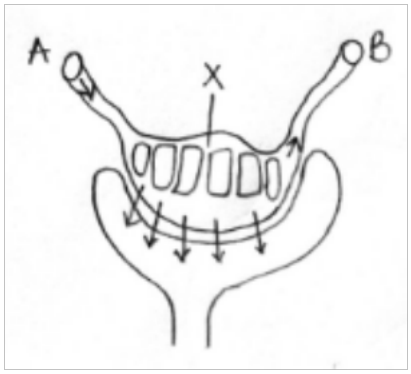
b)State three limitations of using fossil records as an evidence that supports organic evolution (3mks)

……

……

……

14. The following is part of a kidney nephron



a) i)Name the process represented by the arrows (1mk)

……

ii) Name the conditions necessary for the process named in (a) (i) above to take place

(1mk)

……

b) Identify with a reason vessel A (1mk)

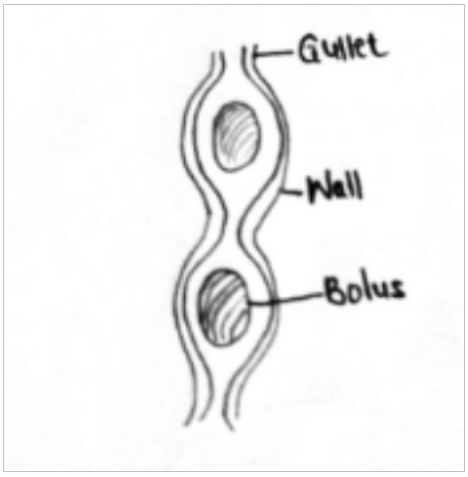
……

c) Name any two blood components that are present in vessel (A) but are absent in vessel B (2mks)

……

……

15. The diagrammatic representation below illustrates one of the process that occurs in mammals during feeding. Carefully study it and answer the following questions



i) Identify the process (1mk)

……

ii) State two structural adaptations of gullet to its functions (2mks)

……

……

iii) Name one enzyme already present in the food bolus within the gullet in man (1mk)

……

b) State two functions of mucus secreted by the intestines (2mks)

……

……

16. Explain each of the following;

a) Variegated plants accumulates less food than non-variegated plants under similar conditions. (2mks)

……

……

……

b) Most leaves are thin with broad leaf surface (2mks)

……

……

……

17. State the economic importance of the following plant excretory products (3mks)

a) Papain

……

b) Caffein

……

c) Colchicine

……

18. a) State two processes which occurs during anaphase of mitosis (2mks)

……

……

b)What is the significance of first meiotic division (1mk)

……

c)State two ways in which HIV/AIDS is transmitted from mother to child (2mks)

……

……

19. State the function of the following during pregnancy (3mks)

a) Amnion

……

b) Amniotic fluid

……

c) Umblical cord

……

20. Name the process by which;

i) Producers convert sunlight energy into chemical energy (1mk)

……

ii) Chemical energy is converted into heat energy by consumers (1mk)

……

21. Students from Mpesa foundation academy wanted to investigate the population of crabs in their school pond. They caught 50 crabs, marked them with white paint on the cephalothorax and then released them back into the pond. After three days, they came back and caught 50 crabs of which 3 had the white mark.

a) Using the data above, calculate the population of crabs in the pond (2mks)

b) Suggest three assumptions the students made during this study (3mks)

……

……

……

22. State any two methods that can be used at home to properly manage domestic

effluents

(2mks)

……

……

23. a) Explain how the following factors increase the rate of diffusion

(3mks)

i) Temperature

……

ii) Diffusion gradient

……..

iii) Size of diffusing particles

……

b) Diffusion is a passive process while active transport is an active process. Explain

(2mks)

……

……

24. a) Waterlogging in terrestrial plants inhibit uptake of certain mineral ions from the soil by the plants. Explain (3mks)

……

……

……

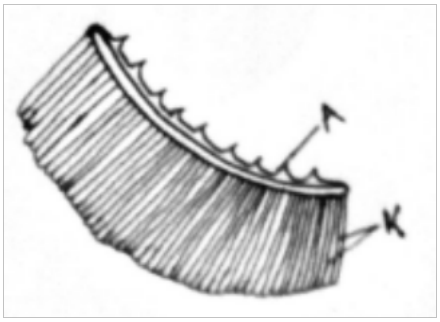
……

b) State two illustrations of Osmosis in plants (2mks)

……

……

25. The diagram below represents a gill of a fish



i) State two ways in which a large surface area is created in structures labelled K

(2mks)

……

……

ii) Name the type of flow system that occurs between water and blood in the capillaries present on structures K
(1mk)

……

iii) Name an organ in human beings that also display the flow system named in (ii) above
(1mk)

……

26. Identical twins were separated after birth and were then raised in different environments. One in Kenya and the other in U.S.A. They rejoined after 18 years and they looked slightly different.

i) Name the type of variation the twins exhibited (1mk)

……

ii) Give two observable differences likely to be noted between the twins
(2mks)

……

……

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SAMPLE II

NAME _____ AD NO _____

DATE _____ Class _____

BIO PP1

TIME:

INSTRUCTIONS:

Answer all the questions in the spaces provided

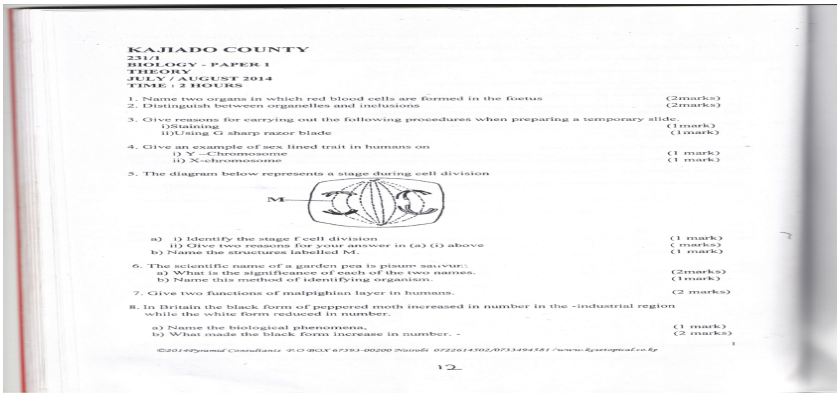
1. Name the part of a flower that develops into:

[i] Seed [1mk]

[ii] Fruit [1mk]

2. State two ways in which floating leaves of aquatic plants are adapted to gaseous exchange. [2mk]

3. The diagram below represents a stage during cell division



KAJIADO COUNTY
231/1
BIOLOGY - PAPER 1
THEORY
JULY / AUGUST 2014
TIME : 2 HOURS

1. Name two organs in which red blood cells are formed in the foetus (2marks)
2. Distinguish between organelles and inclusions (2marks)
3. Give reasons for carrying out the following proceedures when preparing a temporary slide.
i)Staining (1mark)
ii)Using G sharp razor blade (1mark)
4. Give an example of sex lined trait in humans on
i) Y –Chromosome (1 mark)
ii) X–chromosome (1 mark)
5. The diagram below represents a stage during cell division
M
a) i) Identify the stage f cell division (1 mark)
ii) Give two reasons for your answer in (a) (i) above (marks)
b) Name the structures labelled M. (1 mark)
6. The scientific name of a garden pea is pisum sativur:
a) What is the significance of each of the two names. (2marks)
b) Name this method of identifying organism. (1mark)
7. Give two functions of malpighian layer in humans. (2 marks)
8. In Britain the black form of peppered moth increased in number in the -industrial region while the white form reduced in number.
a) Name the biological phenomena. (1 mark)
b) What made the black form increase in number. - (2 marks)
12

[a] [i] Identify the stage of cell division
[1mk]

[ii]Give two reasons for your answer in [a] [i] above
[2mk]

[b] Name the structures labeled M
[1mk]

[b] Name the class to which millipede belongs
[1mk]

4[a] Distinguish between the terms [2mk]

Homodont and heterodont

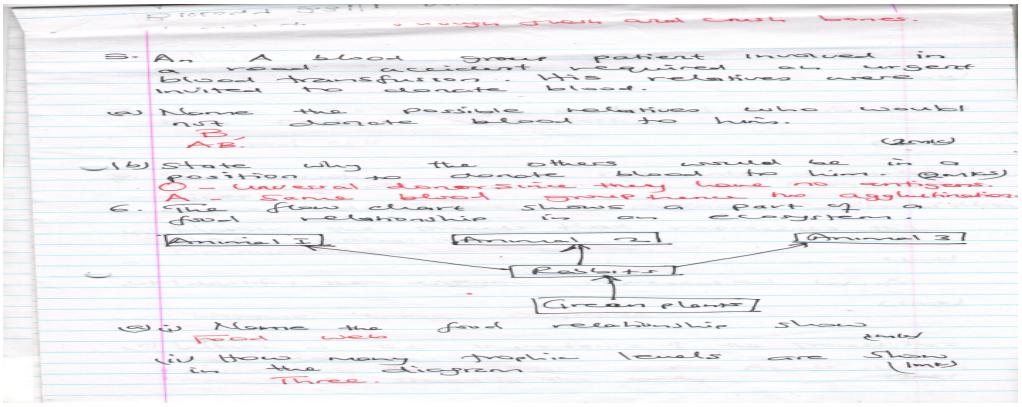
[b]what is the function of the carnassial teeth
[2mk]

5.An A blood group patient involved in a road accident required an urgent blood transfusion. His relatives were invited to donate blood.

[a]Name the possible relative who would not donate blood to him
[2mk]

[b]State why the others would not be in a position to donate blood to him
[2mk]

6. The flow chart shows a part of a food relationship in an ecosystem



[a][i]Name the food relationship shown
[1mk]

[ii] How many trophic levels are shown in the diagram
[1mk]

[b]What is the main source of energy in the ecosystem
[1mk]

7. Name the only epidermal cell in plants that contain chloroplast
[1mk]

8. The equation below represents a metabolic process that occurs in the mammalian lives

Amino Acids Enzyme x organic compound

[a]Name the process that represents the above equation
[1mk]

[b]Identify the enzyme represented by x
[1mk]

[c] What is the importance of the process to the mammal
[1mk]

9. [a] Name the carbohydrate that is stored in mammalian muscle
[1mk]

[b]What name is used to describe removal of indigestible and undigested food material from the alimentary canal
[1mk]

10.[a]Carl Linnaeus developed the taxonomic units of classification

[i]What is taxonomy
[1mk]

[ii]Why was the system of classification by carl linneaus described as natural system of classification
[2mk]

11. Phagocytes also called granulocytes or polymorphs are cells found in the blood whose they ingest pathogens and cell debris

[i]why are they called polymorphs. [1mk]

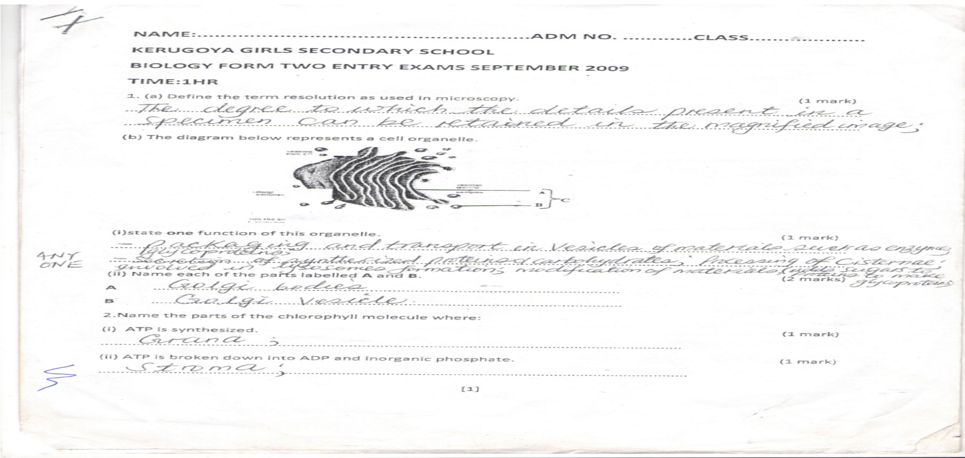
[ii]Name the cell organelle most abundant in phagocytes to enable them function effectively [1mk]

12. Name the:

[a] Material that strengthens xylem tissue
[1mk]

[b]Tissue that is removed when the part of a plant is ringed
[1mk]

13. The diagram below represents a cell organelle.



NAME:..ADM NO. ....CLASS....................

KERUGOYA GIRLS SECONDARY SCHOOL

BIOLOGY FORM TWO ENTRY EXAMS SEPTEMBER 2009

TIME:1HR

1. (a) Define the term resolution as used in microscopy. (1 mark)

(b) The diagram below represents a cell organelle.

(i)state one function of this organelle. (1 mark)

(ii) Name each of the parts labelled A and B. (2 marks)

A

B

2.Name the parts of the chlorophyll molecule where:

(i) ATP is synthesized. (1 mark)

(ii) ATP is broken down into ADP and inorganic phosphate. (1 mark)

[1]

[i]State the function of this organelle [1mk]

[ii]Name each of the parts A and B

A [1mk]

B [1mk]

14. In which two ways do guard cells differ from other epidermal cells
[2mk]

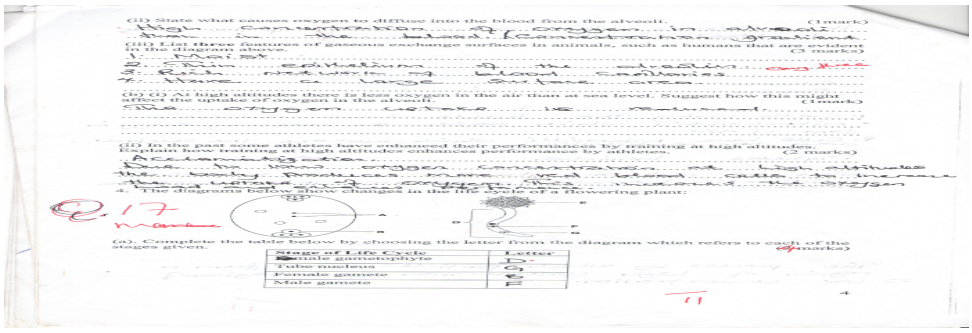
15.Through cellular respiration, the chemical energy stored in glucose molecule is converted into which specific molecule
[3mk]

[b]Name the substance that speed up chemical reaction without being used up in those reactions

[1mk]

16.During germination and early growth, the dry weight of endosperm decreases while that of embryo increase explain
[2mk]

17. The diagrams below show changes in the life cycle of flowering plants



[i]Complete the table below by choosing the letters from the diagram which refers to each of the stages given [4mk]

STAGE OF LIFE CYCLE	LETTER
Male gametophyte	
Tube nucleus	
Female gamete	
Male gamete	

[1mk]

3 [a]. State 2 characteristics of kingdom Monera that are not found in other kingdoms
[2mk]

19.State three ways by which plants compensate for lack of the ability to move from one place to another
[3mk]

20. State three physiological processes that are involved in movements of substances across the cell membrane
[3mk]

21. If the human pancrease is not functional:

[a]Name the hormone which will be deficient [1mk]

[b]Name the disease the human is likely to suffer from [1mk]

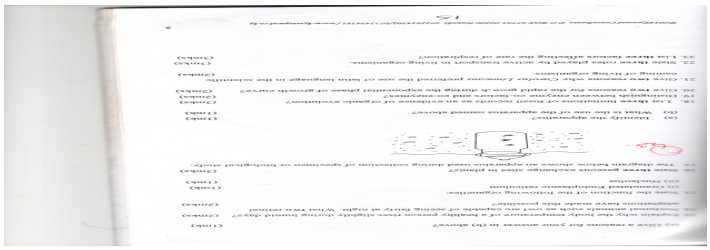
22. The oxidation state of a certain food is represented below by a chemical equation

$2C_3H_2O_2N + 6O_2 \rightarrow (NH_4)_2CO_2 + 5CO_2 + 5H_2O$

[a] Calculate the respiratory quotients[RQ] of the food substance
[2mk]

[b]Identify the food substrate
[1mk]

23. The diagram below shows an apparatus used during collection of specimen



[a]Identify the apparatus [1mk]

[b]What is the use of the apparatus named above [1mk]

24. State two factors in an ecosystem that affect the distribution of organisms
[2mks]

25. A DNA strand has the following base sequence G C C T A G A T C A C

What is the sequence of the

[i] Complementary DNA strand
[1mk]

[ii] M-RNA strand copied from this DNA strand
[1mk]

26. State three limitations of fossil records as evidence of organic evolution
[3mk]

27. How does nutrition as a characteristic of living organism differ in plants and animals
[2mk]

28.State the function of the following parts of a light microscope .

[i] Body tube
[1mk]

[ii] Diaphragm
[1mk]

29. State three characteristics of gaseous exchange surfaces
[3mk]

30. State two sources of variations
[2mk]