

NAME.....CLASS.....

INDEX NO..... DATESIGN..... ADM NO

231/1
BIOLOGY
PAPER 1
DEC, 2021
TIME: 2 HOURS

MOKASA 2 JOINT EVALUATION EXAMS

(Kenya Certificate of Secondary Education)

BIOLOGY THEORY

Instructions

- Write your name, class and admission number in the space provided above.
- Write the date of the examination and sign in the space provided above.
- Answer *all* the questions in the spaces provided.
- You may be *penalized* for wrong spelling especially technical terms.

For Examiner's Use Only

Question	Maximum Score	Candidate's Score
1-29	80	

This paper consists of 11 printed pages. Candidates should check the question paper to ascertain that all the pages are printed as indicated and no questions are missing

1. The study of Biology has contributed to the fight of Covid-19. Name one major and one minor branch of Biology that deals with the study of causative agent of the disease.

(i) Major branch (1 mark)

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(ii) Minor branch (1 mark)

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2. Name the scientists that deals with the study of organisms that lives on or in other organism bodies depriving them nutrients (1 mark)

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3. State two assumptions that should be made while estimating the size of a cell using the light microscope. (2 marks)

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4. a) Explain why only the fine adjustment knob should be used when focusing a specimen using the high power objective lens (1 mark)

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b) Give a reason why the stage of the microscope should be kept dry. (1 mark)

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5. a) Give the functions of the centrioles (2 marks)

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b) Name the organelle that form the following cell structures. (2 marks)

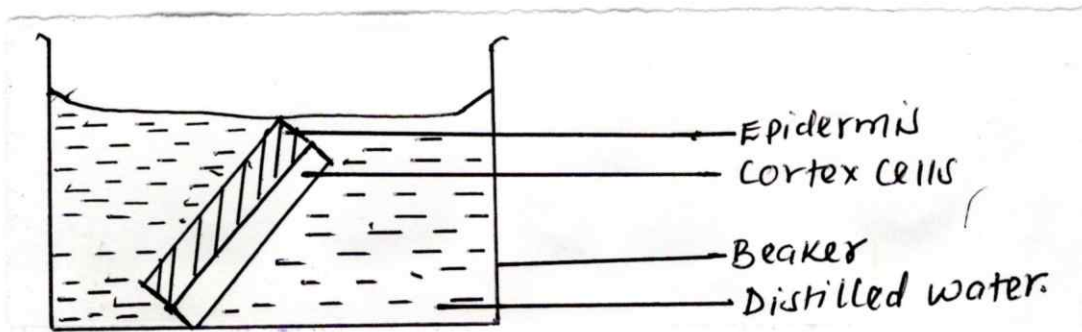
(i) Lysosomes

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(ii) Ribosomes

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6. The diagram below shows an experiment to demonstrate a certain physiological process. The set up was left undisturbed for an hour.



- a) Name the physiological process being investigated. (1 mark)

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- b) Draw the strip of the tradescantia after an hour. (1 mark)

- c) Account for the shape of tradescantia strip after an hour. (3 marks)

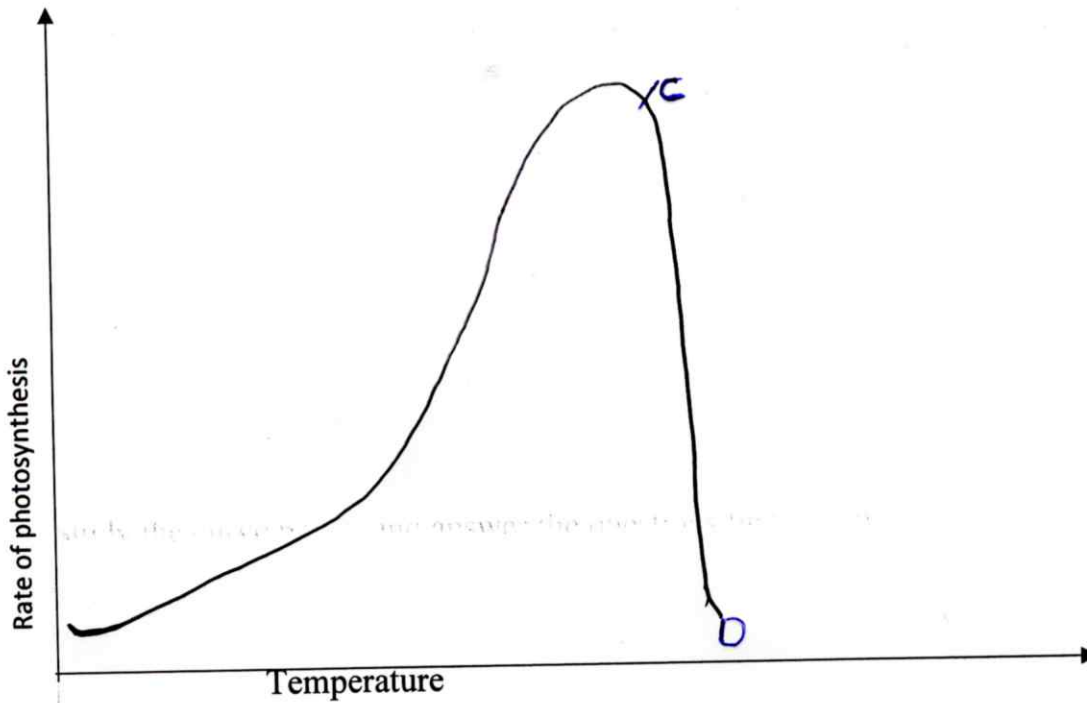
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7. Study the curve below and answer the questions that follows.



a) What was being investigated? (1 mark)

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b) Account for the shape of the curve between points C and D (2 marks)

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8. Explain how body immune system responds when one is vaccinated with weak pathogen. (3 marks)

a) What was being investigated? (1 mark)

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b) Account for the shape of the curve between points C and D (2 marks)

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9. Trace the path followed by a molecule of carbon (IV) oxide from the atmosphere to the photosynthetic cells . (3 marks)

10. State application of anaerobic respiration in
a) Agriculture (1 mark)

b) Food industry (1 mark)

12. Explain the following mechanisms of excretion by the kidney.

i) Ultra-filtration (2 mark)

ii) Selective reabsorption (2 mark)

iii) State any one vitamin stored in the liver (1 mark)

12. Explain the following mechanisms of excretion by the kidney

10. Ultra-filtration (2 mark)

13. a) Each somatic cell of a mule has 63 chromosomes. Explain the reason why the mule is infertile. (1 mark)

Selective reabsorption (2 mark)

10. State any one vitamin stored in the liver (1 mark)

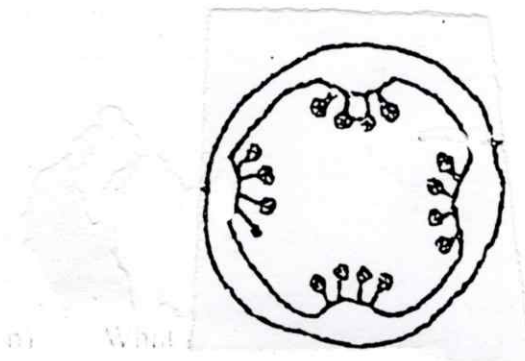
12. Explain the following mechanisms of excretion by the kidney

b) What is the importance of crossing over?

(1 mark)

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14. The diagram below represents a transverse section of a fruit.



a) Name the type of placentation shown

(1 mark)

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b) Give a reason for your answer in (a) above

(2 marks)

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15. In order to learn about small organisms it is often necessary to capture them from their habitat and carry them to the laboratory for thorough examination. State **two** methods that can be used for collecting small animals.

(2 marks)

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b) Give a reason for your answer in (a) above

(2 marks)

.....

16. a) Define the term alternation of generation

(1 mark)

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.....

b) Name the dominant generation in the following plant divisions. (2 marks)

(i) Pteridophyta

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ii) Bryophyta

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17. a) Define the term Eutrophication (1 mark)

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b) Explain the effect of Eutrophication in aquatic ecosystem (2 marks)

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18. a) What is biological control (1 mark)

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17. a) Define the term Eutrophication (1 mark)

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b) Explain how the biological control can be used to eradicate mosquitoes. (2 marks)

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19. a) Name the causative agent of schistosomiasis (1 mark)

18. a) What is biological control (1 mark)

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17. a) Define the term Eutrophication (1 mark)

.....

b) State two control measures for schistosomiasis (2 marks)

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19. a) Name the causative agent of schistosomiasis (1 mark)

18. a) What is biological control (1 mark)

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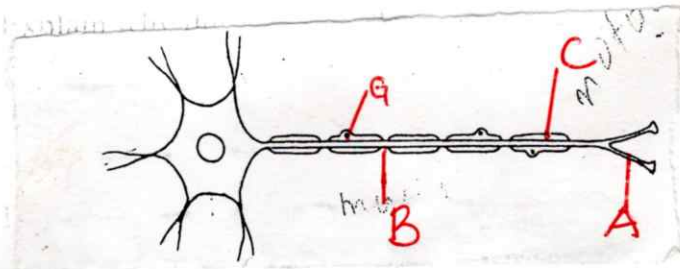
20. a) State one hormones that stimulates germination (1 mark)

b) Differentiate between parthenocarpy and parthenogenesis (2 marks)

21.a) Explain why during the early stages of germination the total dry weight is low. (1 mk)

b) Define imbibition and state its function (2 marks)

22. The diagram below show a neuron



a) With reason identify the neuron (2 marks)

b) Name the parts labelled

(2 marks)

G

A

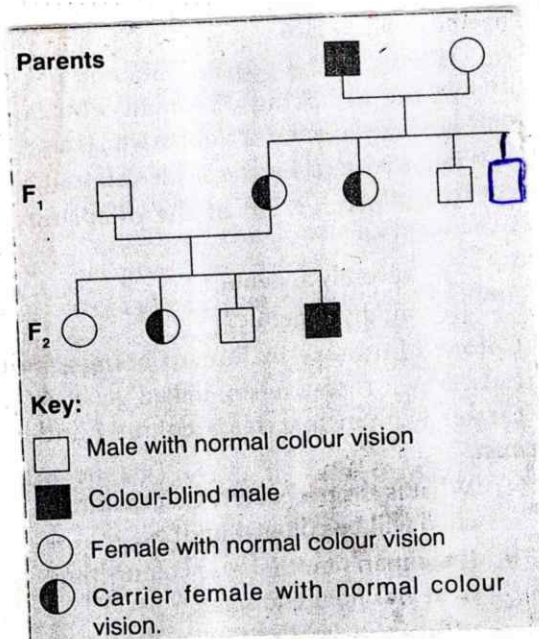
c) Give the functions of the parts labelled

(2 marks)

B

C

23. The gene for colour blindness is linked to the X chromosome. The pedigree below shows the inheritance of colour blindness. Study it and answer the questions below.



a) What are the parental genotypes?

(1 mark)

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b) Work out the genotype of F2 generation

(1 mark)

24. a) A woman had a brother who died of sickle cell anaemia. What advice would you give her before she gets married. (1 mark)

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b) Explain why people who suffer from sickle trait are not prone to malarial attacks. (2 marks)

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25. The paddles of whales and fins of fish adapt these two organisms to aquatic habitats. (1 mark)

a) Name the evolutionary process that may have given rise to similar structures. (1 mark)

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b) What name is given to such structures. (1 mark)

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26. Explain briefly the evolutionary characteristics which make human being (*Homo sapiens*) better adapted to the environment. (2 marks)

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b) What are vestigial structures?

(1 mark)

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27. Explain how muscles bring about the stretching and bending of the hind limb. (2 marks)

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28. State **two** functions of synovial membrane.

(2 marks)

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29. a) Explain how plants with weak stems attain support. (2 marks)

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b) Name a strengthening tissue that its strengthening material is cellulose. (2 marks)

(1 mark)

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39. Explain how plants with weak stems attain support. (2 marks)

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