

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

## BIOLOGY FORM 2 – MARKING SCHEME

### OPENER EXAMINATION: TERM 1 2024

#### INSTRUCTIONS

Answer all the questions in the spaces provided.

1. What is biology?  
Is the study of living things (1 mark)

2. Give two skills gained by a student learning Biology.  
-to understand the developmental stages in human body  
-to persue careers eg dentistry.medicine.verternary practice

3a)Name the unit of classification that has the least organisms  
species (1 mark)

4.What is the importance of using a hand lens in classification of organisms (1 mark)

For magnification

5.State two main branches of biology. (2 marks)

zoology  
botany  
-microbiology

6.Define each of the following terminologies as used in biology : (2 marks)

a). Ecologystudy of living organisms and their surrounding

b). Anatomy  
study of internal strucrees of living organisms

7.What characteristics of living organisms is represented by the following characteristics:

a)A cat producing kittens.  
reproduction (1mk)

b)A girl droppssing a hot pan.  
irritability (1mk)

c)The exhalation of carbon (IV) oxide.  
Gaseous exchange (1mk)

8. draw and label the external sructeres of a leaf (4mks)

9 a) An electron microscope has a much greater resolving power than a light microscope. Explain the meaning of the term resolving power. (1 mark)

The ability to a microscope to distinguish details of a specimen

b) Give a reason why an electron microscope cannot be used to study life specimen. (1 mark)

the electrons will destroy the samples

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10. What is taxonomy?  
Is the study of sorting out of organisms into groups (1mark)

11. Give two reasons why classification is important in biology. (2marks)

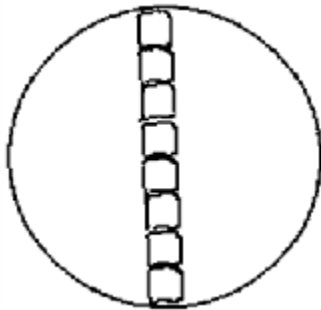
- to bring together living organisms with similar characteristicsbut separates the ones with differ features
- helps in placing living organism into their correct groups for reference
- helps to arrange information in an ordry manner
- helps to understand the evolutionary relationsnios between differ organisms

12. (a) Distinguish between growth and development. (2marks)

Growth is the irreversible increase in size and mass while development is the irreversible change in complexity of a sructere of an organism

(b) State the importance of growth in living organisms. (1mark)

13. During a practical lesson to estimate the size of a cell, using the sketch below which some students observed, calculate the length of one cell in micrometers given that the field of view was 8mm wide. (3 marks)



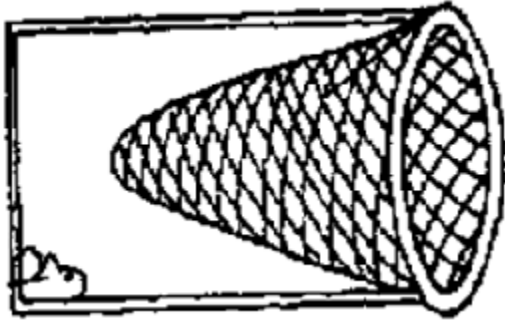
lengthof one cell =diameter of field of view/the number of cells

$$=8 \times 1000 / 8$$

$$=1000 \text{ micrometer}$$

14. a) What is meant by the term Entomology. (1 mark)  
Study of insects

b) The diagram below represents a certain apparatus used by biology students.



(i) Name the apparatus above. (1 mark)  
Bait trap

(ii) State the role of the apparatus named in b) (i) above. (1 mark)  
For attracting and trapping small animals eg mice

15. Black jack (Bidens pilosa) belongs to the family Compositae.

What is it's:

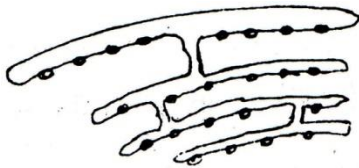
Genus. Bidens (1 mk)

Species. pilosa (1 mk)

16. a) define the term cell. (1 mk)

Is the basic unit of structure and functions in organism

b) i) identify the organelle represented by the diagram below. (1 mk)



Rough Endoplasmic Reticulum

ii) State the function of the organelle identified in 2b(i) above. (1 Mark)  
synthesis and transport proteins

17. If a light microscope had an eye piece lens of X25 and an objective lens of X40, what would the total magnification be? (2 mks)

$$\begin{aligned} \text{mag} &= \text{eye piece lens} \times \text{objective lens} \\ &= 25 \times 40 \\ &= X1000 \end{aligned}$$

18. State the importance of each of the following process in living things. (3 mks)

i. Respiration.

Synthesis energy

ii. Gaseous exchange

helps to eliminate carbon iv oxide and acquire oxygen

iii. Reproduction

Helps in giving rise to new offspring thus prevent the extinction of a certain species

19. a). Give a reason why each of the following steps are followed when preparing cross sections of a leaf for examination under a microscope:(4mks)

b)Cutting very thin sections

to allow light to pass through

c)Using sharp razor blade (scalpel) during cutting.

To avoid distortion of cells and cell organelles

d)Placing the sections in water

to maintain turgidity of cell

e)Staining the sections with iodine before observing under a microscope.

- For clear visibility

- For differentiation

20. state four properties of Enzymes (4mks)

-are affected by temperature and PH

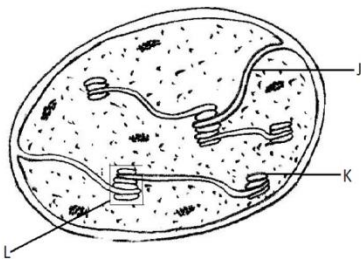
-Are substrate –specific

-are not affected by reaction the catalyse

-are very efficient thus they are required in small quantities

-most reactions catalyzed by enzymes are reversible

23. Below is a structure found in plants.



Name the organelle.

chloroplast

(1 mk)

What is the role of the organelle you have named in (a) above.

Site for photosynthesis

(1 mk)

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Name the parts labeled J and L.

(3 mks)

J-lamella

L-granum

24. Name the five major kingdom of classification

(5mks)

Animalia

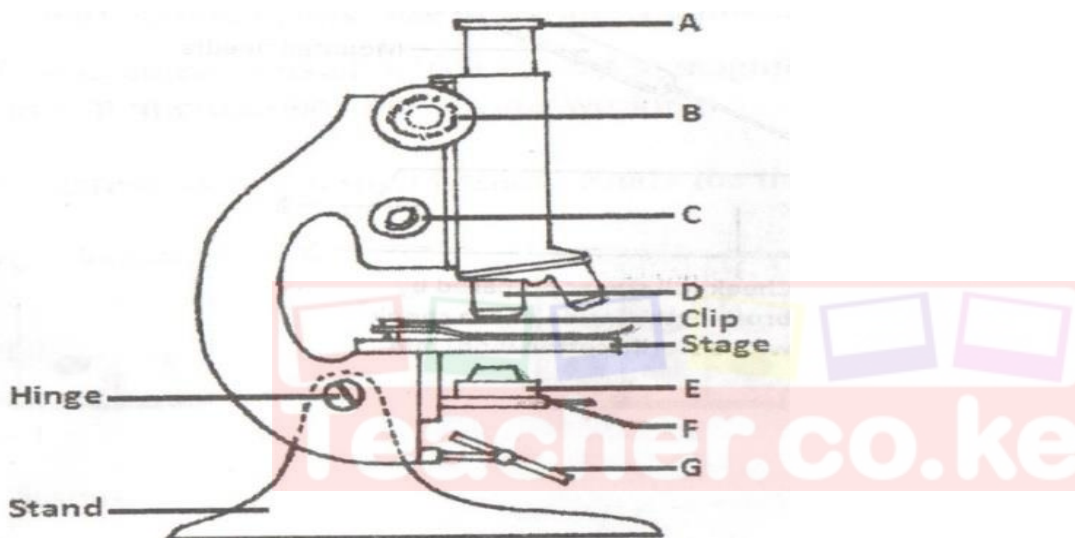
Plantae

Fungi

Protoctista

Monera

25. The diagram below represents the structure of a light microscope. Study it and answer the questions that follow.



a) Name the parts of the microscope labeled A to G.

(7 mks)

A-eye piece

B-Course adjustment knob

C-Fine adjustment knob

D-Objective lens

E-Condenser

F-Diaphragm

G-Mirror

b) State the functions of each of the parts marked E and F.

(2 mks)

c) Which part of the microscope (use letter symbols):

i. Contributes to the magnification of the specimen.

(1 mk)

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ii. Is used to move the body tube over very small distances when observing under high power magnification. (1 mk)

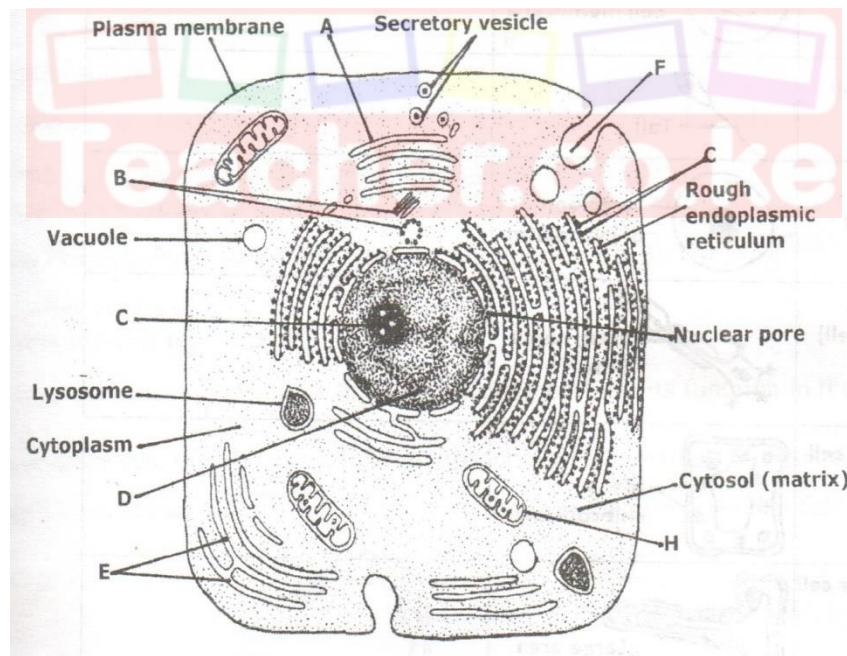
E-Concentrate light on to the stage

F-regulate the amount of light passing through the condenser

e) state 2 differences between light microscope and electron microscope (2mks)

Light microscope	Electron microscope
Uses light to illuminate specimen	Uses beam of electron to illuminate specimen
Uses glass lens	Uses electromagnetic lens
Low resolving power	High resolving power
Low magnification power	Very high magnification power
Specimen under view can be dead or live	Specimen under view are dead
Specimens are stained using normal dyes	Specimens are stained using complex stains

26. The diagram below shows a cell as seen under a microscope.



a)i. Is this observation under a light or an electron microscope? (1 mk)  
electron microscope

ii. Give a reason for your answer. (1 mk)  
more organelles can be seen

i. Is this an animal or a plant cell? (1 mk)

animal cell

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

lacks cell wall

b) Name the parts labeled A B C E E H

(5 mks)

A-Golgi body

B-Ribosomes

C-Nucleolus

E-Smooth endoplasmic reticulum

H-Mitochondrion

c) State the functions of each of the parts marked A, B, C, D, E, F, H. (6 mks)

A-Package and transport glycoproteins

B-Site for protein synthesis

C-Manufacture of ribosomes

E-Synthesis and transport of lipids

H-Site for respiration

27. Briefly and adequately explain how plants compensate for lack of movement in a constantly changing environment.

(2 marks)

The grow towards towards light

They carryout pollination

28. explain 5 adaptations of the leaf for photosynthesis (10mks)

Broad flat lamina provide large SA for absoption of CO<sub>2</sub> and sunlight

thinness of the leaf allows light and CO<sub>2</sub> to pass thr short distance

presence of stomata for efficient diffusion of CO<sub>2</sub>

Transperent cuticle and epidermis to allow penetration of light to palisade cells

Palisade cells contain large number of chloroplasts and their arrangement and location next the upper epidermis to receive maximum light

29. state 5 differeces between plants and animals (10mks)

plants	Animals
Contain chlorophyll	Lacks chlorophyll
Respond slowly to their environment	Respond rapidly to changes in environment
Do not move about	Move about in search of food and shelter
Growth occurs at meristematic only	Growth occurs all over the body
Lacks complex excretory organ	Have complex excretory organ

