

BIOLOGY FORM 1 TERM 1**(THEORY)****MARCH, 2024 - 2 HOURS****INSTRUCTIONS TO CANDIDATES**

- (a) Write your name, index number and school in the spaces provided above
- (b) Sign and write the date of the examination in the spaces provided above
- (c) Answer ALL the questions in the spaces provided on the question paper
- (d) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.
- (e) Candidates should answer the questions in English

FOR EXAMINER'S USE ONLY

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

17	18	19	20	21	22	23	24	GRAND TOTAL

This paper consists of 11 printed pages

1. a) What is biology

Study of life;

(1 mark)

b) State four scientific skills imparted to biologists by studying biology

(4 marks)

Drawing; Evaluating; Measuring; Identification; Measuring; Classification;

First four points

2. a) What biological knowledge is required in dealing with ticks that infest a cow

(1 mark)

Parasitology;

b) State three main branches of biology

(3 marks)

Zoology; Botany; Microbiology;

3. List **three** differences between a plant and an animal.

(3 marks)

Plants do not move about, while Animals move about;

Plants make their own food, while Animals depend on already made food;

Plants take in air with a lot of Carbon(IV)Oxide for photosynthesis during the day, while Animals take in air rich in Oxygen and take out Carbon(IV)Oxide all the time;

Plants respond slowly to stimuli, while Animals respond rapidly;

Growth in plants occurs at meristematic tissues only while in animals growth occurs all over the body

4. Mention the name given to the study of each of the following:

(3 marks)

a) The cell *Cytology;*

b) Microorganisms *Microbiology;*

c) Insects *Entomology;*

5. State the importance of each of the following in living organisms

(2 marks)

a) Excretion

Enables organisms to eliminate metabolic waste to prevent their accumulation to toxic levels;

Accumulation to toxic level that would lead to death

b) Reproduction

Enables living organisms to give rise to offspring to perpetuate species/ enhance survival/ prevent extinction;

6. What characteristics of organisms is described below

- a) A cat giving birth to kittens and eating them. (2 marks)

Reproduction; Nutrition;

- b) A snake hissing at the sight of a cat. (1 mark)

Irritability;

- c) A boy running to class at the sound of a bell. (2 marks)

Movement; Irritability;

7. The figure below shows one of the characteristics of living things. Identify the characteristic shown.

(1 mark)



Movement;

8. Give three reasons why Biology is studied in schools. (3 marks)

Solving environmental problems eg food shortage

*Choice of careers eg **Public health***

*Acquiring scientific skills eg **Observation skills;***

First 3 points examples must be given

9. a) What is magnification (1 mark)

To make an object appear large;

b) A student observed a leg of an insect under a hand lens and made a drawing of the leg whose length was 4cm with a magnification of X2. What was the actual length of the leg? (2 marks)

Drawing magnification = Drawing length/ Actual length

$$X2 = 4cm / x$$

$$\begin{aligned} \text{Actual length} &= (4cm) / (X2); \\ &= 2cm; \end{aligned}$$

10. a) State two precautions to observe when collecting millipedes, centipedes and spiders. (2 marks)

Handle with pair of forceps/ gloves;

Collect only the number that you need;

Do not harm the organisms

Do not destroy their natural habitat

Return live organisms to their habits after study

Immobilise highly mobile animals e.g. spider

b) Name the apparatus used when collecting mosquitos for study. (1 mark)

A sweep net;

11. a) i) Which microscope has a higher resolving power? (1 mark)

Electron microscope;

ii) Give a reason for your answer in 11 (a) (i) above. (1 mark)

Uses electrons for illumination;

12. The diameter of the field of view of a light microscope is 5.5mm. Plant cells lying across the diameter are 20. Determine the size of one cell in micrometers. (Show your working.) (2 marks)

$(5.5\text{mm} \times 1000\mu\text{m}) / 20\text{cells} ;$

$275\mu\text{m};$

13. a) Name the organelles that perform each of the following functions in a cell. (2 marks)

i) Synthesis of proteins

Ribosome;

ii) Transport of cell secretions

Endoplasmic reticulum;

14. a) What is the Binomial nomenclature? (2 mark)

Scientific naming/ giving an organism two names, the first one being genus and second being specific name;

b) The scientific names of three animals leopard, wolf and lion in the family carnivore are; *Panthera pardus*, *Canis lupus* and *Panthera leo* respectively.

i) Why are scientific names given in Latin? (1 mark)

Accepted worldwide/ valid;

ii) What does *Canis* refer to? (1 mark)

Genus name;

iii) Giving a reason, state the organisms that are most closely related. (1 mark)

Leopard and Lion; belong to the same genus;

15. a) Give reasons for carrying out the following during preparation of temporary slides. (3 marks)

i) Cutting thin sections

For easy absorption of stain/ dye / For easy passage of light;

ii) Staining

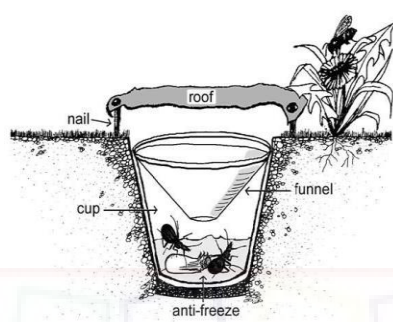
For the object to appear more clear/ distinct;

iii) Adding a drop of water

To keep the cells alive/ moist/ turgid;

Prevent drying up that may distort the cells

16. Below are some of the common apparatus used to collect the specimen. Use it to answer the questions that follow.



a) i) Name the apparatus.

(1 mark)

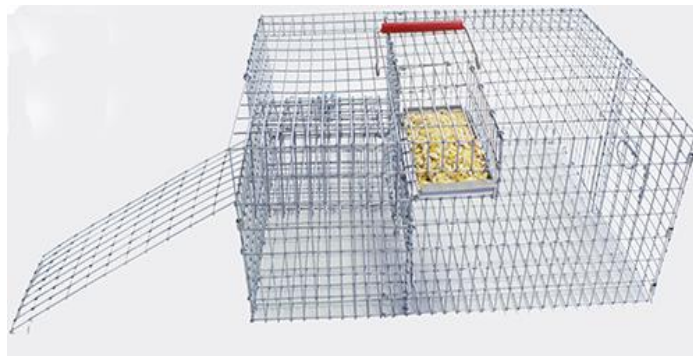
Pitfall trap;

ii) Give two functions of the roof in the apparatus.

(2 marks)

Keep for rain drop from reaching the trapped insects; keep off strong sunlight;

b)



- i) Name the apparatus shown in (b) above (1 mark)

Bait trap;

- ii) Give the role of the apparatus named in (b) (i) above. (1 mark)

Attract and trap small animals;

17. Give the procedure of focusing an object using low power objective lens using a light microscope. (3 marks)

Turn the low power objective lens until it clicks into position;

Open the diaphragm fully;

Look through the eyepiece, adjust the mirror

Use the fine adjustment knob to make the image sharper;

Any three sequential points

18. a) Define taxonomy. (1 mark)

Science of classification/ scientific study of classification;

- b) Name the second taxonomic unit of classification in plants. (1 mark)

Division;

- c) Name any three kingdoms of classification. (3 marks)

Plantae; Animalia; Monera; Fungi; Protoctista;

Any first three

19. a) What is the function of centriole in a cell? (1 mark)

Has a role in cell division/ formation of spindle fibers;

Formation of cilia and flagella;

- b) Name the cell organelle that would be abundant in a skeletal muscle. (1 mark)

Mitochondria;

20. A biology student used a microscope with X40 objective lens and X5 eye piece lens to magnify an object.

Calculate the magnification of the object.

(2 marks)

$$\text{Magnification} = (X40) \times (X5);$$

$$X200;$$

21. The outbreak of COVID 19 posed a great threat and untold suffering among human population across the world. State how the importance of biology came out clearly in the following areas as a result of outbreak of corona virus;

i) International cooperation

(1 mark)

Doctors all over the world cooperated to come up with a vaccine;

ii) Career choice

(1 mark)

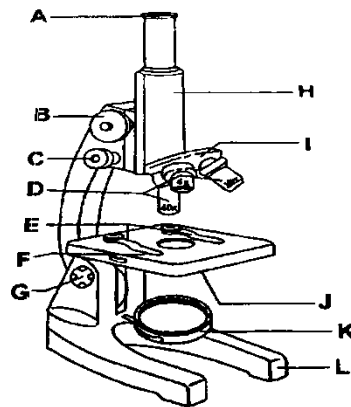
Nurses/ Doctors/ Public health offices employed by different entities took care of patients/ disseminated information on containment measures;

iii) Solving environmental problems

(1 mark)

Biological knowledge was applied in studying the virus, it's lifecycle and how to possibly eliminate it from our environment;

22. The diagram below represents a common laboratory equipment.



- a. Identify the equipment. (1 mark)

Light microscope;

- b. Name the parts labelled E and G (2 marks)

E *Clips;*

G *Hinge screw;*

- c. Identify the letters that represent the parts used in;

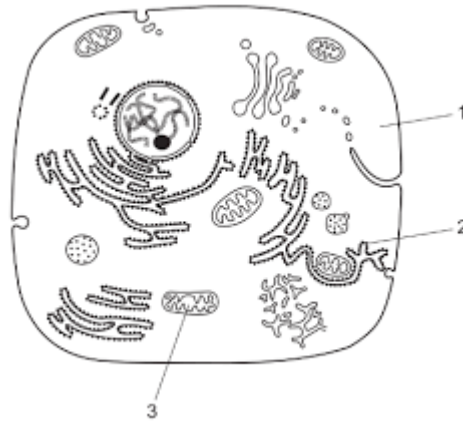
- i) Changing the parts labeled D from one to the other. (1 mark)

I / revolving nose piece;

- ii) Inclining the equipment to an appropriate position. (1 mark)

G / hinge screw;

23. The diagram below shows a certain cell. Use it to answer the questions that follow.



- a) Identify the cell. (1 mark)

Animal cell;

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

*Has cell membrane **only**; Central nucleus; Has centrioles;*

First two points

- c) Name the structures labeled 1, 2 (2 marks)

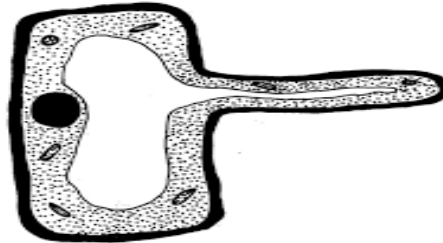
Cytoplasm; Smooth Endoplasmic reticulum;

- d) State the function of the part labeled 3 (1 mark)

Site for respiration;

24. The diagrams below represents some of the specialized cells in living things.

X



Y



a) Identify the cells labelled X and Y

(2 marks)

X *Root hair cell;*

Y *Sperm cell;*

b) Identify the modification in their structure that is common to both of them.

(1 mark)

Extended structure;