NAME …….ADM/NO……CLASS……..

# Revision Kit 2019

231/1

## BIOLOGY

## 2019

## 2 HRS

## FORM ONE

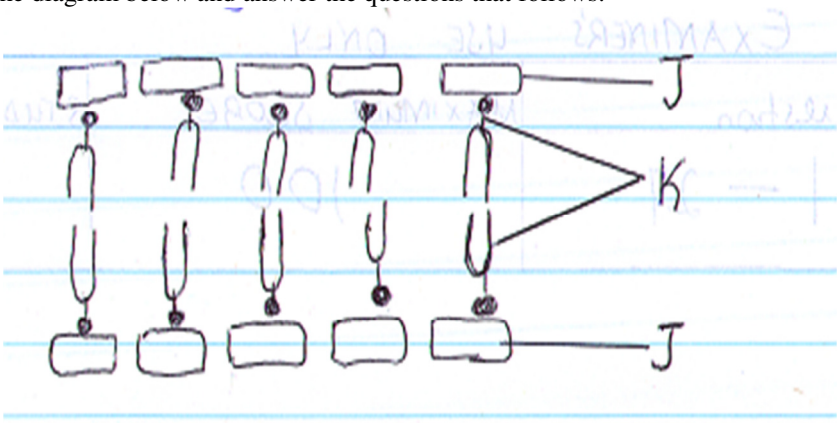
### INSTRUCTIONS TO STUDENTS

1. Write your name and admission number in the spaces provided.
2. Answer all the questions in the spaces provided.
3. Candidates should ensure that no questions are missing.

### FOR EXAMINER'S USE ONLY

| Question | Maximum score | Student's score |
|---|---|---|
| 1-27 | 100 | |

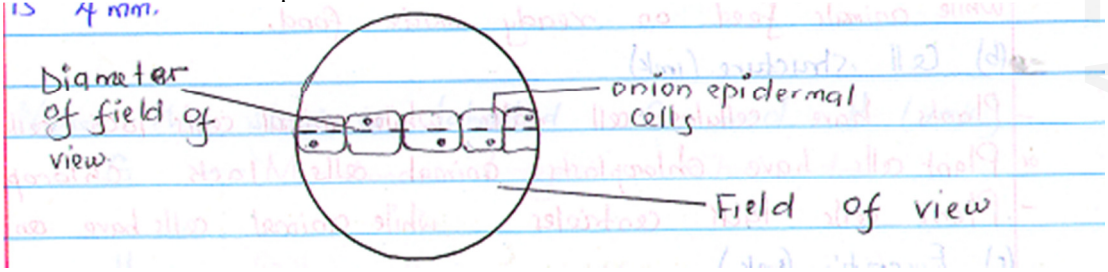
1. Give one reason why students should be taught biology. **(1mk)**
2. 
   a. Name the cell organelle responsible for
      i. Respiration **(1mk)**
      ii. Photosynthesis **(1mk)**
   b. Study the diagram below and answer the questions that follows:




   c. Identify the above organelle and state its function
      i. Identify 1mk)
      ii. Function (1mk)
      iii. Name the layer labeled K. (1mk)
3. State three major differences between plants and animals. (3mks)
4. 
   a. Which groups of organisms are classified in the kingdom Monera. (1mk)
   b. Define the term species. (1mk)
5. The Scientific name of the black jack plant is Bidens Pilosa. What is the plant's
   a. Genus (1mk)
   b. Species (1mk)
6. 
   a. State two functions of the golgi apparatus (2mks)
   b. Name the organelle that would be abundant in:
      i. Skeletal muscle (1mk)
      ii. Palisade cell (1mk)
7. The table below shows the concentration of sodium and iodine ions in pond water and in the cell sap of an aquatic plant.

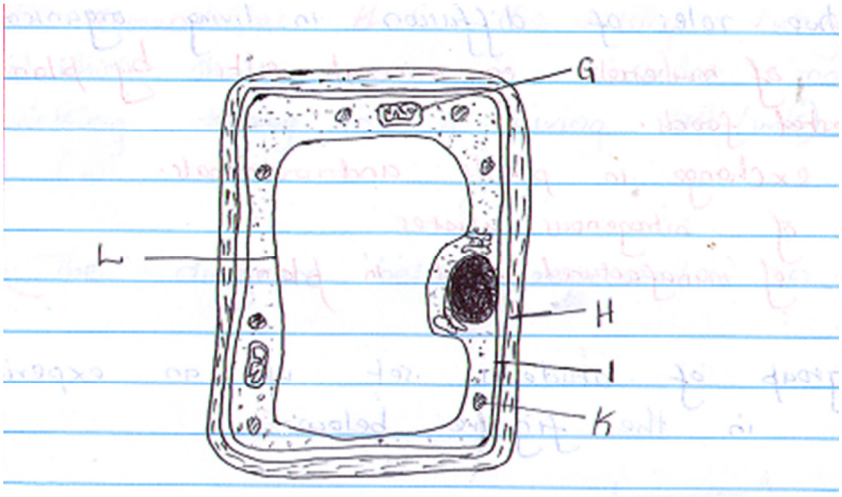
| Ion | Concentration in pond water (PPM) | Concentration in cell sap(PPM) |
|---|---|---|
| Sodium | 120 | 70 |
| Iodine | 0.2 | 400 |

   a) Suggest the process through which each of the ions is taken up and give your reasons,
      i. Sodium (1mk)
      Reason (1mk)
      ii. Iodine (1mk)
      Reason (1mk)
   b) Briefly explain why plant cells do not burst when put in distilled water. (1mk)
   c) Red blood cells burst when placed in distilled water. (1mk)
8. 
   a. What is the name given to the double naming system of living organisms? (1mk)
   b. State one principle of the system you have named above. (1mk)
9. Study the diagram below which was drawn by a form one student during a biology practical lesson. The diameter of the field view of the microscope is 4mm.

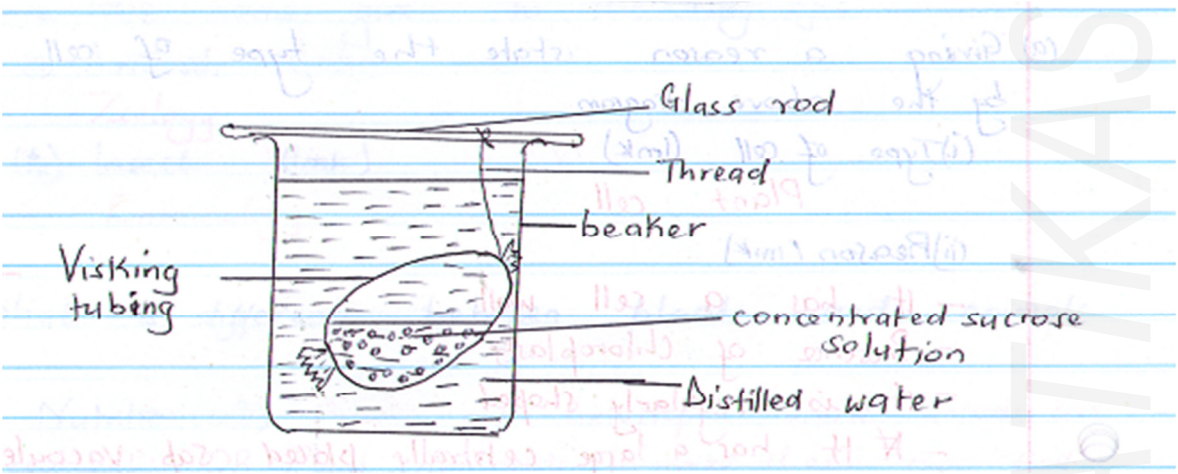


a. How did the student obtain the diameter of the field of view? (3mks)
b. Use the diagram to calculate the size of one onion epidermal cell. (1mm=1000$\mu$) (2mks)

10. State the name given to the study of:
    a. Animals (1mk)
    b. Insects (1mk)
11. State functions of the following parts of a microscope
    a. Base (1mk)
    b. Diaphragm (1mk)
12. The diagram below represents a cell.



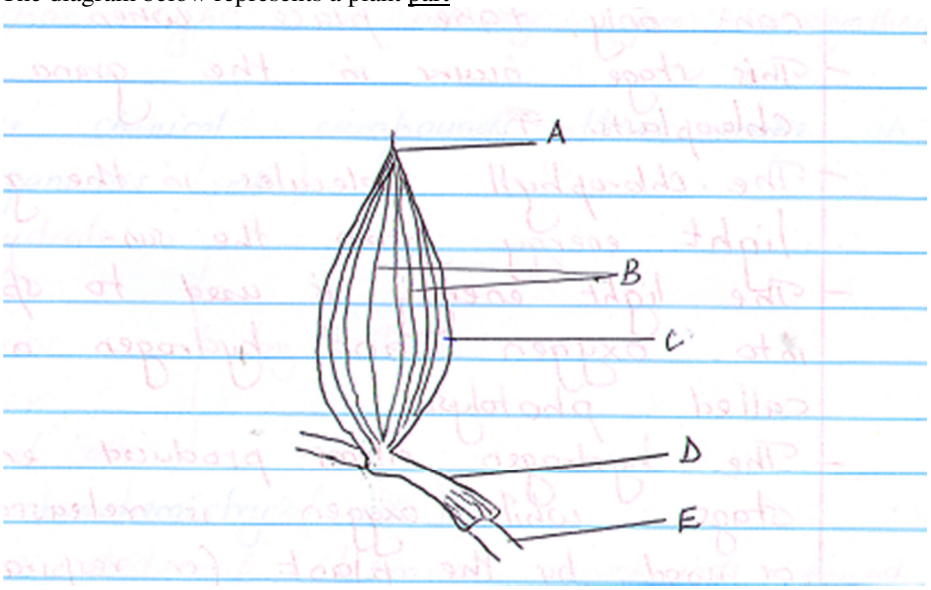

    a. Giving a reason state the type of cell represented by the above diagram,
        i. Type of cell (1mk)
        ii. Reason (1mk)
    b. Name the structure labeled G and H. (2mks)
        G
        H
    c. What is the function of the part labeled L. (1mk)
13.
    a. Define the term diffusion. (2mks)
    b. State two roles of diffusion in living organisms. (3mks)
14. A group of students set up an experiment as shown in the figure below.




    a. What were the students testing? (1mk)
    b. State the expected result after one hour. (2mks)
    c. Which type of solution is represented by
        i. Concentrated sugar solution (1mk)
        ii. Distilled water (1mk)

d.
   i. What property does the above experiment demonstrate about the visking tubing (1mk)
   ii. Which structure in a similar manner to the visking tubing in a living cell? (1mk)

15. The diagram below represents a plant part




   a. From the features shown in the diagram state whether it is a dicotyledonous or monocotyledonous leaf. Give a reason for your answer. (2mks)
   b. Name the parts labeled C and D (2mks)
   c. Which structures on the diagram are involved in transport of mineral salts, water and manufactured food (1mk)
   d. Name three cells in a leaf which contain chloroplasts. (3mks)

16. Describe the light state of photosynthesis. (5mks)
17. In an experiment, a leaf from a plant which had been kept in the dark overnight was boiled in water for a minute, boiled in alcohol and washed in cold water iodine solution was then added to the leaf.
   a. Why was the leaf boiled in:
      i. Water? (1mk)
      ii. Alcohol? (1mk)
   b.
      i. What observation was made after adding iodine to the leaf? (1mk)
      ii. Give a reason for the observation made in(b)(i) above. (1mk)
   c. State the aim of the experiment. (1mk)
18.
   a. List three chemical compounds that make up living organisms. (3mks)
   b. What is biochemistry? (1mk)
   c. Study the equation below and answer the questions that follow:

Glucose + Fructose $\xrightarrow[N]{M}$ Sucrose + Water

M (1mk)

N (1mk)

   i. Glucose and fructose are examples of which type of carbohydrates? (1mk)

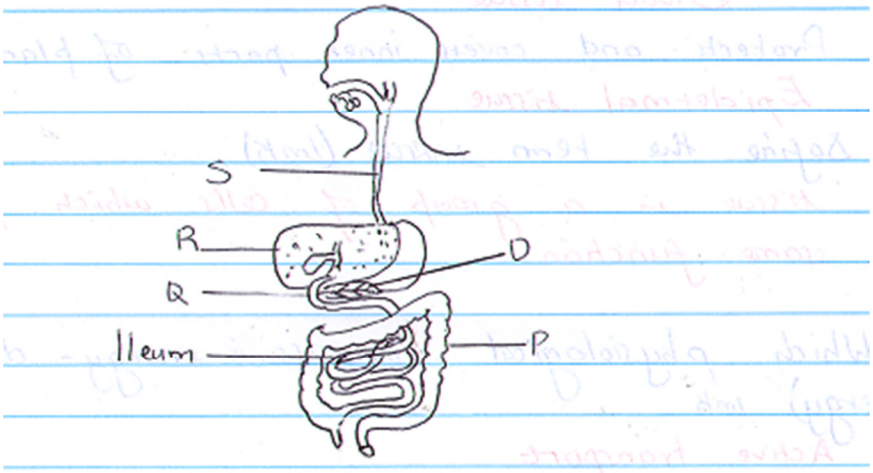
19.
   a. State one functions of lipid. (1mk)
   b. What are the building units of lipids? (1mk)
20. Differentiate between enzyme inhibitors and Enzyme. (2mks)
21.
   a. What do you understand by the term heterotrophism. (1mk)
   b. State any two heterotrophic modes of nutrition. (2mks)
22. The equation below shows a chemical reaction that takes place in plants,

Carbon (IV) oxide + water $\longrightarrow$ Glucose + A

   a. Identify substance A. (1mk)
   b. Other than the reactants, state one conditions necessary for this reaction. (1mk)

c. Name the process presented by the equation above. (1mk)

23. The diagram below represents parts of the human digestive system.




a. Name the substance produced by the organ labeled O. (1mk)
b. Name the organs labeled R and S. (2mks)
c.
   i. Which digestive juice is secreted in the mouth? (1mk)
   ii. Name the enzyme found in the juice in C (i) above. (1mk)

24.
a. Name the part of the microscope which a student can use to regulate the amounts of light passing through the condenser to the stage. (1mk)
b. The total magnification of a specimen is x 800.
The objective lens has a magnification of x40. Calculate the magnification of the eye piece. (1mk)

25.
a. Identify the tissue that
   i. Transports substances such as oxygen and nutrients in animals. (1mk)
   ii. Protects and covers inner parts of plants. (1mk)
b. Define the term tissues (1mk)

26.
a. Which physiological process is energy – driven(requires energy) (1mk)
b. State one role of the process you have named in (a) above in living things. (1mk)

27. During a practical lesson form one students were given a termite, told to observe and draw it. Then they were to indicate the drawing magnification.
a. Which apparatus did the student use to observe the termite? (1mk)
Which formula did they use to calculate the drawing magnification? (1mk)

# MARKING SCHEME

1 it helps in solving environmental problems e.g. food shortage, poor health services, pollution, misuse of environmental resources e.g. forests

- Entry to career eg medicine

- Helps one to require scientific skills eg observing identifying, measuring
analyzing, evaluating etc

- Useful for international cooperation

2(a) (i) Mitochondrion

(ii) Chloroplast

(b) (i) Cell membrane

-it encloses the cell contents

-It controls or regulates the entry and exit of substances into and out of cells.

3.

| Pant | Animals |
|---|---|
| 1. Manufacture their own food | Cannot manufacture their own food. They feed on ready made complex food materials |
| 2. Grew continuously throughout their life | Stop growing when they reach maturity |
| 3. Respond slowly to stimuli | Respond quickly/rapidly to stimuli |
| 4. Do not move from one place to another(no Locomotion) | Capable of moving whole body from one place to another(locomotion) |

4 (a) Bacteria

(b) A species is a group of organism which has hereditary distinction from that of any

5. (a) Bidens

(b) pilosa

6.. - packaging and transport of glycoproteins

-Secretion of synthesized proteins and carbohydrates

-manufacture lysosomes

b(i) Mitochodria

(ii) Chloroplasts

7 (a)(i) Diffusion

Sodium molecules (ions) are moving from the pond water where their

(ii) Active transport

Iodine ions are moving from the pond water where their concentration is low to

b) Plant cells are surrounded by a rigid cell wall which prevents the cell from

c) The red blood cells take in water by osmosis they swell and exert pressure on

8 (a) Binomial nomenclature

(b) -the genus name should start with a capital letter while the species name is

- the two names should be underlined separately in handwritten manuscripts or

9. (a) By keeping a transparent ruler on the stage of microscope. Focus the

(b) 1 cell = $\frac{400\mu m}{5\ onion\ cells} = 800\mu m$

10 (a) Zoology

(b) Entomology

11. (a) Provides a firm and steady support

(b) Aperture that regulates the amount of light passing through the condenser to
illuminate the specimen

12 (a)(i) Plant cell

(ii) - it has a cell wall

other group and whose members naturally interbreed to p

- Presence of chloroplasts Any one

- it has a large centrally placed sap vacuole

(b) G – Mitochondria(reject mitochondria

H- Cell wall

(c) Sap vacuole. Function – store sugar and salts

- contribute to the osmotic properties of the cell.

13 (a) The process by which particles or molecules move from a region of high concentration to a region of low concentration

(b) - Absorption of materials e.g. mineral salts by plants and digested foods

- gaseous exchange in plants and animal 1mk

- Excretion of nitrogenous wastes

- Transport of manufactured food in plants

14 (a) To demonstrate osmosis using a visking tubing

(b) The level of the sugar solution in the visking tubing had increased and the visking tubing was swollen

(c) (i) Hypertonic solution

(ii) Hypotonic solution

(d) (i) it demonstrates that the visking tubing is semi-permeable.

(ii) Cell membrane

15 (a) Monocotyledonous leaf

Reason – it has parallel veins

- leaf is attached to the stem by the leaf sheath

(b) C – lamina

D - Sheath

(c) B- veins

(d) (i) Palisade mesophyll

(ii) Spongy mesophyll

(iii) Guard cells

16 -the light stage or the light dependent stage can only take place when sunlight is available

-This stage occur in the grana of the chloroplasts

-the chlorophyll molecules in the grana absorbs light energy from the sun

-the light energy is used to split water molecules into oxygen and hydrogen atoms a process called photolysis

- the hydrogen atoms produced enter the dark stage while oxygen is released to the atmosphere or used by the plant for respiration

-Some of the light energy is used to form adenosine triphophate(ATP) that is later used in the dark stage (Maximum 6; students score 5)

17(a) (i) to kill the protoplasm/break starch granules to stop the reactions

(ii) To remove the green pigment

(b (i) It turned brown in colour/the colour of iodine solution

(ii) it had been de-starched as it was kept in the dark

(c) to show that light is necessary for photosynthesis

18 (a) -carbohydrate

-Lipids

- Proteins

-Water

-Mineral salts (Any three)

(b) This is the study of chemical compounds found in living organisms and the reaction in which they take part.

(c) (i) Condensation

Hydrolysis

(ii) Monosaccharides

19 (a) -Lipids are sources of energy

-Lipids are sources of metabolic water

-Lipids are constituents of cell membrane

-Lipids protect major organs eg. heart and Kidney

Where they act as shock absorbers

(b) Fatty acids and glycerol

20) Enzyme inhibitors are substances that show down or stop the action of an enzyme while an enzyme is an organic catalyst which are protein in nature.

21(a) Heterotrophism; Mode of nutrition where an organism feeds on readymade complex food materials obtained from bodies of other organisms

(b) Holozoic

Saprophytism

Parasitism

Symbiosis

22 (a) Oxygen

(b) Chlorophyll

Light energy

Suitable or optimum temperature

(c) Photosynthesis

23 (a) Pancreatic juice

b) Liver

Oesophagus

(c)(i) Saliva

(ii) Salivary amylase

24 (a) Diaphragm

(b) $\frac{X800}{40}$ = X20

25 (i) Blood tissue

(ii) Epidermal tissue

(b) A tissue is a group of cells which perform the same function

26 (a) Active transport

(b) -Reabsorption of sugars and some salts by the kidney

-Absorption of digested food from the alimentary canal of animals into the blood stream

- Excretion of waste products from body cells

27 Handlens/magnifying lens

- Drawing magnification = $\frac{Length\ of\ the\ drawing}{Length\ of\ the\ object}$