**AKWAMUMAN SENIOR HIGH SCHOOL,**

**End of First Semester Examination**

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| Form 1 | BIOLOGY 2 & 1 | 1 hour 50 minutes |

PAPER 2 **1 hour 20 minutes**

ESSAY

SECTION A

*Answer* **three** *questions in all.* **Two** *from section* **A** *and* **one** *from Section* **B***.*

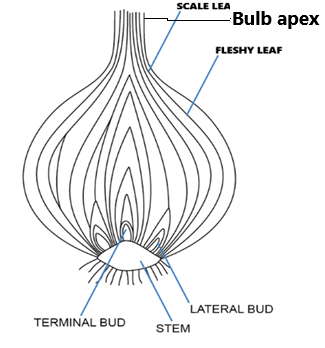
|  |  |
| --- | --- |
| 1 (a)(i) What is orientation in biology?............................................................................................................ | |
| ……………………………………………………………………………………………………………….. | |
| ……………………………………………………………………………………………………………….. | |
| (ii)What are the orientations indicated by the arrows and name **one** part of the specimen due to   |  |  |  | | --- | --- | --- | |  | Orientation | Part | | A |  |  | | B |  |  | | C |  |  | | D |  |  | | E |  |  |   **each** orientation? | |
| (b) (i) Explain the term body symmetry?..................................................................................................... | |
| ……………………………………………………………………………………………………………….. | |
| ……………………………………………………………………………………………………………….. | |
| (ii)Describe the following symmetry | |
| (α) bilateral symmetry…………………………………………………………………………………. | |
| ………………………………………………………………………………………………………………. | |
| (β) radial symmetry……………………………………………………………………………………. | |
| ………………………………………………………………………………………………………………. | |
| (c) (i) What is sectioning?............................................................................................................................ | |
| ……………………………………………………………………………………………………………….. | |
| (ii)Define the following types of sectioning | |
| (α)Transverse sectioning........……………………………………………………………………………….. | |
| ……………………………………………………………………………………………………………….. | |
| (α)Longitudinal sectioning............………………………………………………………………………….. | |
| ………………………………………………………………………………………………………………. | |
|  | |
| 2.(a)(i) What is a microscope?......................................................................................................................... | |
| ………………………………………………………………………………………………………………. | |
| (ii) Mention **two** ways of handling and caring for a microscope……………………………………… | |
| ………………………………………………………………………………………………………………. | |
| ………………………………………………………………………………………………………………. | |
| (b) Give **one** part of the compound light microscope used for the following functions. | |
| (i) Turn to change the power (objective lens) from one power to another…………………………….. | |
| (ii) Brings the object into rapid and initial focus……………………………………………………… | |
| (iii)Regulates the right amount of light entering the stage……………………………………………. | |
| (iv)Holds glass slides and specimen in place………………………………………………………….. | |
| (c) Define the following terms in microscopy | | |
| (i)Resolution……………………………………………………………………………………………… | | |
| ………………………………………………………………………………………………………………. | | |
| (ii)Magnification…………………………………………………………………………………………. | | |
| ………………………………………………………………………………………………………………. | | |
| (ii)Mount…………………………………………………………………………………………………. | | |
| ………………………………………………………………………………………………………………. | | |
| (iii)Staining……………………………………………………………………………………….………. | | |
| ………………………………………………………………………………………………………………. | | |
| (iv)Temporary slide………………………………………………………………………………………. | | |
| ………………………………………………………………………………………………………………. | | |
| (d)Tabulate **two** differences between compound light microscope and electron microscope | | |
| **Compound light microscope** | **Electron microscope** | |
|  |  | |
|  |  | |
|  | | |
| 3. (a) A student made a drawing of the antennae of an insect **1.5** times longer than the length of the actual  size. If the actual size is **10cm**. Calculate | | |
| (i) Length of the drawing | | |
| (ii) the magnification of the drawing. | | |
| (iii) Interpret the magnification of the drawing………………………………………………………… | | |
| ……………………………………………………………………………………………………………….. | | |
| (b) Give **one** *structure* and **one** *function* to **each** of the following parts of the eukaryotic cell. | | |
| (i) Nucleus – Structure…..………………………………………………………………………………... | | |
| Function…..………………………………………………………………………………………………….. | | |
| (ii) Chloroplast - Structure………………………………………………………………………………... | | |
| Function..…………………………………………………………………………………………………….. | | |
| (iii) Vacuole - Structure…………………………………………………………………………………... | | |
| Function..…………………………………………………………………………………………………….. | | |
| (iv) Cell membrane - Structure…………………………………………………………………………... | | |
| Function…………………………………………………………………………………………………….. | | |
| (c) Tabulate **two** differences and one similarity between mitochondrion and chloroplast. | | |
| **Mitochondrion** | **Chloroplast** | |
|  |  | |
|  |  | |
| Similarity…………………………………………………………………………………………………… | | |
| (d) State **two** of the old cell theory................................................................................................................ | | |
| ………………………………………………………………………………………………………………. | | |
| (e)State **two** of the modern cell theory. ….…………………………………………………………………. | | |
| ………………………………………………………………………………………………………………. | | |

SECTION B

Answer **all** questions

4. Specimen **K** below is **not** a good biological drawing. Redraw and make the necessary corrections.

(a) Make a 7 - 9 cm long labeled drawing of Specimen K.



|  |
| --- |
| (b) State **two** attributes of a good biological drawing………...…………………………………………… |
| ……………………………………………………………………………………………………………….. |
| (c) Give **two** applications of biology in daily life…………………………………………………………… |
| ………………………………………………………………………………………………………………. |
| ………………………………………………………………………………………………………………. |
| (d)Which step of the scientific method is being carried out? |

|  |  |
| --- | --- |
| …………………………………………………… | Set up two groups of plants, one exposed to sunlight and the other kept in the shade. Measure and compare their growth over a set period. |
| …………………………………………………… | Plants seem to grow better in sunlight. |
|  | Does sunlight affect plant growth? |
|  | Record height measurements and compare the growth of the two groups. |
|  | If the sunlight-exposed group shows significantly greater growth, the hypothesis is supported. |
|  | If plants are exposed to sunlight, then they will grow taller. |

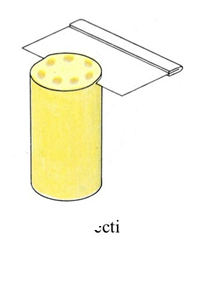
PAPER 1 30 minutes

OBJECTIVE TEST

[50 marks]

*Answer all questions.*

1. What section will be produced from this sectioning?



A. Transverse section.

B. Longitudinal section.

C. Horizontal section.

D. Vertical section.

2. The branch of biology that deals with the study of insects is **A. entomology B. ecology**

**C. anthropology D. embryology**

3. Temporary slides prepared to be examined under the

microscope are always covered with a cover slide to

A. Avoid breaking the slide

B. Make the object appear clearly

C. Prevent the object from falling

D. Avoid wetting the objective lens

4. A student wants to view cells under the compound microscope at a total magnification of x400. If the eyepiece is x10, which of the following objective lenses should be used?

A. x10 B. x40 C. x100 D. x0.4

5. A prepared slide to be observed under the microscope must be placed on the

A. Condenser B. Stage

C. Diaphragm D. Nosepiece

6. Which of the following parts of a light microscope contains a lens?

A. Diaphragm B. Eyepiece

C. Fine adjustment D. Nosepiece

7. The first microscope was invented by

A. Carolus Linnaeus B. Matthias Schleiden

C. Antonio Van Leeuwenhoek

D. Robert Hooke

8. One important function of the cell membrane is to

A. Offer protection against mechanical injury

B. Regulate the movement of substances

to and from the cell

C. Gives a definite shape to the cell

D. Provide a site for chemical processes

9. The stereo microscope allows for dissecting

objects or performing microsurgery because

A. it is an optical microscope.

B. it has a longer working distance.

C. it is an electron microscope.

D. it produces upright images.

10.The branch of biology that studies the external structure of living organisms is

A. Physiology. B. Microbiology.

C. Zoology. D. Morphology.

11.Usually, the first step in solving a scientific problem is

A. performing an experiment.

B. identifying the problem.

C. formulating a hypothesis.

D. testing a variable.

12. Which of the following is **not** a characteristic feature of all living things? **A. Respiration B. Excretion**

**C. Reproduction D. Transpiration**

13. The life process by which energy is released

from food is called

A. Excretion B. Digestion

C. Respiration D. Nutrition.

14. Which of the following is **not** found within

cytoplasm?

A. Nucleus B. Cell wall

C. Vacuole D. Mitochondrion

15. The fluid mosaic model of the cell membrane proposed

by Singer and Nicholson states all the following

**except**

A. the plasma membrane is composed of a lipid bilayer of phospholipid molecules

B. the outer head is hydrophobic while the inner tail is hydrophilic.

C. there are globular proteins embedded in the bilayer.

D. the integral proteins penetrate the lipid bilayer.

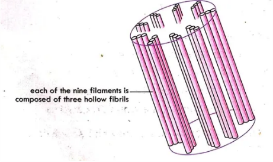
16. Which of the following structures below is found

**only** in plant cells?

A. Nucleus B. Plastid

C. Cell membrane D. Cytoplasm

*Use the organelle below to answer questions* **17** *and* **18***.*

17. What is the name of the organelle?

A. Centriole B. Lysosome

C. Vacuole D. Chloroplast

18. The function of the organelle is

A. control cellular reactions.

B. formation of spindle fibers during cell division.

C. to make energy for the cell.

D. to make food.

19. Which of the following is **not** a type of cytoskeleton in the cell?

A. peroxisomes B. microtubule.

C. intermediate filament. C. microfilament.

20. A drawing, 3cm in length, was made of an

insect, 1cm in length. The magnification of the

drawing is

A. x3 B. x1 C. x2 D. x1/3

21. When focusing the light microscope, the

objective lens should always be moved upwards

A. To avoid the danger of breaking the slide

B. To avoid the danger of breaking the mirror

C. To allow the nosepiece to rotate

D. To avoid wetting the lens

22. A prepared slide to be observed under the

microscope must be on the **A. Condenser B. Stage**

**C. Diaphragm D. Nose piece**

23. When an image being viewed is too dark what

changes are made to the compound light

microscope?

A. Change the light source.

B. Adjustment to the diaphragm.

C. Properly click in the objective lens

D. Cleaning the objective lens with lens paper

24. Which of the following structures is made of similar cells performing the same function?

A. Bone B. Ear C. Eye D. Liver

25. Living organisms can perform all the life

activities because they are made of

A. food substances B. water.

C. cells. D. oxygen.