

ANESTAR SCHOOLS

BIOLOGY FORM TWO END OF TERM THREE EXAM.

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

1. (i)The Scientific name of confused beetle is TRIBOLIUM CONFUSAM. Identify any three mistakes made in writing the name. **Both words are underlined (3marks)**

Genus name written in capital letters;

Species name written in capital letters

- (ii)What taxonomic group does the name CONFUSAM refer to? (1mrk)

Species name

2. . (a)Explain why specimens are important in studying biology. (1mark)

Proper study and understanding of living things in laboratory;

- (b) Identify an apparatus that is effective in capturing:

- (i) A scorpion. (1 mark)

A pair of forceps

- (ii) Butterfly (1 mark)

Sweep net;

3. (i) Identify an organelle that is most abundant in the proximal convoluted tubule. (1 mark)

Mitochondria; mitochondrion;

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

Yield energy for active transport;

4. a) Using a microscope, a student counted 55 cells across a field of view whose diameter was 6000µm. Calculate the average length of the cells. **Show your working.**

(3marks)

Length of a cell= diameter of field of view

Number of cells ;

6000

55 ;

109;

- (b)State the function of the following parts of a light microscope

Fine adjustment knob.

(1mark)

Magnification (of images); owtte

- i) Diaphragm.

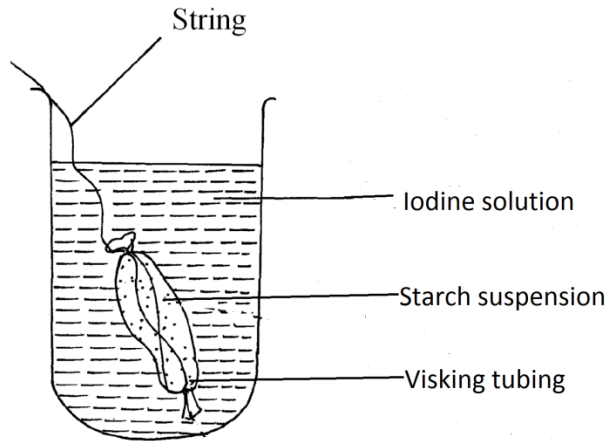
(1mark)

Regulation of a mount of light (falling on the object/specimen on microscope);

Condenser

(1mark)

. An investigation was performed by a group of students as shown in the set up below.



5. After 30 minutes, the starch suspension had turned blue-black while iodine solution retained its colour.
- (a) Name the physiological process that was being investigated in the experiment. (1mrk)

Diffusion

- (b) Account for the results observed after 30 minutes. (3marks)

Visking tubing is semi-permeable; allowing the small sized Iodine molecules to pass through; but preventing the large sized starch molecules from crossing;

- (c) Explain what would happen to a red blood cell when placed in distilled water and left to stand for the same duration as for the experiment above. (3marks)

The cell sap is hypertonic to the solution / distilled water; hence water molecules moved into the cell by osmosis; making the cell to swell and eventually burst;

- d) Define cell physiology. (1mark)

It is the study of the functions of cell structures;

6. State two types of mechanical digestion along the digestive tract. (2marks)

Mastication/chewing(mouth)

Peristalsis(oesophagus,Ileum\$colon).

Maceration(mixing wave,stomach)

Swallowing

Absorption

7. Name two organisms that exhibit symbiotic relationship and explain how each benefits from the association.

(2marks)

Lichen(algae and fungi)

Root nodules and rhizobium bacteria.

8. Describe how the following structures lower the rate of transpiration;

(i)Sunken stomata.

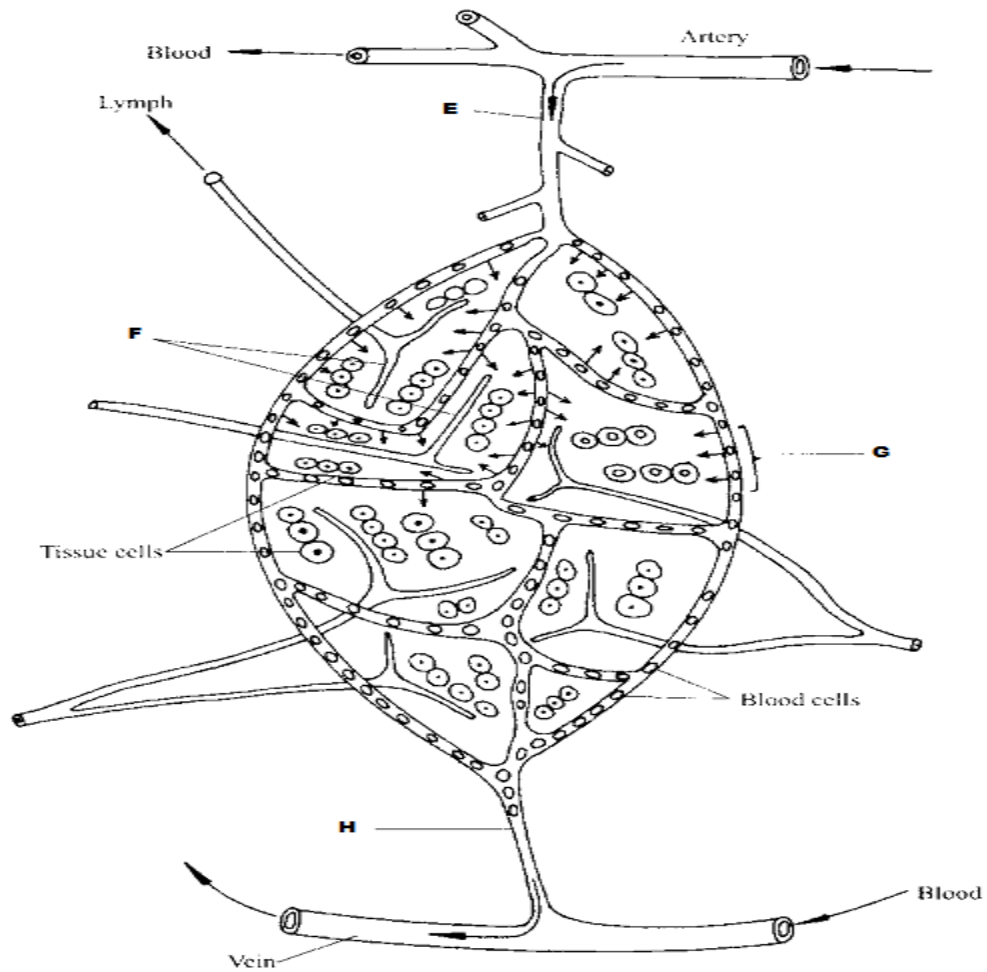
(2marks)

Water vapour accumulates in the pits lowering saturation deficit;

(ii) Hairy leaf.

(2mark)**Hairy leaf traps a layer of moisture lowering saturation deficit;**

9. Study the diagram below and answer questions that follow.



a) Identify the parts labeled E, F and H.

(3marks)

E Arteriole;

F Lymphatic vessels;

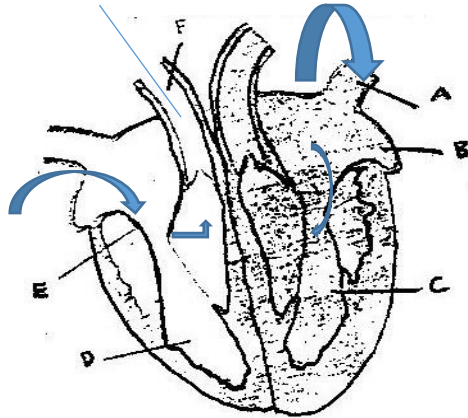
H–Venule;

b) State the importance of the process represented by G in bodies of living organisms.

formation of tissue/ intercellular/ interstitial fluid; which is a medium of exchange of materials between body cells and blood;

(2marks)

10. The diagram below shows a vertical section through a mammalian heart.



a. Name the parts labelled A, B, E and F (4 marks)

A Pulmonary vein

B Left atrium

E Tricuspid valve

F. Pulmonary artery

b. Use arrows to show the direction in which blood flows in the heart. (2 marks)

c. Give a reason why the wall of chamber C is thicker than chamber D (2marks)

11.) Define the term respiration. (2marks)

Process by which food substances are chemically broken down in all living cells to release energy ,carbon iv oxide,water or alcohol.

ii) Name , draw and label the structure of the organelle which is the site for respiration. (6marks)

mitochondrion.

iii) Distinguish between aerobic and anaerobic respiration

Chemical Equation of aerobic respiration is Glucose + Oxygen gives Carbon dioxide + water + energy whereas the equation of anaerobic respiration is Glucose gives Lactic acid + energy

Aerobic respiration occurs in the cytoplasm to mitochondria, while (6marks)

The breakdown of glucose in the presence of oxygen to produce more amount of energy is called as aerobic respiration; Whereas the anaerobic respiration occurs in the cytoplasm only.

The high amount of energy is produced and 38 ATP released at a time in aerobic respiration; Less amount of energy is produced and 2 ATP are released at a time in anaerobic respiration.

Final product in aerobic respiration are carbon dioxide and water, whereas Lactic acid (animal cells), carbon dioxide and ethanol (plant cell) is the final product in anaerobic respiration.

Aerobic respiration requires oxygen and glucose to produce energy whereas in anaerobic respiration does not require oxygen but uses glucose to produce energy.

Aerobic respiration shows complete process of combustion, while it is incomplete in the anaerobic respiration.

Aerobic respiration is a long process for the production of energy whereas anaerobic respiration is a fast process in comparatively.

Examples of aerobic respiration occurs in many plants and animals (eukaryotes) whereas anaerobic respiration occurs in human muscle cells (eukaryotes), bacteria, yeast (prokaryotes), etc. cells (eukaryotes), bacteria, yeast (prokaryotes).

12. Name two kidney diseases (2mrks)

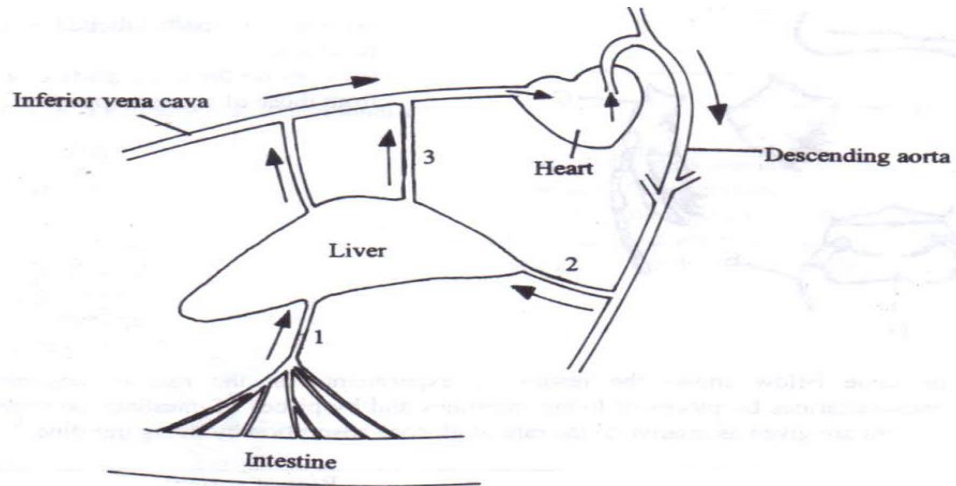
Kidney stones.

Nephritis

13. Explain why glucose and protein are not present in urine. (2mrks)

Reabsorbed back at proximal convoluted tubule

14. The figure below illustrates the blood supply and drainage of the liver



In which of the vessels labeled 1, 2 and 3 would you expect the highest concentration of glucose after an overnight of fast? Give a reason.

(3marks)

3; stored glucose/glycogen; is broken down to glucose due to low glucose concentration by hormone glucagon;

15. The rates of gaseous exchange by different respiratory surfaces of plants were determined and recorded in the table below.

Structure	Gaseous exchange in %
A	89
B	3

C	0.3
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Suggest the possible plant structure represented by A, B, C.(3 marks)

A.stomata

B.Cuticles

c. Lenticels

(a) Name the fluid that is produced by sebaceous glands.

(1mark)

Sebum

(b) What is the role of sweat on the human skin? 1mrk

Kills micro-organisms; cools the body; getting rid of wastes/excretion;

16. Explain what happens when there is oxygen debt in human muscles.

(2marks)

Lactic acid is oxidized to carbon iv oxide,water and energy when oxygen is available

17. Giving a reason in each case, name the class to which each of the following organisms belong:

(4marks)

Pea plant ;***Dicotyledonae;***

Reason; ***Leaves are net veined; have leave petiole/tap root system/cross-section of vascular bundles are arranged (around pith) star shaped xylem in roots/phloem in between arms of xylem/ floral parts are in 4s or 5s or multiples of 4a/5s/ two cotyledons; Any one.***

Bat Mammalian;

Reason

Presence of fur/hair/mammary glands/sweat glands/ presence of two pina/heterodont dentition/ear oscicles; Any one.

18. What do you understand by the term ecology.(2mrks)

Study of interrelationships of organisms to each other and to their environment.

19. Explain two beneficial effects of fungi (4mrks).

Yeasts have been used in the production of beer, wine, and bread.

Some fungi attack insects and, therefore, can be used as natural pesticides.

Fungi used in the human diet. mushrooms

20. The diagram below represents a member of the kingdom Animalia.



i) Name the phylum to which the organism belongs.

Arthropoda (1mark)

ii) Using observable features in the diagram, give three reasons for the answer in (i) above.

(3marks)

Three body parts; head, thorax, abdomen

Jointed appendages

Segmented

Body covered with exoskeleton.