

ALLIANCE HIGH SCHOOL
END OF TERM I EXAMINATIONS, 2016.
FORM 2 BIOLOGY
TIME: 2 HOURS

Attempt all questions in the spaces provided in this paper

1 (a) what is binomial nomenclature? (1 mark)

(b) The scientific name of a barnacle as first adequately described by a taxonomist called Linneaus is given as BALANUS BALANOIDES

(i) Using binomial nomenclature write the name in a proper scientific way. (1 mark)

(ii) State three rules that must be observed when writing scientific names. (2marks)

2. State the function of lysosomes in a cell. (1 mark)

3. Give three structural similarities between the chloroplast and the mitochondrion. (3 marks)

4. Two students were independently observing bacteria under microscopes. One student was able to see 100 bacteria in the field of view while the other student could only see 10 bacteria, though the two slides were duplicates of each other.

a. What might have been the difference in the way the two microscopes were adjusted?

(2 marks)

b. Which of the two students will be able to see less detail of any one bacterium on the slide?

(1 mark)

5. Some drops of fresh pineapple juice are added drop by drop to DCPIP solution. The blue color of the DCPIP quickly fades.

a. What food substance is present in the juice

(1 mark)

b. What is the importance of this food substance to the human body?

(2 marks)

c. When this food substance is deficient in the body what health disorders could result?

(1 mark)

6. (a) State the function of co-factors in cell metabolism.

(1 mark)

(b) Give two examples of a metallic co-factor.

(2 marks)

(c) Distinguish between competitive and non-competitive enzyme inhibitors (2 marks)

7. Name the organelles that perform each of the following functions in a cell.

a) Controls movement of substances in and out of the cell. (1 Mark)

b) Stores enzymes. (1 Mark)

c) Protein synthesis (1 Mark)

d) Transport of cell secretions. (1 Mark)

e) Involved in photosynthesis. (1 Mark)

f) Produce hydrolytic enzymes for breaking down micro-organisms and damaged or worn out cells. (1 Mark)

g) Contain chromosomes which control activities of a cell. (1 Mark)

h) Synthesizes ATP. (1 Mark)

i) Packages synthesized protein. (1 Mark)

8. An experiment was carried out to investigate the effect of different concentrations of sodium chloride on human red blood cells. Equal volumes of blood were added to equal volumes of salt solutions of different concentrations. The results were shown below.

	Sodium chloride concentration	Shape of red blood cells at the end of experiment	Number of blood cells at the experiment
A	0.9%	Normal	No change in number
B	0.3%	Swollen	Fewer in number

a) If the experiment was repeated with 1.4% sodium chloride solution, state the results you would expect with reference to:-

i) Number of red blood cells. (1 Mark)

ii) Appearance of red blood cells when viewed under the microscope. (1 mark)

b) Account for the fewer number of red blood cells in 0.3 % sodium chloride solution (4 Marks)

c) Give the biological terms which can be used to describe

i) 0.9 % sodium chloride solution. (1 Mark)

ii) 1.4 % Sodium chloride solution. (1 Mark)

9. Give a reason why each of the following steps are followed when preparing a cross section of a leaf for examination under the microscope.

a) Cutting very thin sections. (1 Mark)

b) Using a sharp razor blade during cutting. (1 Mark)

c) Placing the sections in water. (1 Mark)

d) Staining the sections with iodine before observing under the microscope. (1 Mark)

10. State three ways in which xerophytes reduce loss of water through the stomata.

(3marks)

11. State five reasons why transpiration is necessary in plants. (5 marks)

12. Distinguish between:

(a) Open and closed circulatory system.

(2marks)

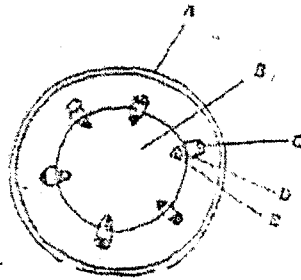
(b) Pulmonary and systemic circulation

(2 marks)

(c) Give two advantages closed circulatory system has over open circulatory system.

(2 marks)

13. The diagram below represents a transverse section of a young stem



(a) Name the parts labeled A and B (2 marks)

A _____ B _____

(b) State the functions of the parts labeled C, D and E (4 marks)

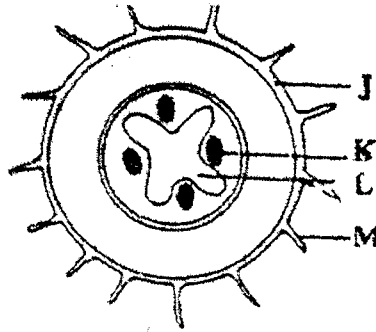
C _____

D _____

E _____

(c) List three differences between the section shown above and one that would be obtained from the root of the same plant (3 marks)

16. The diagram below represents a traverse section through a plant organ



(a). From which plant organ was the section obtained?

(1mark)

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

(2marks)

(c). Name the parts labeled J, K and L.

(3marks)

J

K

L

(d). State two functions of the part labeled M.

(2marks)

17. Explain how the following adaptations reduce transpiration in xerophytes

(a) needle-like leaves

(2marks)

(b) Thick waxy cuticle

(1mark)

3. (a) Fill in the following blank spaces with the correct (appropriate) word: (8mks)

The wall of the mammalian heart is made up of _____ Muscle, which is unlike other types of muscles; because its contractions are _____. The contraction of the heart muscle is stimulated by the _____ node, which is located on the _____ atrium. The wave of excitation is then picked up by the _____ node and transmitted to the ventricles along the _____ fibers.

Regulation of the heartbeat is stimulated by _____. Also; the hormone _____ increases the heart rate.

(b) Account for the structural difference between the left ventricle and the right ventricle of the mammalian heart. (2 marks)

(c) Name the blood vessel that supplies the mammalian heart with oxygen and nutrients (1 mark)

(d) State three structural differences between arteries and veins (3 marks)

arteries	veins

END: JAW