

Biology I

001

05 Nov. 2014 08.30am - 11.30am



ORDINARY LEVEL NATIONAL EXAMINATIONS, 2014

SUBJECT: BIOLOGY I

DURATION: 3 HOURS

INSTRUCTIONS :

1. Write your name and index number on the answer booklet as written on your registration form.
2. Do not open this question paper until you are told to do so.
3. This paper consists of **THREE** sections: **A**, **B** and **C**.

Section A: Attempt **all** questions. **(55 marks)**

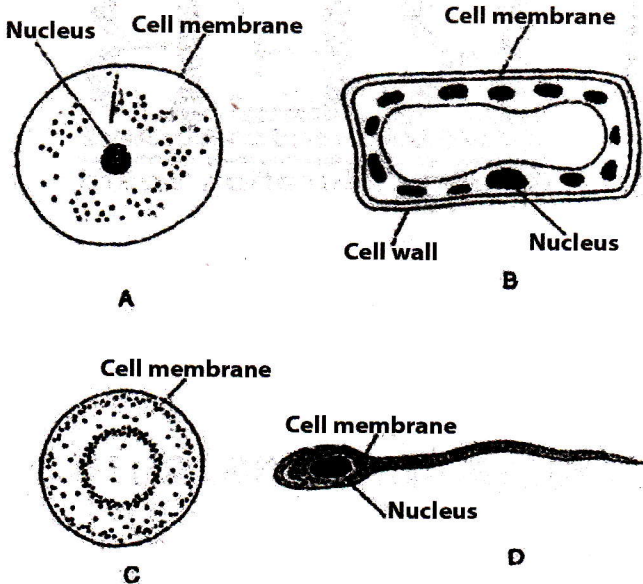
Section B: Attempt any **three** questions. **(30 marks)**

Section C: This section is **compulsory**. **(15 marks)**

4. Use only blue or black pen.

SECTION A: Attempt all questions. (55 marks)

1. The diagrams below represent types of cells.



Question

Which of these represent animal cells?

Explain your answer. **(3marks)**

2. Using \checkmark and **X**, indicate the parts of the cell found in a plant and animal cell. The first one has been done for you. **(5marks)**

PART	PLANT CELL	ANIMAL CELL
Nucleus	\checkmark	\checkmark
Cell membrane		
Cytoplasm		
Cell wall		
Large vacuole		
Chloroplast		

3. Blood contains Plasma, Red blood cells, White blood cells and platelets. Give the function of each :

- a) Plasma..... **(1mark)**
- b) Red blood cells **(1mark)**
- c) White blood cells **(1mark)**
- d) Platelets **(1mark)**

4. a) Distinguish between saprophytes and parasites. **(2marks)**

b) (i) Name a common disease in Rwanda caused by a protozoa. **(1mark)**

(ii) Suggest methods that can be used to control the disease you named in b(i). **(3marks)**

5. What substances are transported by :

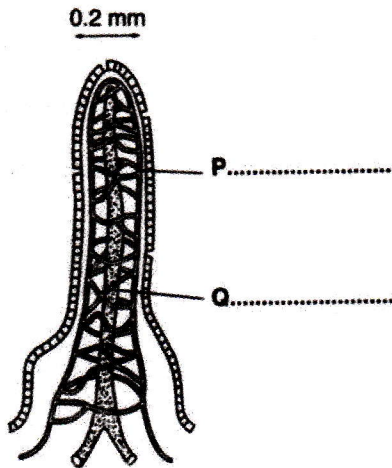
a) The vascular systems of a flowering plant? **(2marks)**

b) The blood system of mammals? **(2marks)**

6. a) Why is mucus needed to protect the cell lining the gut from protein-digesting enzymes? **(2marks)**

b) The **pH** in the stomach is very acidic about **pH 2**. Why would it be a problem if the **pH** in the small intestine was 2? **(2marks)**

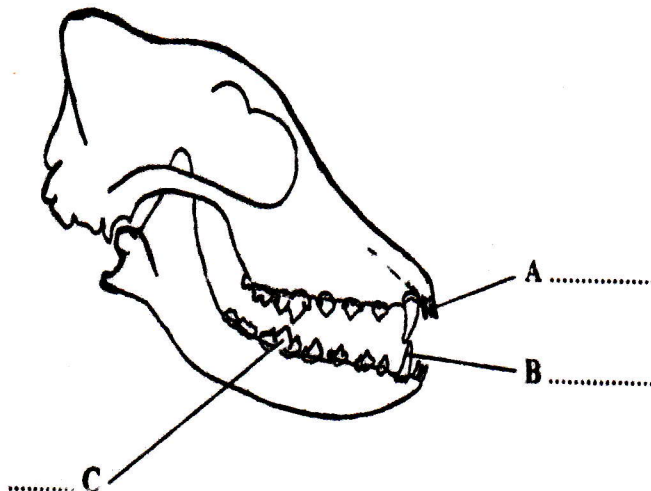
7. An experiment was done to investigate effects of bile on lipid digestion. Lipase enzyme and bile were added to a lipid test tube A. Test tube B only had the lipid and lipase enzyme. Explain why :
- a) The **pH** in test tube A became acidic. (2marks)
- b) The reaction in test tube B was very slow. (1mark)
8. Explain why the elimination of water by the kidney may be considered to be both excretion and osmoregulation. (4marks)
9. Why is it more accurate to describe fish as 'Variable - temperatured' animal rather than 'cold-blooded'? (2marks)
10. a) How is a zygote different from any other cell in the body? (1mark)
- b) Why is it difficult to decide whether viruses are living organisms? (4marks)
11. The diagram below shows a villus in longitudinal section from elium of a mammal.



Question

- a) Name the parts labelled P and Q. (2marks)
- b) What are the functions of P and Q? (2marks)
- c) Explain how P is adapted to carry out its functions. (2marks)

12. The diagram below shows the side view of a skull of a carnivore.



Label the teeth A, B and C. (3marks)

13. Choose words from the list to complete the sentences that follow. Each word may be used once or not at all. (6 marks)

Cells; Chloroplasts; Chromosomes; Genes; Organs; Organisms; Nucleus; Tissues.

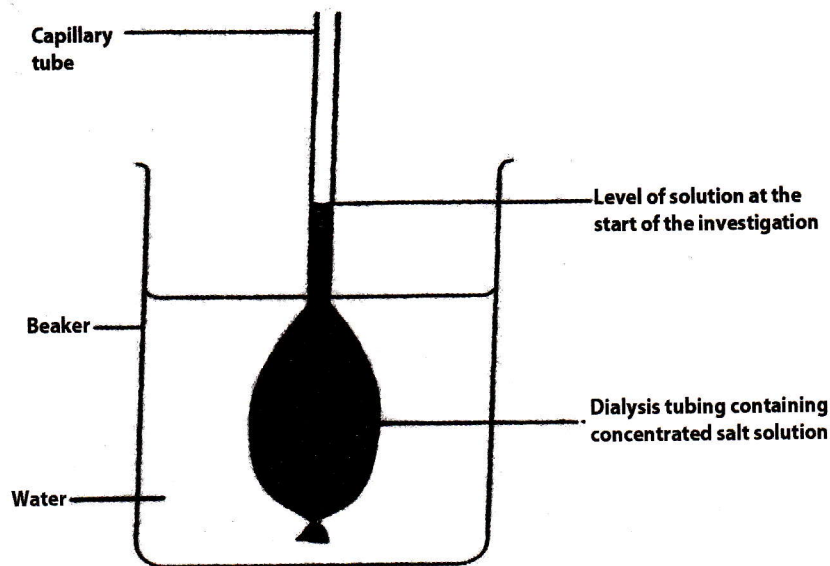
Each body cell contains a... (i)..... which controls the cell's activities and characteristics. This contains pairs of ... (ii)....., which are made up of a number of small units of inheritance called...(iii)..... A collection of similar cells working together are called (iv)..... These make up (v)..... which work together as systems allowing (vi) to survive.

SECTION B : ATTEMPT ANY THREE QUESTIONS. (30 MARKS)

14. Briefly explain how: a) the flow of blood is maintained in a mammal. **(5marks)**
b) The flow of water is maintained in a flowering plant. **(5marks)**
15. a) (i) What are hormones? **(1mark)**
(ii) Where are hormones produced? **(1mark)**
b) Which hormones are produced by the pancreas? **(2marks)**
c) Explain how the blood sugar levels in blood is controlled. **(6marks)**
16. a) How is AIDS transmitted from one person to another? **(4marks)**
b) Suggest all possible methods that can be used to avoid the AIDS virus. **(6marks)**
17. Identify the various modes of asexual reproduction in plants and animals. **(10marks)**
18. a) Define pollination. **(1mark)**
b) Name the types of pollination and characteristics of each. **(9marks)**

SECTION C: COMPULSORY. (15 MARKS)

19. Some students set the experiment below to investigate a biological process.



- a) (i) Name the process being investigated. **(1mark)**
(ii) Define the process named in a(i) above. **(2marks)**
- b) (i) What will happen to the water level in the capillary tube during this investigation? **(1mark)**
(ii) Explain what has happened in b(i) above. **(5marks)**
- c) Explain fully what happens when both animal and plant cells are put in a beaker containing pure water. **(6marks)**