

RWANDA NATIONAL EXAMINATIONS COUNCIL



P.O. BOX 3817 KIGALI -TEL/FAX 586871

Biology I
002

06 Nov. 2009 8.30 - 11.30 am

ORDINARY LEVEL NATIONAL EXAMINATIONS 2009

SUBJECT : BIOLOGY I

DURATION : 3 HOURS

INSTRUCTIONS

This paper consists of **three** sections A, B and C.

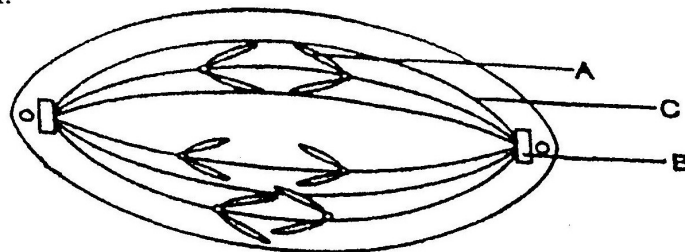
- Attempt **all** questions in section A: **(55 marks)**
- Answer any **three** questions in section B: **(30 marks)**
- Answer only **one** question in section C: **(15 marks)**

SECTION A: Answer all questions (55 marks)

1. Give three characteristics of class Amphibia. (3 marks)
2. What are the functions of the following structures?
 - i) Pancreas
 - ii) Muscles
 - iii) Gills(3 marks)
3. Match the structures with the organisms which possess them

Structures	Organisms
Antennae	Fungus
Flagella	Snail
Spores	Housefly
Coiled shell	Euglena

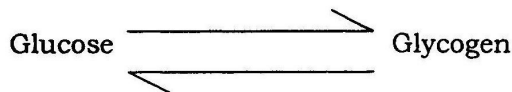
4. Amoeba is a single celled organism which lives in water. Describe how it feeds. (4 marks)
5. a) Describe four common features of a respiratory surface in animals. (3 marks)
- b) What advantages does aerobic respiration have over anaerobic respiration? (2 marks)
6. a) Define osmosis. (2 marks)
- b) explain why osmosis is considered a special case of diffusion. (2 marks)
7. The figure below shows an animal cell during a mitotic Division.



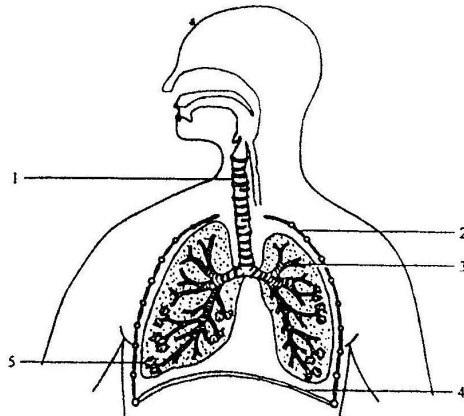
- i) Name the structures A, B, and C. (3 marks)

- ii) What stage of mitosis is shown in the figure ? **(1 mark)**
 iii) state two roles of mitosis. **(2 marks)**

- 8 a) Explain why there is no digestion of starch in the Stomach ? **(2 marks)**
 b) Enzymes are specific. Explain this statement. **(2 marks)**
9. a) Mammals have double circulation. What does this mean? **(2 marks)**
 b) Explain why large organisms need a circulatory system. **(2marks)**
10. The following interconversions take place during metabolism of carbohydrates in a human body



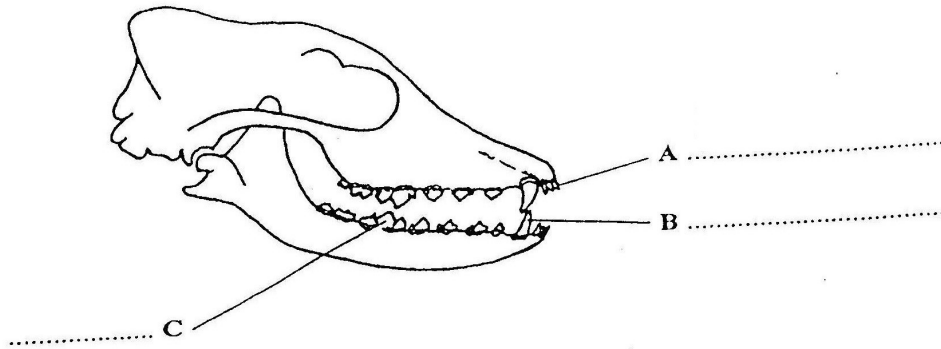
- a) In which organ does this reaction take place? **(1 mark)**
 b) Name two hormones that are involved in this reaction. **(2 marks)**
 c) What is the effect of excess glucose in the blood? **(2 marks)**
11. The diagram below shows some parts in the human thorax.



- a) Label the numbered parts in the thorax by completing the table Below: **(5 marks)**

	Name of part
1	
2	
3	
4	
5	

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



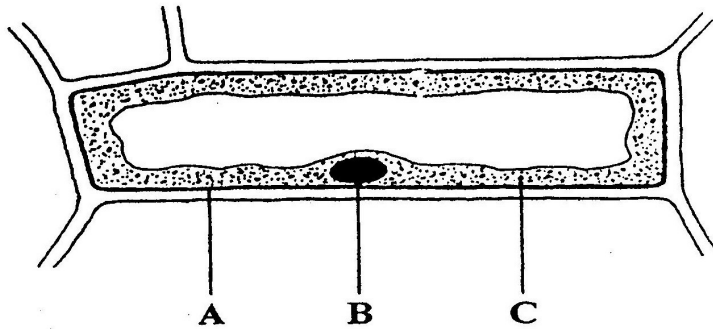
- a) Label the teeth A, B, and C. **(3 marks)**
- b) What function does each of the types of teeth mentioned in a above perform in helping this carnivore feed?
 A.....
 B.....
 C..... **(3 marks)**
- c) The jaw movement of carnivore and herbivores are different because they feed on different kinds of food.
 i) Describe the jaw movement of a carnivore. **(1 mark)**
 ii) Describe the jaw action of a herbivore. **(1 mark)**
13. In mice, the gene for black fur is dominant over the gene for brown fur. The gene for black fur can be represented by "B" whilst "b" represents the gene for brown fur.
 a) What is the genotype of a brown mouse? **(1 mark)**
 b) What are the possible genotypes of a black mouse? **(2 marks)**

SECTION B: (30 MARKS) .

Attempt any Three questions in this section (30 marks)

14. a) Define photosynthesis. **(1 mark)**
 b) What are the raw materials of photosynthesis. **(2 marks)**
 c) Explain how a leaf is adapted for photosynthesis. **(4 marks)**
 d) Mention three factors that may influence the rate of photosynthesis. **(3 marks)**

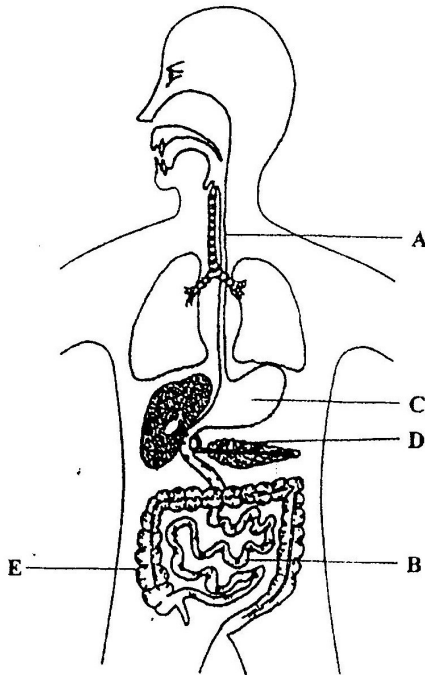
15. a) Plants are made of cells. This diagram below shows a plant cell. Complete the table and give one function of each part. **(6 marks)**



	Name	Function
A		
B		
C		

- b) Animals are made of cells. Describe two differences and two similarities between plant and animal cells. **(4 marks)**

16. The diagram below shows several organs of a human body



Complete the table below by naming each labeled organ and give one of its functions. (10 marks)

	Name	Function
A		
B		
C		
D		
E		

17. a) Define pollution. (2 marks)
 b) Explain how the increased use of fossil fuels could be responsible for acid rain and global warming. (4 marks)
 Acid rain..... (4 marks)
 Global warming..... (4 marks)
18. a) Describe the process of fertilization in man. (4 marks)
 b) How can you prevent fertilization in man? (6 marks)

SECTION C : (15 MARKS)

Attempt one question in this section

19. a) Describe the different types of carbohydrates giving examples of each type. (10 marks)
 b) You are provided with a solution which is suspected to contain reducing sugar. Describe the possible tests you can carry out to confirm that it is a reducing sugar. (5 marks)
20. a) Describe the composition of blood. (4 marks)
 b) Explain how blood cells transport oxygen. (4 marks)
 c) How are blood cell adapted to transport oxygen? (3 marks)
 d) Explain why animal cells burst when in water but plant cells do not. (3 marks)