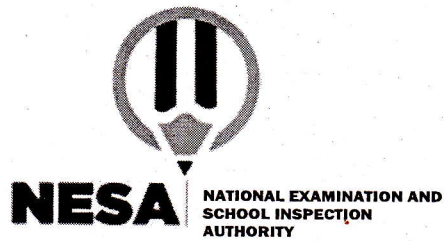


**Biology and Health  
Sciences I**

**001**

27/07/2021 08.30 AM - 11.30 AM



**ORDINARY LEVEL NATIONAL EXAMINATIONS, 2020-2021**

**SUBJECT: Biology and Health Sciences I**

**DURATION: 3 HOURS**

**INSTRUCTIONS:**

- 1) Write your names and index number on the answer booklet as written on your registration form and **DO NOT** write your names and index number on additional answer sheets if provided.
- 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 a **blue** or **black** pen.

**SECTION A: ATTEMPT ALL QUESTIONS (55 marks)**

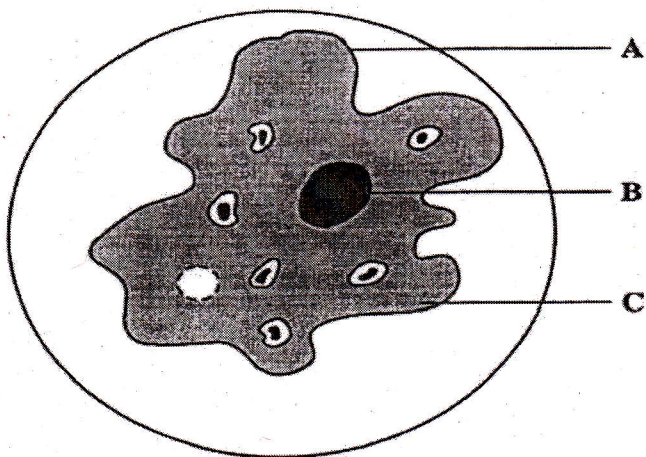
1) Movement is a life process. Name four other life processes that all plants and animals do. **(4 marks)**

- 1.....
- 2.....
- 3.....
- 4.....

2) Give Three characteristics of class amphibia. **(3 marks)**

- 1.....
- 2.....
- 3.....

3) Amoeba is a single celled animal. The students took some amoebae from the pond. They looked at one under a microscope.



(i) Use the words from the box to name the parts of this amoeba. **(3 marks)**

Cell membrane, Cell wall, Chloroplast,  
Cytoplasm, Nucleus, Vacuole

Letter	Name
A	
B	
C	

- (ii) Draw lines to link each part of the amoeba cell with its function. **(3 marks)**

Part	Function
A	Controls the characteristics of the cell
B	Allows substances to move in and out of the cell
C	Where chemical reactions take place

- (iii) In which of these parts would you find genes? **(1 mark)**

- 4) a) Complete these sentences using appropriate words. **(4 marks)**

Blood from the body enters the right side of the heart through the blood vessel called the.....

The blood is pumped through the .....to the lungs.

The blood returns to the heart through the blood vessel called the .....

The blood is pumped to the body parts through the blood vessel called the.....

- b) Describe the differences between arteries and veins? **(3 marks)**

- c) Complete this sentence.

In the lungs the blood loses .....gas and picks up.....gas. **(2 marks)**



5) a) Some drugs, when mis-used, harm the body.

Complete the table by putting a tick (✓) under alcohol or solvent or both, to show the effect of these drugs. **(3 marks)**

One has been done for you.

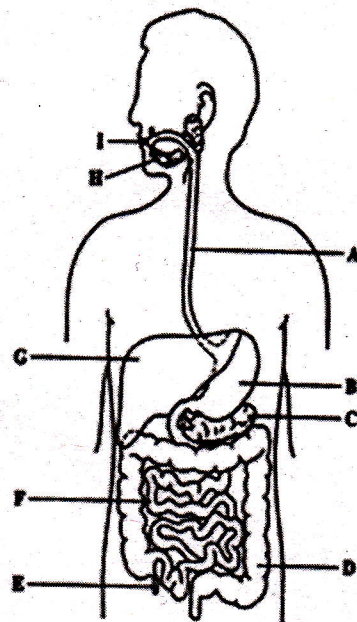
Drug		Effect
Alcohol	Solvent	
✓	✓	Possibility of addiction
		Hallucinations
		Damage to brain and liver cells
		Damage to Kidney cells

b) It is dangerous to drink alcohol and then drive or operate machinery.

Explain why.

**(2 marks)**

6) The diagram shows the human digestive system.



a) Name the parts A,D and F.

**(3 marks)**

A.....

D.....

F.....

- b) Use the letters from the diagram to show where
- (i) Hydrochloric acid is produced..... **(1 mark)**
  - (ii) Insulin is produced ..... **(1 mark)**
  - (iii) Amylase is produced..... **(1 mark)**
- c) What does amylase do in the digestive system? **(2 marks)**

7) Variation is often caused by mutation.

- (i) What is mutation? **(1 mark)**
- (ii) Name one cause of a mutation **(1 mark)**
- (iii) Describe two other causes of variation. **(2 marks)**

8) Fill in the gaps with the most appropriate word or words.

Ecology is the study of how living organisms interact each other and with their.....

Ecosystems are made up of.....and abiotic components. Two examples of abiotic components are.....and.....

The.....is the place where a particular organism lives. **(5 marks)**

9) a) What does asexual reproduction mean? **(1 mark)**

b) Give two examples of asexual reproduction in animals. **(2 marks)**

10) a) Name two foods which are good sources of Protein

1..... 2..... **(2 marks)**

b) Explain briefly why the human body needs Proteins? **(2 marks)**

c) Describe an experiment you would carry out to test for protein in a piece of food. Say what you would expect to see if protein was present.

**(3 marks)**



**SECTION B: Attempt any three questions (30 marks)**

11) 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 influence the rate of Photosynthesis.

**(3 marks)**

12) Describe the different types of carbohydrates giving examples of each type.

**(10 marks)**

13) How are Red blood cells adapted to transport of oxygen?

**(10 marks)**

14) a) Describe the composition of blood.

**(6 marks)**

b) Explain why animal cells burst when in water but plant cells do not.

**(4 marks)**

15) a) Give differences between Mitosis and Meiosis.

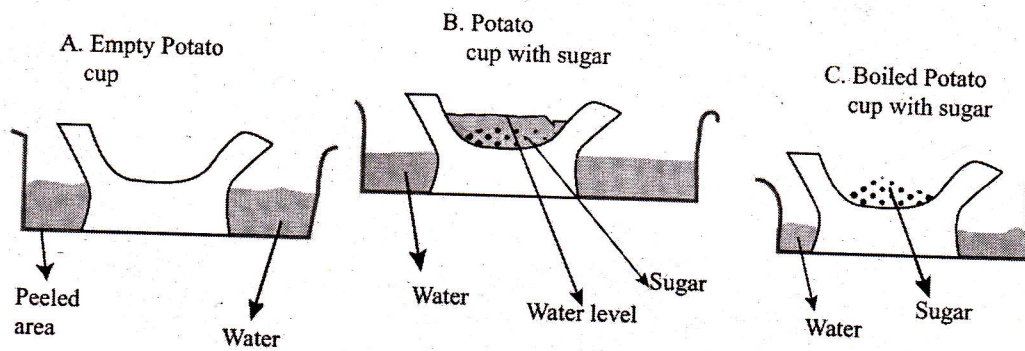
**(8 marks)**

b) What is the role of Mitosis?

**(2 marks)**

**SECTION C: This Section is compulsory (15 marks)**

16) Senior Three students in a secondary school carried out an experiment to investigate a biological process in a living tissue. The set up of their experiment is shown below. Interpret the set up and answer the questions that follow:



- Explain in detail why water gathers in the hallowed portion of potato B. **(4 marks)**
- Explain why water does not gather in the hallowed portion of potato A and C. **(4 marks)**
- Why is the set up in A necessary in this Experiment? **(2 marks)**
- Why did they use boiled potato in C? **(3 marks)**
- What process is being investigated in this experiment? **(2 marks)**



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