

Candidate Name _____

Centre Number	Candidate Number

EXAMINATIONS COUNCIL OF ZAMBIA

Joint Examination for the School Certificate
and General Certificate of Education Ordinary Level

BIOLOGY
PAPER 2 Theory

5090/2

NOVEMBER 2003

1 hour 45 minutes

Additional materials:
Answer paper

TIME: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page and on all separate answer paper used.

There are **ten** questions in this paper.

Section A

Answer **all** questions.

Write your answers in the spaces provided on the question paper.

Section B

Answer any **three** questions.

Write your answers on the separate answer paper provided.

At the end of the examination:

1. fasten all separate answer paper used securely to the question paper;
2. enter the numbers of the Section B questions you have answered in the grid below.

INFORMATION FOR CANDIDATES

The intended number of marks is given in brackets [] at the end of each question or part question.

You are advised to spend no longer than one hour on Section A and no longer than 45 minutes on Section B.

FOR EXAMINER'S USE	
Section A	
Section B	
Total	

Section A

Answer **all** questions.

1. Fig 1.1 shows a plant cell.

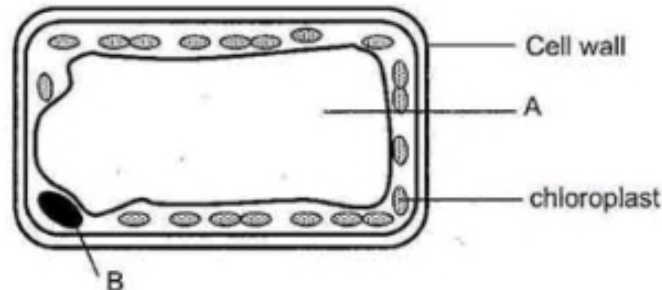


Fig. 1

- (a) Identify and state the functions of the structures labelled A and B

(i) Structure A: [1]

Functions: (1) [1]

(2) [1]

(ii) Structure B: [1]

Functions: (1) [1]

(2) [1]

- (b) List two differences between the plant cell shown in Fig 1 and an animal cell.

(i) [2]

(ii) [2]

[Total:8]

2. Fig 2 shows stages in the process of making yoghurt using fresh milk.

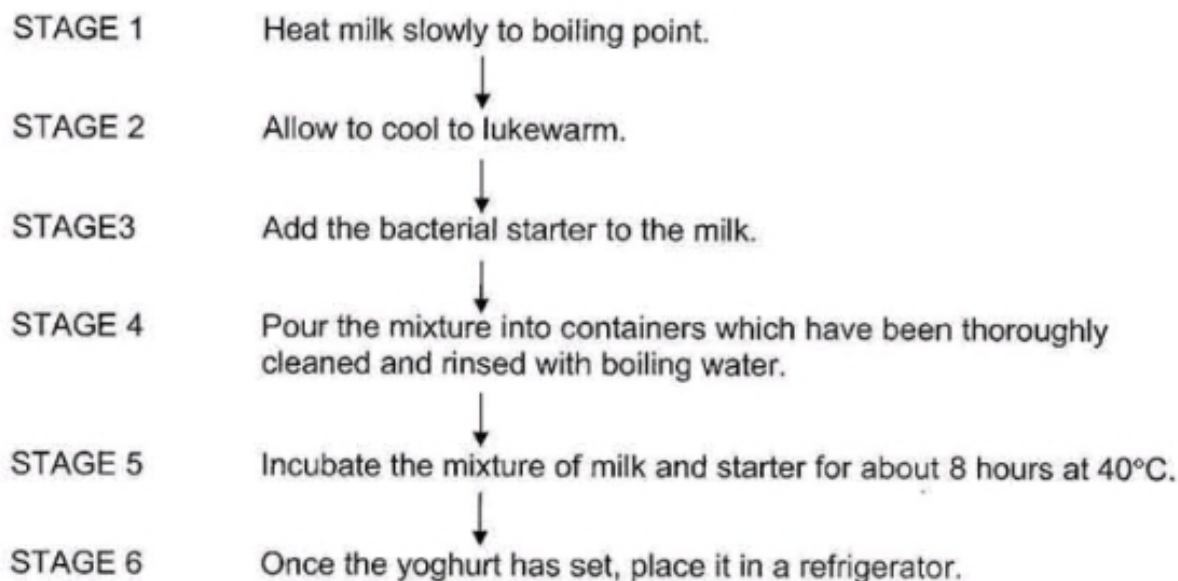


Fig 2

Using the stages shown in Fig 2 and your own knowledge on the topic, answer the following questions:

- (a) Suggest any two ways in which other bacteria, other than that in the starter in stage 3, is prevented from growing in the milk being used in making yoghurt.

(i)

(ii) [2]

- (b) Why is the milk cooled before adding the bacterial starter?

.....

..... [1]

- (c) What happens to the bacteria in the starter after the starter has been added to the lukewarm milk in stage 3?

.....

..... [2]

- (d) What happens to the milk after the bacterial starter has been added and the mixture left to incubate in stage 5?

.....

..... [2]

- (e) Why is it necessary to rinse containers in boiling water in stage 4?

.....

..... [2]

[Total: 9]

3. Fig 3.1.1 and Fig 3.1.2 show the experimental set up to demonstrate a biological process at the start of the experiment.

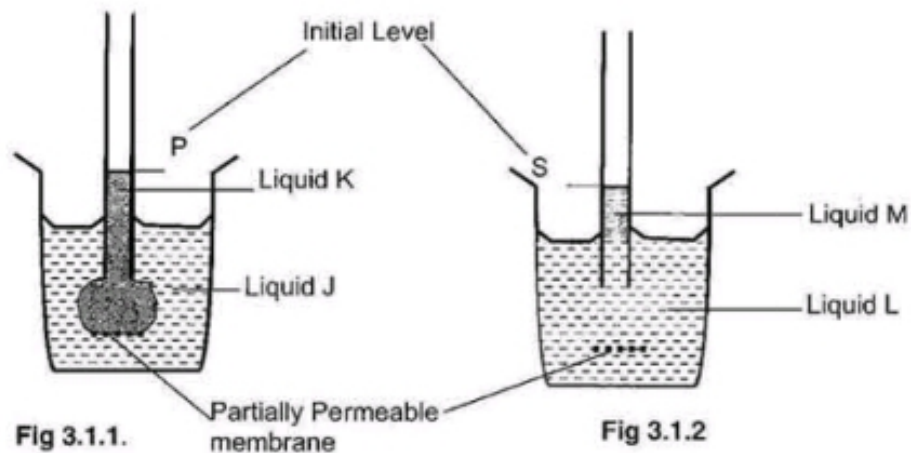
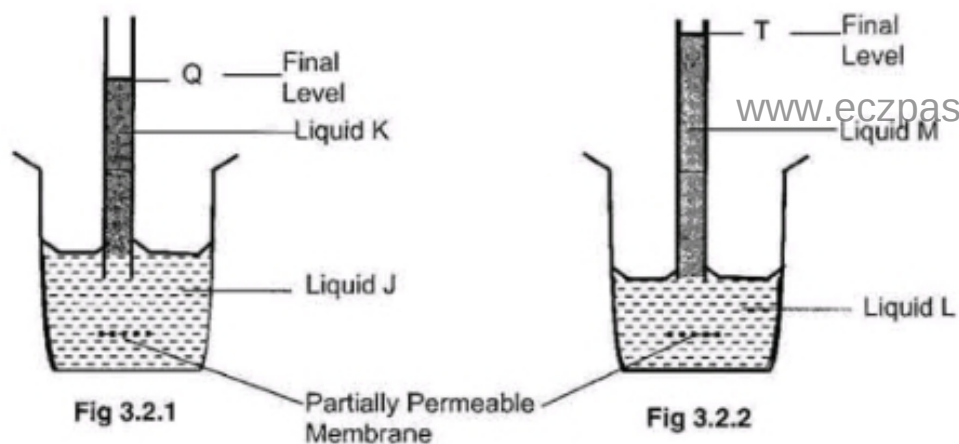


Fig 3.2.1 and Fig 3.2.2 show the same experimental set up to demonstrate a biological process after 30 minutes.



- (a) Two of the liquids used in the experiment were water and the other two were sucrose solutions.

- (i) From the experimental results shown in Fig 3. 2.1. and Fig 3.2.2, name liquids J and L.

J.....
L..... [1]

- (ii) Explain why liquid M has risen to a greater height than liquid K.

.....
.....
.....
..... [2]

- (b) (i) Name the biological process being demonstrated in the experimental set up.

.....
.....
..... [1]

- (ii) How does the process you have named affect an animal cell when placed in water?

.....
.....
..... [3]

[Total:7]

4. Some married couples fail to have children due to the females' failure to produce ova. In such cases, female fertility drugs containing a hormone are taken.

- (a) (i) Name a hormone that stimulates production of ova.

.....
..... [1]

- (ii) Suggest why this treatment can result in the birth of many babies at once.

.....
..... [2]

- (b) Females possess an endocrine gland that secretes the hormone you have named in (a) (i) above.

- (i) Name the endocrine gland.

..... [1]

- (ii) Where in the female body is this gland situated?

..... [1]

- (c) State any two methods of contraception used in Zambia.

- (i)
(ii) [2]

[Total:7]

5. Fig 5.1.1 and Fig 5.1.2 show two examples of variations in humans.

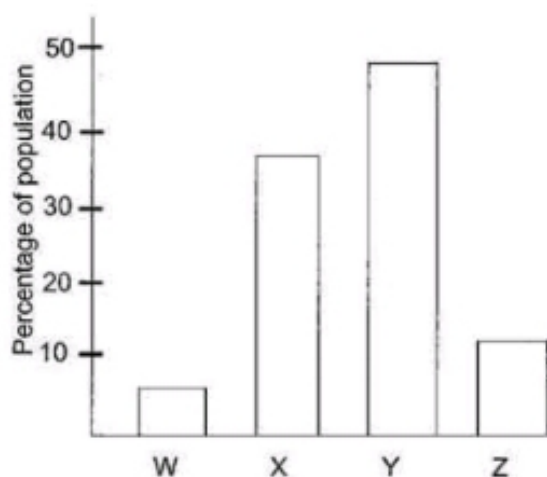


FIG 5.1.1

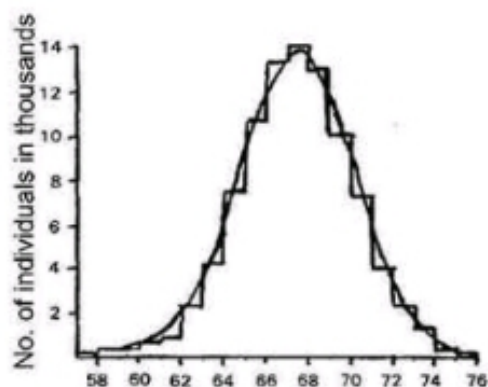


FIG 5.1.2

- (a) Name the type of variations shown in Fig 5.1.1 and Fig 5.1.2, and give one example for each type of variation.

(i) Type of variation (Fig 5.1.1)

[1]

Example:

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[1]

(ii) Type of variation (Fig 5.1.2)

[1]

Example:

[1]

- (b) What genetic factors control the type of variations shown in Fig 5.1.1 and Fig 5.1.2?

(i)

[1]

(ii)

[1]

- (c) Give two environmental factors that might influence the type of variation shown in Fig 5.1.2.

(i)

[1]

(ii)

[1]

- (d) Using a genetic diagram, explain co-dominance in the inheritance of blood groups in human beings.

Symbols:

Parents: Phenotype [1]

Genotype [1]

Gametes: _____, _____, _____, _____, ... [1]

Offspring (F1):

Genotypes: _____, _____, _____, _____, ... [1]

Phenotypes: _____, _____, _____, _____, ... [1]

[Total:13]

Section B

Answer any **three** questions.

6. (a) Explain how the human body digests the following food substances contained in a boiled egg:

(i) Fats. [4]

(ii) Proteins. [5]

- (b) What happens if the products of digestion of proteins in the egg are more than what the body needs? [3]

[Total 12]

7. (a) (i) In what named process and under what environmental conditions would a mesophyll cell of a flowering plant give out oxygen? [5]

(ii) Describe an equation which is a summary of the process by which a mesophyll cell gives out oxygen. [3]

- (b) Explain why plants need water. [4]

[Total: 12]

8. Fig 8.1 shows the results of the study on the feeding pattern in a pond.

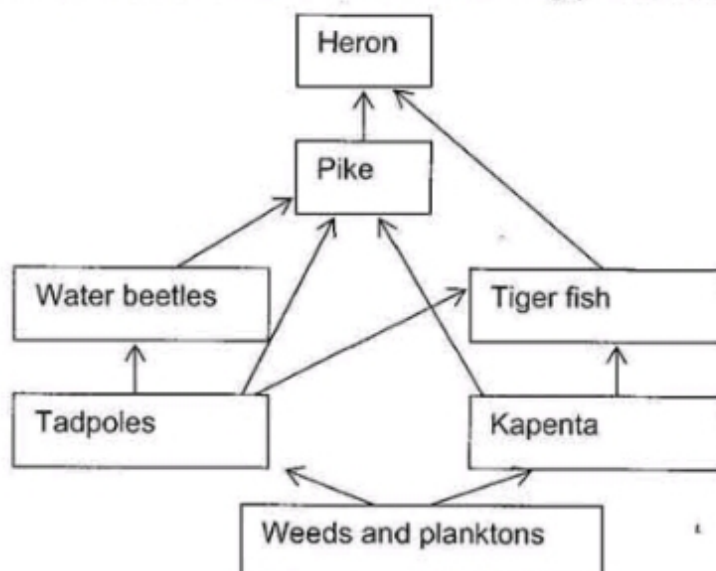


Fig 8.1

- (a) (i) Explain what happens to the other organisms at the same tropic level in the food web when most of the kapenta is harvested from the pond? [4]
- (ii) How do the animals in this food web use the energy they receive? [5]
- (b) Why do organisms become fewer as you go up each tropic level? [3]

www.eczpastpapers.com [Total: 12]

9. (a) What is meant by the term homeostasis? [2]
- (b) What role is played by the following structures of the skin in controlling the temperature of the body during overcooling:
- (i) Sensory Nerve?
- (ii) Erector muscle?
- (ii) Blood vessels?
- (iii) Sweat gland? [8]
- (c) Explain the role of the lungs in homeostasis. [2]

[Total: 12]

10. (a) Explain the harmful effects caused by:
- (i) intake of heroin. [4]
- (ii) excessive intake of alcohol. [4]
- (b) Describe the withdrawal symptoms of heroin. [4]

[Total: 12]