

JUNIOR LYCEUM ANNUAL EXAMINATIONS
Educational Assessment Unit - Education Division
2001

FORM 3

BIOLOGY

TIME 1½ Hour

Name: _____ Class: _____

SECTION A: This section carries 55 marks.
ANSWER ALL QUESTIONS IN THE SPACES PROVIDED.

Do not
write in
this margin

1. This question is about **CYTOLOGY**. Fill in:

PART OF THE CELL	ONE FUNCTION
NUCLEUS	
MITOCHONDRION	
CYTOPLASM	
CELL MEMBRANE	
CHLOROPLAST	

(total 5 marks)

2. This question is about **DIFFERENT FORMS OF LIFE**. Fill in:

Animal Kingdom	One Characteristic Feature	Example
Coelenterates (Cnidarians)		
	Most have an internal or external shell	
	Body thin and flat to facilitate the diffusion of oxygen.	
		Earthworm

(total 8 marks)

3. The following question is about the use of the **MICROSCOPE**:

List **four** steps how you would use the microscope to observe a prepared slide.

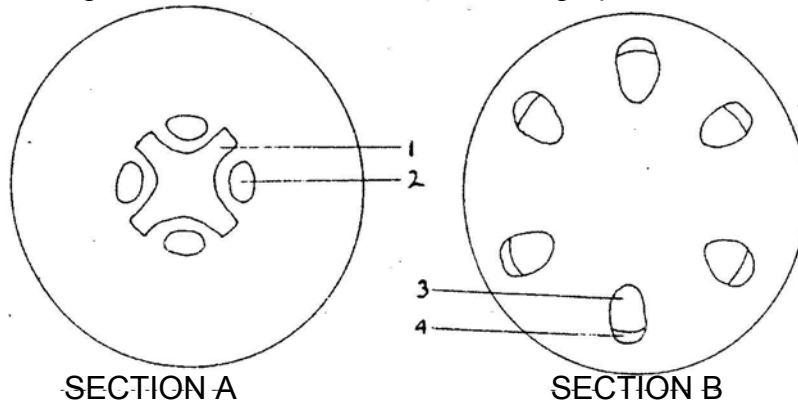
- i) _____;
- ii) _____;
- iii) _____;
- iv) _____.

(total 4 marks)

Do not

4. This question is about **flowering plants**:

The diagrams below show sections through parts of a flowering plant.



a) Indicate from which part of the plant Sections A and B are taken from.

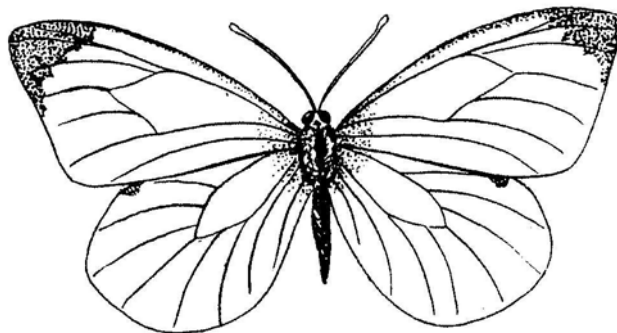
- i) Section A is taken from the _____;
- ii) Section B is taken from the _____. (1,1)

b) Identify the parts labelled 1 to 4:

- i) Label 1 is the _____; ii) Label 2 is the _____;
 - iii) Label 3 is the _____; iv) label 4 is the _____;
- (1,1,1,1)
(total 6 marks)

5. This question is about **insects**:

The diagram below shows an insect.

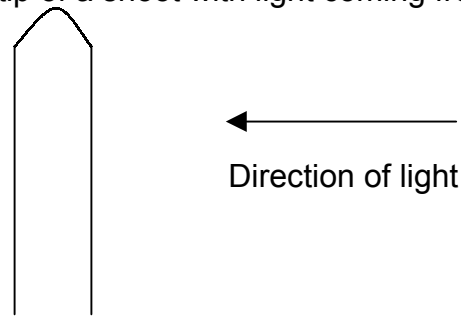


State three (3) features you can see **in the diagram** which are **characteristics of insects**:

- i) _____;
 - ii) _____;
 - iii) _____ (1,1,1).
- (total 3 marks)**

Do not

6. This question is about **tropisms**.
The diagram below shows the tip of a shoot with light coming from one side.



- a) How would the shoot respond to the light? _____ (1)
- b) What is the name of such a response? _____ (1)
- c) Name **one** advantage to plants of responding in this way? _____ (1)
- d) Describe briefly how this response is brought about?

_____ (4)
- (total 7 marks)**

7. This question is about **biotic factors**.

Fill in the following table:

Biotic Factors	Description	Example
Parasitism	_____ _____ _____ _____ (2)	_____ _____ _____ (1)
(1)	_____ _____ _____ _____ (2)	Root-nodule bacteria and leguminous plants.
Predator-prey relationships	_____ _____ _____ _____ (2)	_____ _____ _____ (1)

(total 9 marks)

Do not

8. This question is about **beneficial and harmful organisms in soil**.

- a) The **earthworm** is an organism that has a beneficial effect on soil.
List three (3) reasons why the earthworm has a beneficial effect on soil.

_____ (3)

- b) (i) Name one organism that is considered to be a **harmful** soil organism.

_____ (1)
(ii) Describe briefly the damage it causes.

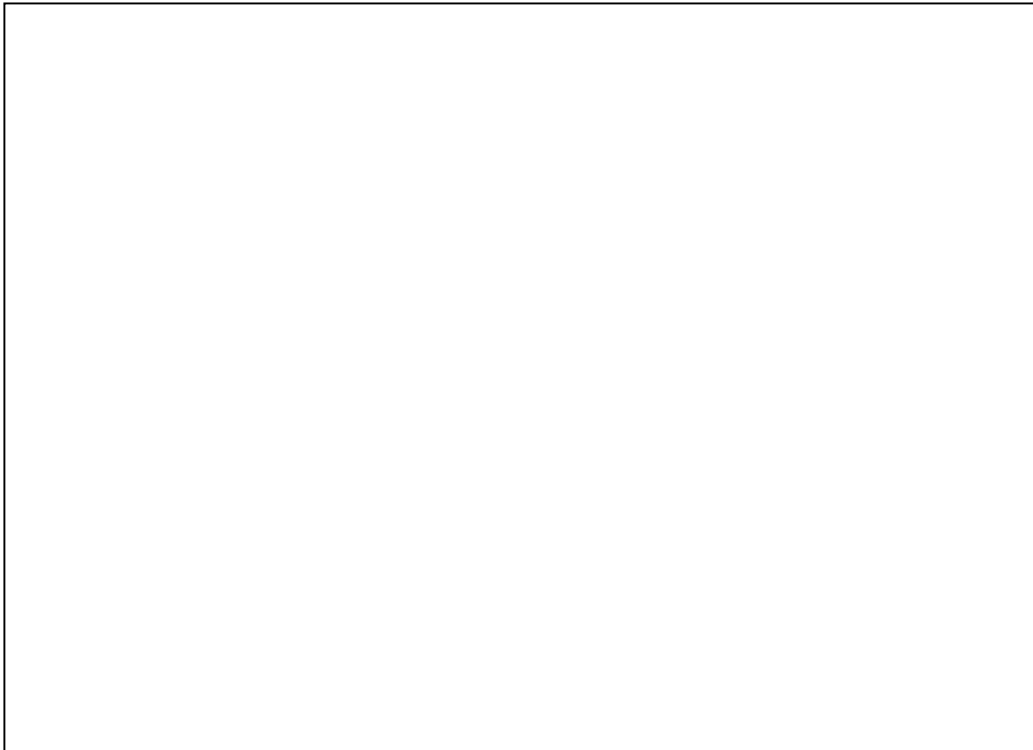
_____ (1)
(total 5 marks)

9. This question is about the **Leaf** .

- (i) List two (2) functions of the leaf.

_____ (2)

- (ii) Draw in the space provided a clear labelled diagram to show the internal cellular structure of the leaf (6)



(total 8 marks)

SECTION B : Answer your questions on the papers provided.

This Section carries 45 marks.

Answer Question ONE and any other TWO questions .

Question 1. Read the following paragraph and answer the questions below:

This question is about **transpiration**.

A leafy shoot was kept in a potometer and exposed to different conditions.

The time taken for the bubble of air to move **50mm** along the capillary tube was recorded for each set of conditions. The results are shown below.

Humidity of air	Air Movement	Temperature ° C	Time in seconds taken to move 50 mm.
Dry	Still	20	150 seconds
Dry	Moving	30	50 seconds
Damp	Still	20	200 seconds
Damp	Moving	30	100 seconds

- a) What is **transpiration**? (3)
- b) Under which conditions was the rate of water uptake:
- (i) **fastest** (1)
- (ii) **slowest** (1)
- c) Calculate the time taken for the bubble to move **one (1) mm. in each condition** recorded in the table above. **Show your workings.** (4)
- d) Suppose that the lower side of all leaves was covered with petroleum jelly which is impermeable to water. The leafy shoot was then again exposed to the same conditions as shown in the table above. **Predict what would happen to the rate of water uptake and explain your results.** (1,2)
- e) Plants can be adapted to reduce water loss. Name two (2) such adaptations. (2)
- f) Name one (1) importance of transpiration to the plants. (1)

(total 15 marks)

2. a. Define the following:

- (i) Osmosis (ii) Diffusion (iii) Active Transport (2,2,2)

b Describe, with the help of diagrams, the processes mentioned in (a) in relation to:

- (i) Osmoregulation in a named animal-like protist. (2)
- (ii) Absorption of water and mineral salts from the soil by roots. (2)

c Describe an experiment to demonstrate the principles of 'diffusion'. (5)

(total 15 marks)

3. a. Draw outline structures of:

(i) a virus (ii) a bacterium (iii) a typical plant cell (3, 3, 3)

b. Describe the differences between **Prokaryotic** and **Eukaryotic** cells. (2)

c. Name two (2) differences between **Monocotyledonous** and **Dicotyledonous plants**. (2, 2)

(total 15 marks)

4. a. Draw a large labelled diagram to show the structure of a **named common insect – pollinated flower**. (5)

b. Describe one (1) function of any **two** parts labelled in 4a. (2).

c. State two (2) functions of:

(i) the root (ii) the stem (2, 2)

d. Draw an outline structure of a unicellular fungus **or** a filamentous fungus. (4)

(total 15 marks)

5. a. List the components of a soil sample. (5)

b. Give four (4) differences between

(i) clay soil (ii) sandy soil. (4)

c. What type of soil is "**LOAM**" ? (1)

d. Describe an experiment to determine the **water** content in a particular soil sample. (5)

(total 15 marks)