



BRAINIACS OLYMPIAD

GRADES 7-8

BIOLOGY SAMPLE PAPER (PRACTICAL PART)



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BIOLOGY SAMPLE PAPER – PRACTICAL PART

Grades: 7–8

Time: 120 minutes

Total Points: 100

Equipment: *Not required*

TASK 1 [50 points]

PART 1. INVESTIGATION (26 points)

Effect of Light on Germination (Model System)

Seeds need suitable conditions to germinate. Light intensity may affect the rate of germination.

(a)

(i) The student collected the following data:

Light Intensity (arbitrary units)	Seeds germinated in 4 days
10	8
20	16
30	24

Calculate the **rate of germination per day** for each light intensity.

[6]

(a) (ii) Plot a line graph of light intensity vs rate of germination.

[6]

Include:

Correct axes

Units

A suitable scale

(a) (iii) State one conclusion from your results.

[2]

(a)(iv) Identify:

[8]

Independent variable

Dependent variable

(a)(v) State one variable that must be kept constant.

[2]

(a)(vi) Identify one safety hazard in this investigation if it was carried out in a laboratory.

[2]

PART 2. FOOD TEST & PLANT STRUCTURE (14 points)

Plants store energy in different forms such as starch and fats.

(a) Testing food for starch

A student tested a food sample using iodine solution.

(i) Describe the method for testing starch.

[5]

(ii) State the positive result for this test.

[3]

(b) Leaf shape and photosynthesis

The diagram shows a leaf placed on a grid.

(diagram would be provided in exam paper)

(i) Calculate the area of the leaf.

Only count squares more than half-filled.

[3]

(ii) Explain why a thin leaf helps the plant to photosynthesize efficiently.

[3]

PART 3. CELL BIOLOGY (10 points)

(a) Make a large, clear biological drawing of an animal cell.

[6]

Your drawing must:

Be at least half a page

Use clear lines

Have no shading

(b) Label the following parts:

[4]

Cell membrane

Cytoplasm

Nucleus

Mitochondrion

TASK 2 [50 points]

PLANNING AN INVESTIGATION (50 points)

Environmental factors influence living organisms.

Plan an investigation to study:

The effect of carbon dioxide concentration on the rate of respiration

You may use:

Germinating seeds

Test tubes

Limewater

Stopwatch

Your plan should include:

Aim

Independent variable

Dependent variable

Method

One variable to keep constant

How results would be recorded

Space for student answer:

Aim:

Independent variable:

Dependent variable:

Method:

Constant variable:

Recording results:

END OF PAPER