BRAINIACS OLYMPIAD

GRADES 7-8

BIOLOGY SAMPLE PAPER

THEORETICAL PART

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BIOLOGY SAMPLE PAPER-GLOBAL FINAL

Grade: 7-8

Time: 120 minutes

Total points: 100

Question 1

Scientists often observe organisms in their natural environments to understand how living systems function.

Indicate which of the following statements are true or false.

A. Growth in living organisms usually involves an increase in cell number or size.

B. All living organisms grow throughout their entire lifetime.

C. Living organisms require energy to maintain life processes.

D. Only animals respond to environmental changes.

Answer

A. True

B. False

C. True

D. False

Question 2

Cells contain structures that perform specific tasks necessary for survival.

Indicate which of the following statements are true or false.

A. The cell membrane controls the movement of substances into and out of the cell.

B. Cytoplasm is the region where many chemical reactions occur.

C. Mitochondria store genetic information used for reproduction.

D. The nucleus contains the genetic material of eukaryotic cells.

Answer

A. True

B. True

C. False

D. True

Question 3

Different body systems in humans work together to maintain life.

Indicate which of the following statements are true or false.

A. The respiratory system helps supply oxygen to the body.

B. The circulatory system transports substances such as oxygen and nutrients.

C. The digestive system is responsible for producing red blood cells.

D. The excretory system helps remove waste products from the body.

Answer

A. True

B. True

C. False

D. True

Question 4

Plants have specialized structures that allow them to survive in different environments.

Indicate which of the following statements are true or false.

A. Roots help anchor plants in the soil and absorb water.

B. Leaves are usually the main sites of photosynthesis.

C. Stems transport water and nutrients within the plant.

D. Flowers are responsible for absorbing water from the soil.

Answer

A. True

B. True

C. True

D. False

Question 5

Environmental conditions influence the survival of organisms in ecosystems.

Indicate which of the following statements are true or false.

A. Light availability can affect plant growth.

B. Temperature has no influence on living organisms.

C. Water availability can limit the survival of organisms.

D. Environmental factors can influence the size of populations.

Answer

A. True

B. False

C. True

D. True

Question 6

Some organisms consist of only a single cell, while others contain many cells working together.

Indicate which of the following statements are true or false.

A. Unicellular organisms carry out all life processes within one cell.

B. Multicellular organisms have specialized cells performing different functions.

C. All unicellular organisms are animals.

D. Multicellular organisms cannot survive if some cells perform different tasks.

Answer

A. True

B. True

C. False

D. False

Question 7

Cells require energy to perform their functions.

Indicate which of the following statements are true or false.

A. Mitochondria help release energy from food in cells.

B. Cells require energy for processes such as movement and growth.

C. Only plant cells need energy to survive.

D. Energy in cells is often stored in chemical molecules.

Answer

A. True

B. True

C. False
D. True

Question 8
Several organs work together to break down food and absorb nutrients.
Indicate which of the following statements are true or false.
A. Digestion begins in the mouth.
B. The small intestine is important for absorbing nutrients into the body.
C. The digestive system transports oxygen through the blood.
D. Different digestive organs perform different functions.
Answer
A. True
B. True
C. False
D. True

Question 9
Plants require several conditions in order to grow successfully.
Indicate which of the following statements are true or false.
A. Water is necessary for most plant life processes.
B. Plants can grow normally without any mineral nutrients from soil.
C. Temperature can influence plant growth and development.
D. Sunlight provides energy for plant food production.
Answer
A. True
B. False
C. True
D. True

Question 10
Food chains describe how energy moves through living systems.
Indicate which of the following statements are true or false.
A. Energy usually flows from producers to consumers in a food chain.
B. Herbivores are animals that feed mainly on plants.
C. Carnivores produce their own food through photosynthesis.
D. Energy available to organisms usually decreases along a food chain.
Answer
A. True
B. True
C. False
D. True

Question 11
A group of students places two identical plants in different conditions. One plant receives sunlight and water, while the other receives water but no light.
Indicate which of the following statements are true or false.
A. The plant kept in sunlight can produce food through photosynthesis.
B. The plant kept in darkness can continue producing glucose indefinitely.

C. Plants need light energy to produce their own food.
D. Plants placed in darkness may eventually stop growing normally.
Answer
A. True
B. False
C. True
D. True

Question 12
A microscope is used to observe different types of cells collected from living organisms.
Indicate which of the following statements are true or false.
A. Some organisms consist of only one cell.
B. All cells contain cytoplasm where many reactions occur.
C. All cells contain a nucleus.
D. Cells contain genetic material that controls their activities.
Answer
A. True
B. True
C. False
D. True

Question 13
In an ecosystem, organisms depend on each other for energy and survival.
Indicate which of the following statements are true or false.
A. Herbivores feed directly on plants.
B. Carnivores obtain energy by eating other animals.
C. Producers depend on carnivores for food production.
D. If herbivores disappear, some carnivores may lose their food source.
Answer
A. True
B. True
C. False
D. True

Question 14
Scientists study how environmental conditions affect plant growth.
Indicate which of the following statements are true or false.
A. Water is important for transporting nutrients within plants.
B. Plants can survive indefinitely without water.
C. Light is important for photosynthesis.
D. Environmental conditions can influence plant growth.
Answer
A. True
B. False
C. True
D. True

Question 15

The human body contains several systems that work together to maintain life.

Indicate which of the following statements are true or false.

A. The circulatory system transports nutrients and oxygen in the body.

B. The respiratory system allows gas exchange in the lungs.

C. The digestive system is responsible for producing nerve signals.

D. Body systems often work together to maintain stable internal conditions.

Answer

A. True

B. True

C. False

D. True

Question 16. Investigating Light and Plant Growth

A student thinks that plants exposed to more light will grow taller than plants kept in low light.

Design a biological investigation to test this idea. Include:

1. A clear hypothesis.
2. The independent variable.
3. The dependent variable.
4. At least three controlled variables.
5. A step-by-step method.
6. How the data should be recorded, compared, and interpreted.

Question 17. Food Web Disturbance Scenario

In a grassland ecosystem, the number of insects suddenly falls sharply over one month.

Explain step by step:

1. Two possible biological reasons for the decrease in insect numbers.
2. How this change may affect plants in the area.
3. How animals that feed on insects may be affected.
4. One possible long-term effect on the stability of the ecosystem.

Question 18. Plant and Animal Cell Comparison

Compare plant cells and animal cells.

In your answer, include:

1. At least three structural differences.
2. At least two similarities.
3. How one plant-cell structure helps plants survive.
4. Why both kinds of cells still need a cell membrane.

Question 19. Human Body Systems in Action

A person runs quickly for five minutes and then drinks water.

Explain how the following systems help the body during and after this activity:

1. The respiratory system
2. The circulatory system
3. The excretory system

Your answer should show how these systems work together step by step.

Question 20. Plant Structure and Survival
A young flowering plant is removed from the soil, and many of its roots are damaged before it is replanted.
Predict and explain:

1. What will happen to water uptake.
2. How the leaves may be affected.
3. What may happen to the rate of photosynthesis.
4. Whether the plant is likely to survive well, and why.

Grade 7–8 – Open Question Rubrics
Question 16 – Investigating Light and Plant Growth (8 pts)

Component	Expected Elements	Points
Hypothesis	Clear prediction linking light intensity to plant growth	1
Independent variable	Light intensity	1
Dependent variable	Plant growth (height, biomass, leaf number, etc.)	1
Controlled variables	e.g., plant species, water amount, soil type, temperature	2
Experimental method	Clear steps: identical plants, different light levels, measure growth regularly	2
Data analysis	Compare growth results between treatments and draw conclusion	1

Model idea: Plants exposed to greater light are expected to grow faster because photosynthesis rate increases.

Question 17 – Food Web Disturbance (8 pts)

Component	Expected Elements	Points
Cause 1	e.g., pesticide use, disease outbreak, habitat loss	2
Effect on plants	Reduced herbivory → plant populations increase	2
Effect on predators	Insect-eating species decrease due to food shortage	2
Long-term ecosystem effect	Food web imbalance, population fluctuations	2

Question 18 – Plant vs Animal Cells (8 pts)

Component	Expected Elements	Points
Structural differences	e.g., cell wall, chloroplasts, large vacuole	3
Similarities	e.g., nucleus, cytoplasm, membrane, mitochondria	2
Functional explanation	Chloroplasts enable photosynthesis in plants	2
Cell membrane explanation	Controls movement of substances in both cell types	1

Question 19 – Human Body Systems in Action (8 pts)

Component	Expected Elements	Points
Respiratory system	Increased breathing supplies oxygen	2
Circulatory system	Heart transports oxygen and nutrients to muscles	2
Excretory system	Removes wastes such as CO_2 and metabolic products	2
Integration explanation	Systems work together to maintain homeostasis	2

Question 20 – Plant Root Damage Scenario (8 pts)

Component	Expected Elements	Points
Water uptake effect	Reduced due to damaged roots	2
Leaf effect	Wilting due to lack of water	2
Photosynthesis effect	Reduced due to water stress	2
Survival prediction	Plant may die or grow poorly due to impaired water transport	2
