



COMPETIFY HUB

# BIOLOGY

## GRADES 5-8

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## Q1: Glycolysis and Fermentation

When oxygen is unavailable, cells rely on fermentation primarily to:

- A. Produce additional ATP
- B. Prevent glucose breakdown
- C. Regenerate NAD<sup>+</sup> for glycolysis
- D. Supply oxygen to mitochondria

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## Q2: Transport and Diffusion

A cell uses ATP to move calcium ions from low concentration inside the cell to high concentration outside. What is this an example of?

- A. Diffusion
- B. Facilitated diffusion
- C. Osmosis
- D. Active transport

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### Q3: Cellular Respiration

If oxygen is removed from a cell's environment, what will occur? A. The Krebs cycle will increase B. The electron transport chain will stop C. Glycolysis will stop immediately D. ATP production will increase

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### Q4: Meiosis and Variation

What process during meiosis increases genetic variation in offspring? A. DNA replication B. Cytokinesis C. Crossing over during prophase I D. Separation of sister chromatids

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### Q5: Cell Cycle Regulation

A mutation causes a cell to ignore signals that normally stop cell division. What result is likely to occur? A. The cell will enter meiosis B. The cell will undergo apoptosis C. The cell will divide uncontrollably D. The cell will produce fewer proteins

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### Q6: Photosynthesis

If a plant is placed in darkness for 24 hours, which outcome is most likely? A. Photosynthesis increases while respiration stops B. Both photosynthesis and respiration stop C. Photosynthesis stops but respiration continues D. Respiration stops but photosynthesis continues

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## Q7: Organs and Regulation

The kidneys help regulate blood pressure by: A. Producing red blood cells B. Controlling water and salt balance C. Digesting proteins D. Releasing oxygen

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## Q8: Types of Feeders

A scientist observes that an organism captures large prey and uses canines to tear flesh into large chunks, which it then swallows and digests. What type of feeder is this organism, and what kind of organism might it be? A. Substrate feeder; mammal B. Suspension feeder; invertebrate C. Bulk feeder; mammal D. Fluid feeder; amphibian

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### Q9: Anatomy and Physiology

Which of the following structures is responsible for the growth of the nail? a. Nail plate b. Nail matrix c. Nail bed d. Cuticle

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### Q10: Anatomy and Physiology

Cystic fibrosis is the condition in which the mucus produced is sticky and clogs up the airways in the respiratory system. Which type of cell is most likely the culprit for such conditions? a. Goblet cell b. Epithelial cells c. Neutrophils d. Melanocytes

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**S1: C**

**Explanation:**

Answer – C. Correct Answer: C Glycolysis needs NAD<sup>+</sup> to keep running, and without oxygen, NAD<sup>+</sup> runs out. Fermentation converts NADH to NAD<sup>+</sup>, which allows glycolysis to continue making ATP.

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**S2: D**

**Explanation:**

Answer – D. Correct Answer: D Active transport is when a cell uses ATP to move a substance against its concentration gradient, which is exactly what is happening in the description.

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**S3: B**

**Explanation:**

Answer – B. Correct Answer: B Oxygen is the final electron acceptor in the ETC, and without it, the ETC cannot function. Glycolysis will continue to work briefly, but will also stop. ATP production will also stop.

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**S4: C**

**Explanation:**

Answer – C. Correct Answer: C During crossing over, homologous chromosomes exchange DNA segments, creating genetic variation in offspring.

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**S5: C**

**Explanation:**

Answer – C. Correct Answer: C Cell cycle checkpoints control division, and signals stop cells from growing when they're damaged. If this is ignored, the cell continues to divide (cancer).

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**S6: C**

**Explanation:**

Answer – C. Correct Answer: C Photosynthesis needs light to function (light-dependent reactions), so it will stop in the darkness. Cellular respiration does not require light to function (light-independent), so it will continue to make ATP using stored glucose.

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**S7: B**

**Explanation:**

Answer – B. Correct Answer: B The kidneys are part of the the excretory system. The excretory system is involved in controlling fluid levels, affecting blood volume and pressure.

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**S8: C**

**Explanation:**

Answer – C. Correct Answer: C A bulk feeder eats large pieces of food and breaks it apart using its teeth, particularly canines. A bulk feeder is most commonly a mammal.

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### S9: b. Nail matrix

#### Explanation:

Answer – b. Nail matrix. The nail matrix is the part of the nail found under the skin at the base of the nail. It is where new nail cells are made. As these new cells grow, they push the older cells forward, which makes the nail get longer. The other parts, like the nail plate and nail bed, support or protect the nail but do not make it grow.

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### S10: a. Goblet cell

#### Explanation:

Answer – a. Goblet cell. Goblet cells make mucus in the airways. In cystic fibrosis, these cells produce thick, sticky mucus that clogs the lungs.

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