

Bioenergetics: Energy Conversion in the Body

Biology · Practice Test · 12 Questions

1. What is metabolism defined as?

- A) The breakdown of molecules
- B) The synthesis of complex compounds
- C) The sum of all chemical reactions maintaining a cell's dynamic state
- D) The process of energy storage

2. Which process involves breaking down molecules to supply energy?

- A) Anabolism
- B) Catabolism
- C) Photosynthesis
- D) Glycolysis

3. What is the primary function of mitochondria?

- A) Protein synthesis
- B) DNA replication
- C) Energy production through the common catabolic pathway
- D) Waste removal

4. What are the two main components of the common catabolic pathway?

- A) Glycolysis and fermentation
- B) Citric acid cycle and oxidative phosphorylation
- C) Photosynthesis and respiration
- D) Digestion and absorption

5. Which molecule is the primary agent for energy storage and phosphate group transfer in cells?

- A) DNA
- B) RNA
- C) ATP
- D) Protein

6. What is the function of NAD⁺ and FAD in biological oxidation-reduction reactions?

- A) Storage of glucose
- B) Transfer of electrons
- C) Structural support
- D) Enzyme inhibition

7. What molecule transports acetyl groups in the common catabolic pathway?

- A) Glucose
- B) Coenzyme A (CoA)
- C) Amino acid
- D) Fatty acid

8. What is the starting molecule that combines with Acetyl CoA to start the citric acid cycle?

- A) Citrate
- B) Oxaloacetate
- C) Isocitrate
- D) Succinate

9. What is the final product of the electron transport chain?

- A) Carbon dioxide
- B) ATP
- C) Water
- D) Glucose

10. How many ATP molecules are produced per C2 fragment that enters the citric acid cycle?

- A) 2
- B) 6
- C) 12
- D) 36

11. What type of energy is used to maintain the concentration gradient of K⁺ and Na⁺ ions across cell membranes?

- A) Mechanical Energy
- B) Heat Energy
- C) Electrical Energy
- D) Chemical Energy

12. Which cellular component removes damaged cellular components?

- A) Mitochondria
- B) Lysosomes
- C) Golgi bodies
- D) Nucleus