Bioenergetics: Fueling the Body

Biology · Practice Test · 15 Questions

1. What is the sum total of all chemical reactions involved in maintaining the dynamic state of a cell?

A) Catabolism
B) Anabolism
C) Metabolism
D) Homeostasis

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

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

3. Which process involves synthesizing (building up) molecules?

A) Catabolism
B) Anabolism
C) Respiration
D) Fermentation

4. In what cell organelle does the common catabolic pathway take place in higher organisms?

A) Nucleus
B) Lysosome
C) Mitochondria
D) Golgi Body

5. Which of the following is NOT part of the common catabolic pathway?

A) Citric Acid Cycle
B) Oxidative Phosphorylation
C) Photosynthesis
D) Electron Transport Chain

6. Which molecule is the most important agent for storing energy and transferring phosphate groups?

A) ADP
B) AMP
C) ATP
D) CoA

7. Which coenzyme is responsible for transferring electrons in biological oxidation-reduction reactions and contains an ADP core?

A) Coenzyme A
B) Acetyl-CoA
C) NAD+
D) Pyruvate

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

A) ATP
B) CoA
C) FAD
D) NADH

9. What two-carbon fragment enters the citric acid cycle to be further fragmented?

A) Glucose
B) Fatty Acids
C) Acetyl-CoA
D) Amino Acids

10. What is the final complex in the electron transport chain that passes electrons to oxygen molecules to produce water?

A) Complex I
B) Complex II
C) Complex III
D) Complex IV

11. For each NADH molecule, how many ATP molecules are produced in oxidative phosphorylation? (simplified)

A) One
B) Two
C) Three
D) Four

12. For each FADH2 molecule, how many ATP molecules are produced in oxidative phosphorylation? (simplified)

A) One
B) Two
C) Three
D) Four

13. What type of energy is generated by maintaining unequal charges inside and outside the cell through ion pumping?

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

14. In muscle contraction, which protein acts as an ATPase enzyme that hydrolyzes ATP?

A) Actin
B) Myosin
C) Collagen
D) Elastin

15. What is the main advantage of the cyclic nature of acetate degradation?

A) Maximizing ATP production
B) Providing raw materials for amino acid synthesis
C) Regulating the speed of catabolic reactions
D) All of the above