

Advanced Environmental Biology & Animal Physiology

Advanced Biology · Practice Test · 9 Questions

1. What primary source of energy fuels deep-sea hydrothermal vent ecosystems where sunlight cannot penetrate?

- A) Hydrogen sulfide oxidized by chemotrophic bacteria
- B) Methane gas absorbed directly by giant tube worms
- C) Thermal radiation emitted by hot volcanic rocks
- D) Dissolved organic carbon from surface run-off

2. Which tissues or organs provide the primary pathway for gas exchange in adult lungless salamanders (Plethodontidae)?

- A) Book lungs
- B) Skin and the lining of the mouth cavity
- C) External gills
- D) Tracheal tube networks

3. How do Crassulacean Acid Metabolism (CAM) plants minimize photorespiration and water loss in arid environments?

- A) By fixing carbon dioxide into malate at night
- B) By fixing carbon dioxide in bundle sheath cells at midday
- C) By opening stomata only during low-humidity afternoons
- D) By using RuBisCO without any affinity for oxygen

4. Which specialized mammalian tissue is primarily responsible for non-shivering thermogenesis during arousal from hibernation?

- A) White adipose tissue
- B) Brown adipose tissue
- C) Skeletal muscle tissue
- D) Hyaline cartilage tissue

5. Coral bleaching occurs primarily when environmental stress causes stony corals to expel which photosynthetic endosymbionts?

- A) Cyanobacteria
- B) Zooxanthellae
- C) Green microalgae
- D) Nitrifying archaea

6. What primary nitrogenous waste product do terrestrial insects excrete to conserve water?

- A) Ammonia
- B) Urea
- C) Uric acid
- D) Trimethylamine oxide

7. What feature of the avian respiratory system enables continuous, unidirectional airflow through the lungs during inhalation and exhalation?

- A) Diaphragmatic muscular contraction
- B) A system of anterior and posterior air sacs
- C) Expandable alveoli lined with lipid surfactant
- D) Bidirectional bronchial movement

8. Which anatomical structure enables regional endothermy in fast-swimming predatory fish such as bluefin tuna and lamnid sharks?

- A) Rete mirabile
- B) Ampullae of Lorenzini
- C) Swim bladder
- D) Lateral line system

9. Which key mineral nutrient do mycorrhizal fungi primarily supply to host plants in exchange for photosynthetically derived carbohydrates?

- A) Potassium
- B) Phosphorus
- C) Magnesium
- D) Calcium