Forensic Ecology and Environmental Science

Forensic Science · Answer Key · 8 Questions

1. Which specific family of blow flies is considered the most reliable indicator for estimating the post-mortem interval (PMI) due to their predictable colonization patterns?

A) Calliphoridae
B) Muscidae
C) Sarcophagidae
D) Piophilidae

2. In forensic palynology, which structural component of pollen grains allows them to persist in harsh environments and resist decay for centuries?

A) Intine
B) Sporopollenin
C) Exine
D) Pectocellulose

3. When utilizing the 'diatom test' to determine if a death occurred by drowning, where are the presence of these algae primarily sought to confirm systemic circulation before death?

A) The stomach
B) The brain
C) The bone marrow
D) The liver

4. Which specialized forensic technique involves the analysis of root hair growth rates and isotope signatures to identify an individual's recent geographic movements?

A) Dendrochronology
B) Isoscape mapping
C) Geographic profiling
D) Palynological tracking

5. The study of necrophagous beetles, specifically the successional waves of Staphylinidae, is most critical during which stage of decomposition?

A) Fresh stage
B) Bloat stage
C) Active decay stage
D) Dry remains stage

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6. Forensic soil analysis often relies on the ratio of which specific isotopes to determine the environmental origin of sediment samples?

A) Strontium and Neodymium
B) Carbon and Nitrogen
C) Oxygen and Hydrogen
D) Lead and Uranium

7. What is the primary forensic application of 'entomotoxicology'?

A) Detecting the presence of drugs or toxins in larval tissue
B) Identifying the species of insect via DNA sequencing
C) Measuring the thermal accumulation of pupation sites
D) Mapping the flight path of forensic flies

8. Which plant physiological process is utilized in dendrochronology to establish a timeline of environmental disturbances, such as the burial of evidence near a tree's root system?

A) Xylem vessel occlusion
B) Cambium growth ring analysis
C) Stomatal density shifts
D) Phloem sap translocation

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