Forensic Biology and Human Physiology

Criminology · Practice Test · 18 Questions

1. Which specific bone in the human body is most commonly used to estimate biological sex in forensic anthropology due to its sexual dimorphism?

A) The humerus
B) The pelvis
C) The femur
D) The radius

2. What is the average rate of decomposition for a body left in an open, temperate environment compared to one buried in soil, in terms of 'Casper's Law'?

A) Twice as fast
B) Half as fast
C) Eight times as fast
D) The same rate

3. In forensic toxicology, which organ is the primary site of ethanol metabolism and is frequently sampled to determine chronic alcohol consumption through fatty acid ethyl esters?

A) Kidney
B) Liver
C) Spleen
D) Pancreas

4. What is the term for the pinkish discoloration of tissues occurring after death due to carbon monoxide poisoning, caused by the formation of carboxyhemoglobin?

A) Lividity
B) Cyanosis
C) Cherry-red livor
D) Petechiae

5. During a forensic autopsy, which specific protein degradation marker is used to estimate the post-mortem interval by measuring the breakdown of muscle fibers?

A) Troponin I
B) Myoglobin
C) Actin
D) Collagen

6. In the context of bite mark analysis, which layer of human skin is most significant for preserving the permanent indentation pattern due to its dense connective tissue?

A) Epidermis
B) Hypodermis
C) Dermis
D) Stratum corneum

7. What physiological process occurs when muscle fibers become rigid due to the depletion of adenosine triphosphate (ATP) following death?

A) Algor mortis
B) Rigor mortis
C) Livor mortis
D) Putrefaction

8. Which specialized forensic technique utilizes the degradation of tooth enamel and dentin to estimate the age of an adult decedent?

A) Gustafson's method
B) Lamendin's method
C) Schour-Massler method
D) Haversian remodeling

9. When identifying remains via DNA, which type of human tissue provides the most stable source of genomic material in highly decomposed bodies?

A) Liver
B) Blood
C) Cortical bone
D) Adipose tissue

10. In the study of forensic taphonomy, what is the 'adipocere' process that preserves soft tissue in wet, anaerobic conditions?

A) Saponification of body fats
B) Calcification of skin
C) Dehydration of muscles
D) Oxidation of hair

11. Which cranial suture is typically the last to fuse in the human skull, making it a critical indicator for age-at-death estimation in skeletal analysis?

A) Sagittal suture
B) Lambdoid suture
C) Spheno-occipital synchondrosis
D) Coronal suture

12. What does the presence of 'Diatoms' in the bone marrow of a victim's femur indicate during a drowning investigation?

A) Death occurred before immersion
B) Inhalation of water while alive
C) Post-mortem contamination
D) Presence of a secondary injury

13. Which part of the human eye is most useful for estimating the post-mortem interval due to its predictable concentration of potassium?

A) Cornea
B) Vitreous humor
C) Retina
D) Lens

14. In forensic pathology, what is the term for the rupture of small blood vessels in the conjunctiva, often indicative of asphyxiation?

A) Petechial hemorrhages
B) Ecchymosis
C) Purpura
D) Hematoma

15. Which specific human hair structure contains the mitochondrial DNA necessary for forensic testing when the root is missing?

A) Cuticle
B) Cortex
C) Medulla
D) Shaft

16. What is the primary function of the 'Hyoid bone' in forensic investigations of manual strangulation?

A) It indicates age
B) It serves as a site for muscle attachment
C) Its fracture indicates pressure to the throat
D) It aids in sex determination

17. Which physiological state is characterized by the cooling of the body post-mortem at a relatively constant rate, known as the 'Glaister Equation'?

A) Algor mortis
B) Livor mortis
C) Rigor mortis
D) Autolysis

18. In forensic odontology, which characteristic of human teeth is utilized to create an individual 'dental fingerprint'?

A) Enamel thickness
B) Root curvature
C) Restoration patterns
D) Pulp cavity size