

# Forensic Biology and Human Physiology

Criminology · Answer Key · 18 Questions

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**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