1. (1 pt each) Match the following people with disciplines, milestones or concepts associated with them. Some answer choices may be used more than once and others not at all. The possible answers and corresponding letters are as follows:

A. Odontology; B. Toxicology; C. Serology; D. Microbiology; E. Entomology; F. Anthropology; G. Anthropometry; H. Document Evidence; I. Comparison Microscope/Firearms Examination; J. Fingerprinting; K. Exchange Principle.

| _B___ | Mathieu Orfila          | _K___ | Edmond Locard          | _G___ | Alphonse Bertillon     |
| _H___ | Albert Osborn           | _J___ | Francis Galton         | _I___ | Calvin Goddard         |
| _C___ | Leone Lattes            | _C___ | Karl Landsteiner       | _J___ | Sir Edward Richard Henry |

2. The concept of "general acceptance" of scientific evidence relates to the:
   a. Miranda warnings  b. exclusionary rule  c. First Amendment  d. Frye standard

3. The value of ridge patterns in determining the uniqueness of a fingerprint is _____ the value of type and position of ridge characteristics in determining the uniqueness of a fingerprint.

   A) less than  B) the same as  C) greater than

4. Ninhydrin is used on a latent print to detect:
   a. fatty acids  b. sodium chloride  c. protein material  d. oil deposits.

5. Paint binders can be chemically analyzed using:
   A) TLC  B) Pyrolysis GC  C) IR spectrophotometry  D) both B and C

6. Evidence of tampering with the position of a body after death can be obtained by evaluating the:
   a. A) algor mortis  b) rigor mortis  c) livor mortis  d) both B and C

7. Investigators can use ______ to detect latent fingerprints without use of chemicals or powder treatments.
   a. GC/MS  b. GRIM 2  c. RUVIS  d. AFIS

8. After successfully visualizing a latent print on an object an investigator should next:
   a. take a 1:1 photograph of the print  b. classify the print  c. lift the print with adhesive tape  d. compare it to the suspect's prints

9. In order to examine an opaque object with a compound microscope, one must:
   a. light the object from beneath the stage  b. stain the object before viewing it  c. use transmitted illumination  d. use reflected illumination

10. Which microscope is best suited to the study of birefringent minerals and fibers?
    a. A) stereoscopic  b. comparison  c. microspectrophotometer  d. polarizing

11. Does the physical evidence and testimony at the inquest support the theory that Lizzie Borden really did take an ax and kill her father and mother in 1892?
    a. Yes  b. No

12. The central canal running through many hairs is known as the:
    a. shaft  b. medulla  c. cortex  d. cuticle

13. Nuclear DNA typing can be most successfully accomplished on hairs that have been removed during which stage of growth?
    a. anagenic  b. frenetic  c. telogenic  d. catagenic
14. An object with the letter "L" is viewed under low power of a compound microscope. The image would appear as:

a. \[ \_
\]
b. \[ \_
\]
c. \[ \_
\]
d. \[ \_
\]

15. Superglue fusing is NOT suitable for use on: a. cardboard  b. leather  c. metal  d. plastic bags

16. (2 pts each) The following are steps that can be taken in the examination of fibers for the purpose of identification and comparison:
1. examination of dye composition using visible light microspectrophotometer
2. make a cross sectional view of the fibers
3. microscopic examination for color and diameter of fibers
4. infrared spectrophotometry
5. study of the birefringence of the fibers
6. TLC study of dyes in fibers

Enter the appropriate number from the above answer choices:

Which step would logically be taken first? \[ \_
\]
Which step would achieve separation of the dyes taken from the fibers? \[ \_
\]
Which step would involve determining the refractive index of the fibers? \[ \_
\]

17. (4 pts total) Indicate which pattern each of the following fall under.

ARCH

LOOP

WHORL

18. (1 pt each) Label the following minuitiae by one of these letters: A. Bifurcation; B. Bridge; C. Double bifurcation; D. Hook/spur; E. Island; F. Lake; G. Opposed Bifurcations; H. Ridge crossing; I. Ridge ending; J. Short ridge; K. Trifurcation

i. I. Ridge ending

ii. E. Island

iii. D. hook/spur

iv. G. Opposed bifurcations

v. A. Bifurcation

vi. B. Bridge

19. Did the legal system find that Sam Sheppard was responsible for the death of his wife in 1954? a. Yes  b. No  c. Both  d. Neither  

1 st - criminal trial – Guilty; 2 nd - criminal trial – Not guilty; 3 rd - civil wrongful imprisonment trial – found to be responsible for wife’s death.
20. Prints impressed in a bar of soap are referred to as: A) clean.  B) visible.  C) latent.  D) plastic.

21. Which feature of hair is MOST important in making a species comparison? A) shaft length  B) bulb size  C) follicle shape  D) scale pattern

22. PSA (p30) is a: a. pre-Screening test for Alcohol consumption  b. polymorphic enzyme found in red blood cells. c. blood enzyme used to discriminate bloodstains.  d. protein unique to seminal fluid

23. Paternity testing is done involving a woman with type AB blood who has accused a man with type B blood of fathering her child who has tested AB. What can be determined in this case? A) The male definitely IS the father of the child.  B) The male is definitely NOT the father of the child.  C) The male could have fathered the child.  D) none of the above

24. The medullary index of human hair is _________ the medullary index for most other animals.  A) less than  B) greater than  C) the same as

25. Physical evidence can be used to exonerate or exclude a person from suspicion if: A) it is collected in accordance with the Fourth Amendment.  B) evidence taken from suspect is obtained voluntarily.  C) the standard reference sample (control) does not share characteristics with evidence at the crime scene.  D) it does not have a well-documented chain of custody.

26. Which property imparts paint with its most distinctive forensic characteristics? A) gloss  B) color  C) color-layer sequence  D) texture

27. If a hair does not have a follicular tag, an expert witness is on best scientific footing when stating that: A) the hair in question comes from a 21-year-old.  B) his examination reveals that the hair is that of a male.  C) a suspect hair comes from a particular animal species.  D) the given hair comes from a specific person.

28. The number of deltas found in an arch pattern is _________ the number of deltas found in a loop pattern.  A) greater than  B) less than  C) the same as

29. Which of the following is NOT true? An expert witness must be able to demonstrate: A) formal degree in forensic science  B) education in his/her area of expertise.  C) significant experience in a relevant field.  D) skill is trade or profession of interest to the court.

30. In what stage can a hair most readily be removed from the scalp? A) anagenic  B) telogenic  C) catagenic  D) telengic

31. Evidence with individual characteristics can lead to a determination of common origin (single source). Which type of evidence CANNOT yield such results? A) fingerprints  B) wear patterns on tires  C) random striations on tools  D) single-layer points

32. Which microscope provides a right-side-up image? A) compound  B) polarizing  C) comparison  D) stereoscopic

33. The corroborative use of physical evidence means that it can be used to: A) provide a lead to give the investigation direction.  B) establish a definite identity.  C) support other investigative findings.  D) rule out a particular suspect.