Chapter 14 Fingerprints

LEARNING OBJECTIVES

1. Name those individuals who have made significant contributions to the acceptance and development of fingerprint technology.

2. Define ridge characteristics.

3. Explain why a fingerprint is a permanent feature of the human anatomy.

4. List the three major fingerprint patterns and their respective subclasses.

5. Classify a set of fingerprints by the primary classification of the Henry system.

6. Describe the concept of an automated fingerprint identification system.

7. Explain what is meant by visible, plastic, and latent fingerprints.

8. List the techniques for developing latent fingerprints on nonporous objects.

9. Describe chemical techniques for developing prints on porous objects.

10. Describe the proper procedures for preserving a developed latent fingerprint.

11. Explain how a latent fingerprint image can be enhanced by digital imaging.

SUPPLEMENTARY QUESTIONS AND ANSWERS

b 1. Which of the following types of fingerprints are more likely to be found impressed in soft wax?
   a. Visible
   b. Plastic
   c. Latent
   d. Hidden

d 2. The first systematic system of individual classification and identification was introduced by:
   a. Francis Galton
   b. Richard Henry
   c. William Herschel
   d. Alphonse Bertillon

a 3. The fingerprint pattern accounting for only 5 percent of all known patterns is the:
   a. Arch
   b. Radial loop
   c. Ulnar loop
   d. Whorl

a 4. A fingerprint pattern having no delta is a(n):
   a. Arch
   b. Loop
   c. Plain whorl
   d. Central pocket loop

b 5. Protein residues are best developed into fingerprint impressions with:
   a. Iodine
   b. Ninhydrin
   c. Physical developer
   d. Dusting powder
6. Which statement is true of a partial fingerprint?
   a. It must show at least a little of all ten fingers.
   b. Any print is sufficient for identification as long as there is enough to identify its basic pattern.
   c. Any print can identify a criminal if it shows an adequate number of ridge characteristics.
   d. At least 75% of the pattern must be present for identification.

7. Which of the following is NOT a ridge characteristic of a fingerprint?
   a. Enclosure
   b. Bifurcation
   c. Ridge ending
   d. Core

8. Chemical methods for developing latent fingerprints must be used in the following sequence:
   a. Iodine, physical developer, ninhydrin
   b. Iodine, ninhydrin, physical developer
   c. Ninhydrin, iodine, physical developer
   d. Ninhydrin, physical developer, iodine
   e. Physical developer, ninhydrin, iodine

Review Questions—14

1. The first systematic attempt at personal identification was devised and introduced by __________.

2. A system of identification relying on precise body measurements is known as __________.

3. The fingerprint classification system used in most English-speaking countries was devised by __________.

4. True or False: The first systematic and official use of fingerprints for personal identification in the United States was adopted by the New York City Civil Service Commission. __________

5. The individuality of a fingerprint (is, is not) determined by its pattern.

6. A point-by-point comparison of a fingerprint’s __________ must be demonstrated in order to prove identity.

7. __________ are a reproduction of friction skin ridges.

8. The form and pattern of skin ridges are determined by the (epidermis, dermal papillae).
9. A permanent scar forms in the skin only when an injury damages the ________.

10. Fingerprints (can, cannot) be changed during a person’s lifetime.

11. The three general patterns into which fingerprints are divided are _________, _________, and _________.

12. The most common fingerprint pattern is the ________.

13. Approximately 5 percent of the population has the _________ fingerprint pattern.

14. A loop pattern that opens toward the thumb is known as a(n) (radial, ulnar) loop.

15. The pattern area of the loop is enclosed by two diverging ridges known as ________.

16. The ridge point nearest the type-line divergence is known as the ________.

17. All loops must have (one, two) delta(s).

18. The approximate center of a loop pattern is called the ________.

19. If an imaginary line drawn between the two deltas of a whorl pattern touches any of the spiral ridges, the pattern is classified as a (plain whorl, central pocket loop).

20. The simplest of all fingerprint patterns is the ________.

21. Arches (have, do not have) type lines, deltas, and cores.

22. The presence or absence of the ________ pattern is used as a basis for determining the primary classification in the Henry system.

23. The largest category (25 percent) in the primary classification system is (1/1, 1/2).

24. A fingerprint classification system (can, cannot) unequivocally identify an individual.

25. True or False: Computerized fingerprint search systems match prints by comparing the position of bifurcations and ridge endings. __________

26. A fingerprint left by a person with soiled or stained fingertips is called a __________.

27. ________ fingerprints are impressions left on a soft material.
28. Fingerprint impressions that are not readily visible are called ___________.

29. Fingerprints on hard and nonabsorbent surfaces are best developed by the application of a(n) ___________.

30. Fingerprints on porous surfaces are best developed with ____________ - treatment.

31. ___________ vapors chemically combine with fatty oils or residual water to visualize a fingerprint.

32. The chemical ___________ visualizes fingerprints by its reaction with amino acids.

33. Chemical treatment with ___________ visualizes fingerprints on porous articles that may have been wet at one time.

34. True or False: A latent fingerprint is first treated with Physical Developer followed by ninhydrin. ___________

35. A chemical technique known as ___________ is used to develop latent prints on nonporous surfaces such as metal and plastic.

36. ___________ occurs when a substance absorbs light and reemits the light in wavelengths longer than the illuminating source.

37. High-intensity light sources, known as ___________, are effective in developing latent fingerprints.

38. Once a fingerprint has been visualized, it must be preserved by ___________.

39. The image produced from a digital file is composed of numerous square electronic dots called ___________.
