

Chapter 2: The Clinical Laboratory

Multiple Choice

1. The laboratory employee with a 2-year associate degree who performs clinical testing is the:

- A. medical laboratory technician.
- B. clinical laboratory scientist.
- C. phlebotomist.
- D. medical technologist.

ANS: A

KEY: Topic: Clinical laboratory employees

DIF: Level 1

Learning Objective: 2.2

2. The laboratory employee who prepares surgical specimen samples for microscopic examination is the:

- A. microbiologist.
- B. histologist.
- C. cytologist.
- D. clinical laboratory technician.

ANS: B

KEY: Topic: Clinical laboratory employees

DIF: Level 1

Learning Objective: 2.2

3. The primary liaison between the medical staff and the laboratory staff is the:

- A. laboratory manager.
- B. pathologist.
- C. section supervisor.
- D. cytologist.

ANS: B

KEY: Topic: Clinical laboratory employees

DIF: Level 1

Learning Objective: 2.2

4. The specialist in the study of disease of tissues and organs through biopsies is a(an):
- A. internist.
 - B. cardiologist.
 - C. pathologist.
 - D. endocrinologist.

ANS: C

KEY: Topic: Clinical laboratory employees

DIF: Level 1

Learning Objective: 2.2

5. The laboratory employee with a 4-year college degree who performs clinical analysis is the:
- A. phlebotomist.
 - B. medical laboratory technician (MLT).
 - C. medical laboratory scientist (MLS).
 - D. clinical laboratory assistant (CLA).

ANS: C

KEY: Topic: Clinical laboratory employees

DIF: Level 1

Learning Objective: 2.2

6. A medical technologist may serve as all of the following **except**:
- A. educator.
 - B. laboratory manager.
 - C. pathologist.
 - D. section supervisor.

ANS: C

KEY: Topic: Clinical laboratory employees

DIF: Level 2

Learning Objective: 2.2

7. The two major areas of the clinical laboratory are:
- A. chemistry and hematology.
 - B. cytology and histology.
 - C. anatomical and clinical.
 - D. urinalysis and microbiology.

ANS: C

KEY: Topic: Clinical laboratory sections

DIF: Level 1

Learning Objective: 2.1

8. Another name for the blood bank is:

- A. immunology.
- B. serology.
- C. compatibility.
- D. immunohematology.

ANS: D

KEY: Topic: Clinical laboratory sections

DIF: Level 1

Learning Objective: 2.3

9. Mycology is the study of:

- A. fungi.
- B. bacteria.
- C. parasites.
- D. microbiology.

ANS: A

KEY: Topic: Clinical laboratory sections

DIF: Level 1

Learning Objective: 2.3

10. A cardiac risk profile is performed in:

- A. hematology.
- B. serology.
- C. coagulation.
- D. chemistry.

ANS: D

KEY: Topic: Clinical laboratory sections

DIF: Level 1

Learning Objective: 2.5

11. The histology department is included in:

- A. clinical chemistry.
- B. immunohematology.
- C. microbiology.
- D. anatomical pathology.

ANS: D

KEY: Topic: Clinical laboratory sections

DIF: Level 1

Learning Objective: 2.1

12. The laboratory department responsible for frozen sections is:

- A. microbiology.
- B. cytology.
- C. cytogenetics.
- D. histology.

ANS: D

KEY: Topic: Clinical laboratory sections

DIF: Level 1

Learning Objective: 2.1

13. The difference between plasma and serum is that:

- A. serum contains fibrinogen.
- B. serum is obtained from a nonclotted specimen.
- C. plasma is obtained from a clotted specimen.
- D. plasma contains fibrinogen.

ANS: D

KEY: Topic: Clinical laboratory specimens

DIF: Level 2

Learning Objective: 2.4

14. Which of the following tests should be returned to the laboratory first to ensure accurate results?

- A. Prothrombin time.
- B. Blood group and type.
- C. Complete blood count.
- D. Blood culture.

ANS: A

KEY: Topic: Clinical laboratory specimens

DIF: Level 2

Learning Objective: 2.4

15. Specimens collected in serum separator tubes are most frequently delivered to:

- A. blood bank.
- B. serology.
- C. hematology.
- D. chemistry.

ANS: D

KEY: Topic: Clinical laboratory specimens

DIF: Level 1

Learning Objective: 2.4

16. To prevent blood from clotting, the specimen must be:

- A. collected in a tube containing an anticoagulant.
- B. inverted right after collection.
- C. centrifuged right after collection.
- D. both A and B.

ANS: D

KEY: Topic: Clinical laboratory specimens

DIF: Level 2

Learning Objective: 2.4

17. The most common specimen analyzed in the hematology section is:

- A. plasma.
- B. whole blood.
- C. urine.
- D. serum.

ANS: B

KEY: Topic: Clinical laboratory specimens

DIF: Level 1

Learning Objective: 2.4

18. Which of the following pairings is wrong?

- A. Icteric and yellow.
- B. Lipemic and cloudy.
- C. Hemolyzed and red.
- D. Fasting and cloudy.

ANS: D

KEY: Topic: Clinical laboratory specimens

DIF: Level 2

Learning Objective: 2.4

19. A serum separator tube should not be collected for:

- A. cholesterol.
- B. cross-match.
- C. bilirubin.
- D. glucose.

ANS: B

KEY: Topic: Clinical laboratory specimens

DIF: Level 2

Learning Objective: 2.4

20. The main anticoagulant for coagulation studies is:

- A. ethylenediaminetetraacetic acid (EDTA).
- B. sodium citrate.
- C. heparin.
- D. oxalate.

ANS: B

KEY: Topic: Clinical laboratory specimens

DIF: Level 2

Learning Objective: 2.4

21. Types of specimens collected for urinalysis include all of the following **except**:

- A. isolation.
- B. random.
- C. first morning.
- D. clean-catch.

ANS: A

KEY: Topic: Clinical laboratory specimens

DIF: Level 2

Learning Objective: 2.4

22. Each of the following is a component of the complete blood count (CBC) **except**:

- A. white blood cell count.
- B. hemoglobin.
- C. sedimentation rate.
- D. differential.

ANS: C

KEY: Topic: Clinical laboratory tests

DIF: Level 1

Learning Objective: 2.5

23. The routine urinalysis consists of all of the following **except**:

- A. physical examination.
- B. culture and sensitivity.
- C. reagent strip testing.
- D. microscopic examination.

ANS: B

KEY: Topic: Clinical laboratory tests

DIF: Level 1

Learning Objective: 2.5

24. A blood culture to evaluate septicemia is performed in:

- A. hematology.
- B. microbiology.
- C. urinalysis.
- D. toxicology.

ANS: B

KEY: Topic: Clinical laboratory tests

DIF: Level 1

Learning Objective: 2.5

25. An elevated bilirubin might indicate a disorder of the:

- A. heart.
- B. kidney.
- C. brain.
- D. liver.

ANS: D

KEY: Topic: Clinical laboratory tests

DIF: Level 2

Learning Objective: 2.5

26. A rapid plasma reagin (RPR) test is performed in:

- A. chemistry.
- B. serology.
- C. hematology.
- D. urinalysis.

ANS: B

KEY: Topic: Clinical laboratory tests

DIF: Level 1

Learning Objective: 2.5

27. The direct antiglobulin test is performed in:

- A. microbiology.
- B. hematology.
- C. serology.
- D. blood bank.

ANS: D

KEY: Topic: Clinical laboratory tests

DIF: Level 1

Learning Objective: 2.5

28. ABO and Rhesus (Rh) typing are performed in which laboratory section?

- A. Hematology.
- B. Blood bank.
- C. Chemistry.
- D. Cytology.

ANS: B

KEY: Topic: Clinical laboratory tests
DIF: Level 1
Learning Objective: 2.5

29. The activated partial thromboplastin time (APTT) or partial thromboplastin time (PTT) test is performed in:
A. coagulation.
B. chemistry.
C. urinalysis.
D. histology.

ANS: A

KEY: Topic: Clinical laboratory tests
DIF: Level 1
Learning Objective: 2.5

30. Electrophoresis is performed in:
A. cytology.
B. microbiology.
C. histology.
D. chemistry.

ANS: D

KEY: Topic: Clinical laboratory tests
DIF: Level 1
Learning Objective: 2.5

31. People with diabetes mellitus are monitored using blood tests for glucose and:
A. phosphorus.
B. hemoglobin A1C.
C. uric acid.
D. bilirubin.

ANS: B

KEY: Topic: Clinical laboratory tests
DIF: Level 2
Learning Objective: 2.5

32. All of the following are tests that measure cardiac risk **except**:

- A. alkaline phosphatase.
- B. cholesterol.
- C. triglycerides.
- D. high-density lipids.

ANS: A

KEY: Topic: Clinical laboratory tests

DIF: Level 2

Learning Objective: 2.5

33. Tests associated with pancreatitis are:

- A. calcium and phosphorus.
- B. blood urea nitrogen (BUN) and glucose.
- C. bilirubin and ammonia.
- D. amylase and lipase.

ANS: D

KEY: Topic: Clinical laboratory tests

DIF: Level 2

Learning Objective: 2.5

34. Tests for ketones, urobilinogen, nitrite, and pH are part of a:

- A. general health profile.
- B. complete blood count.
- C. urinalysis.
- D. ova and parasites examination.

ANS: C

KEY: Topic: Clinical laboratory tests

DIF: Level 2

Learning Objective: 2.5

35. Which test would a physician order on a patient with a suspected infection?

- A. Glucose.
- B. Complete blood count (CBC).
- C. Cholesterol.
- D. Antinuclear antibody (ANA).

ANS: B

KEY: Topic: Clinical laboratory tests
DIF: Level 2
Learning Objective: 2.5

36. A chemistry test to evaluate kidney function is the:
- A. complete blood count (CBC).
 - B. glucose tolerance test (GTT).
 - C. blood urea nitrogen (BUN).
 - D. creatine kinase (CK) or creatine phosphokinase (CPK).

ANS: C

KEY: Topic: Clinical laboratory tests
DIF: Level 2
Learning Objective: 2.5

37. A test that monitors an antidepressant medication is:
- A. creatine kinase (CK) or creatine phosphokinase (CPK).
 - B. blood urea nitrogen (BUN).
 - C. lithium.
 - D. alanine transaminase (ALT).

ANS: C

KEY: Topic: Clinical laboratory tests
DIF: Level 2
Learning Objective: 2.5

38. An anemia is detected by a:
- A. glucose test.
 - B. blood culture.
 - C. urinalysis.
 - D. complete blood count.

ANS: D

KEY: Topic: Clinical laboratory tests
DIF: Level 2
Learning Objective: 2.5

39. Sodium (Na), potassium (K), chloride (Cl), and carbon dioxide (CO₂) are components of the test called:

- A. glucose tolerance.
- B. electrolytes.
- C. liver profile.
- D. cardiac profile.

ANS: B

KEY: Topic: Clinical laboratory tests

DIF: Level 2

Learning Objective: 2.5

40. Choose the hematology test that might be ordered to give additional information to the health-care provider caring for a patient with anemia. The patient has already had hemoglobin and hematocrit tests done, both separately and as part of a complete blood count.

- A. Erythrocyte sedimentation rate (ESR).
- B. Reticulocyte (Retic) count.
- C. Eosinophil count.
- D. Kleihauer-Betke.

ANS: B

KEY: Topic: Clinical laboratory tests

DIF: Level 3

Learning Objective: 2.5

41. Choose the coagulation test that is used to monitor patients receiving Coumadin therapy.

- A. Activated partial thromboplastin time (APTT).
- B. Bleeding time (BT).
- C. Prothrombin time (PT).
- D. Platelet aggregation.

ANS: C

KEY: Topic: Clinical laboratory tests

DIF: Level 2

Learning Objective: 2.5

42. Which of the following urine types is the most concentrated?

- A. Random.
- B. 24-hour.
- C. First morning.

D. Catheterized.

ANS: C

KEY: TOPIC: specimen collection

DIF: Level 2

Learning Objective: 2.4

43. Phlebotomists may be allowed to collect or instruct patients regarding the following microbiological specimens **except**:

- A. blood cultures.
- B. throat cultures.
- C. urine cultures.
- D. wound cultures.

ANS: D

KEY: TOPIC: specimen collection

DIF: 2

Learning Objective: 2.4

Matching

Match the following laboratory procedures with the section that performs them. Answers may be used more than once.

- A. Blood bank
- B. Chemistry
- C. Coagulation
- D. Hematology
- E. Microbiology
- F. Serology

- 44. Activated partial thromboplastin time (APTT)
- 45. Gram stain
- 46. Rapid plasma reagin (RPR)
- 47. Antibody screen
- 48. Lead
- 49. Monospot
- 50. Lithium
- 51. D-dimer
- 52. Sickledex

53. Type and crossmatch

44. ANS: C

KEY: Topic: Clinical laboratory sections

DIF: Level 1

Learning Objective: 2.5

45. ANS: E

KEY: Topic: Clinical laboratory sections

DIF: Level 1

Learning Objective: 2.5

46. ANS: F

KEY: Topic: Clinical laboratory sections

DIF: Level 1

Learning Objective: 2.5

47. ANS: A

KEY: Topic: Clinical laboratory sections

DIF: Level 1

Learning Objective: 2.5

48. ANS: B

KEY: Topic: Clinical laboratory sections

DIF: Level 1

Learning Objective: 2.5

49. ANS: F

KEY: Topic: Clinical laboratory sections

DIF: Level 1

Learning Objective: 2.5

50. ANS: B

KEY: Topic: Clinical laboratory sections

DIF: Level 1
Learning Objective: 2.5

51. ANS: C
KEY: Topic: Clinical laboratory sections
DIF: Level 1
Learning Objective: 2.5

52. ANS: D
KEY: Topic: Clinical laboratory sections
DIF: Level 1
Learning Objective: 2.5

53. ANS: A
KEY: Topic: Clinical laboratory sections
DIF: Level 1
Learning Objective: 2.5

Short Answers

54. Describe the qualifications and functions of the personnel employed by the clinical laboratory.

ANS: See Chapter 2, Pages 24-27
KEY: Topic: Laboratory personnel
DIF: Level 1
Learning Objective: 2.2

55. Explain the difference between plasma and serum and how you would collect to obtain both specimens.

ANS: The liquid portion of blood is called plasma and is obtained from a specimen that has been collected in a tube containing an anticoagulant. Plasma contains fibrinogen. Serum is the liquid portion of blood that does not contain fibrinogen (plasma minus fibrinogen) and is collected by drawing a tube that does not have a coagulant because the specimen needs to clot.

KEY: Topic: Clinical laboratory tests

DIF: Level 2

Learning Objective: 2.4

56. Discuss the three areas the chemistry department is divided into. Provide the type of testing that is performed in each of the areas.

ANS: The three areas of chemistry are electrophoresis, toxicology, and immunochemistry. The electrophoresis area performs hemoglobin and protein electrophoreses. The toxicology area performs therapeutic drug monitoring and the identification of drugs of abuse. Immunochemistry uses enzyme immunoassay techniques to measure substances such as thyroid hormones, cortisol, and vitamin B12.

KEY: Topic: Clinical laboratory sections

DIF: Level 1

Learning Objective: 2.3

Essays

57. Discuss the two main divisions of the laboratory and list the subsections within each of these divisions. Provide two tests performed in each subsection listed.

ANS: The two main divisions of the laboratory are anatomical and clinical. Anatomical is then divided up into the cytology and histology sections. Pap and Thin Prep tests are performed in cytology, whereas biopsies and frozen sections are performed in histology.

The clinical laboratory is divided into the following sections (answers may vary in the “two tests performed” section of the essay):

Chemistry
Hematology
Coagulation
Microbiology
Immunohematology (Blood Bank)
Serology (Immunology)
Urinalysis

KEY: Topic: Clinical laboratory sections

DIF: Level 2

Learning Objective: 2.5