

ASSIGNMENT SHEET

CHAPTER 15: SPECIMEN COLLECTION AND LABORATORY PROCEDURES

Unit 1: The Microscope

WORDS TO KNOW CHALLENGE

A. Spelling: Underline the correct spelling of each word.

- | | | | |
|---------------|-----------|-------------|-------------|
| 1. binnocular | binocular | binocularre | bynocularre |
| 2. optick | optic | optix | optek |
| 3. immercion | immersion | imersion | emmersion |
| 4. diaphram | diaphrame | diaphragm | dyaphragm |
| 5. condenser | condensor | condensir | condenserre |

B. Word Scramble: Unscramble the following terms and then match them to the definitions below.

- | | |
|----------|--|
| 1. _____ | <u>T</u> <u>E</u> <u>N</u> <u>U</u> <u>M</u> <u>I</u> |
| 2. _____ | <u>N</u> <u>I</u> <u>C</u> <u>A</u> <u>F</u> <u>I</u> <u>N</u> <u>O</u> <u>A</u> <u>M</u> <u>G</u> <u>T</u> <u>I</u> |
| 3. _____ | <u>L</u> <u>O</u> <u>C</u> <u>A</u> <u>R</u> <u>U</u> |
| 4. _____ | <u>G</u> <u>E</u> <u>S</u> <u>T</u> <u>A</u> |
| 5. _____ | <u>K</u> <u>N</u> <u>E</u> <u>C</u> |
| 6. _____ | <u>J</u> <u>U</u> <u>T</u> <u>M</u> <u>N</u> <u>T</u> <u>A</u> <u>D</u> <u>S</u> <u>E</u> |

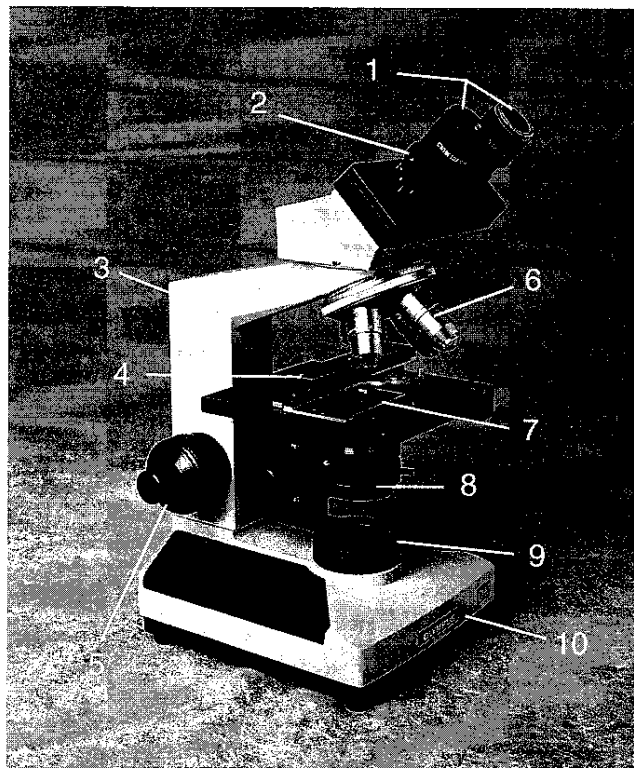
- | | |
|-------|--|
| _____ | The result of combining the ocular and the lens for observation of a specimen |
| _____ | An adjective describing the size of articles examined microscopically |
| _____ | The part of the microscope extending from the base to the oculars |
| _____ | The part of the microscope on which slides are placed for viewing |
| _____ | A part of the microscope that helps to bring the specimen on the slide into sharper view |
| _____ | The part of the microscope that brings objects on the stage under sharp focus |

UNIT REVIEW

A. True or False: Place a "T" for true or "F" for false in the space provided. For false statements, explain why they are false.

- | | |
|-------|--|
| _____ | 1. Standard precautions are not recommended for health care workers. |
| _____ | 2. Spilled blood or body fluids should be cleaned up using a fresh 10 percent bleach solution and disposable paper towels. |
| _____ | 3. It is unimportant for health care workers to set a good example for patients regarding health habits. |
| _____ | 4. Patients should not be provided with verbal and written instructions for laboratory diagnostic testing. |
| _____ | 5. Eating, drinking, applying cosmetics, and handling contact lenses in the laboratory area is unacceptable due to the possibility of contamination. |

B. Labeling: Identify the parts of the microscope. Refer to the figure provided.



1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

C. Matching: Match the term in column I with its description in column II.

COLUMN I	COLUMN II
_____ 1. Standard Precautions	a. Personal protective equipment
_____ 2. PPE	b. Must be followed when handling blood and/or body fluids
_____ 3. Emergency eyewash	c. Puncture-proof container used for broken glass or any sharp, unusable items
_____ 4. Sharps container	d. Prevents additional damage to the eyes from chemical or other hazards

D. Short Answer

1. List the basic recommended personal protective equipment that may be used when collecting specimens from patients.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
2. How often should spills of blood and/or other potentially infectious body fluids be cleaned up in the laboratory area? _____

3. Why is proper handwashing an important consideration when working in the laboratory and with patients?

4. If an accident in the lab area occurs while performing diagnostic tests, what is the most appropriate action to be taken? _____

5. Blood and/or other potentially infectious body fluid soaked materials should be disposed of in which manner? What about contaminated needles and/or broken glass? What is the difference? _____

CASE STUDY

Scenario

You have been designated to perform phlebotomy duties this month. After drawing a patient's blood, you notice there is no sharps container in the room. After trying unsuccessfully to recap the needle using the one-handed scoop technique, you pick up the cap to replace it over the needle, and you stick yourself in the process.

Critical Thinking Questions

1. What is the first thing you should do? _____

2. Do you report this to anyone? If so, to whom should it be reported? _____

3. To which bloodborne pathogens may you have been exposed? _____

UNIT APPLICATION

Performance Objective Practice

1. Research what an exposure control plan is for a health provider's office. List and explain at least four items that must be included in the ECP.
2. With a partner, practice viewing items under a microscope, such as hair, saliva, mold, etc. Be creative.
3. Make a safety poster displaying guidelines for lab safety.

Performance Competency

Following completion of performance objective practice, use the Performance Evaluation Checklist 15-1 in the workbook to perform the procedure for evaluation.

CERTIFICATION AND REGISTRATION PREPARATION

- _____ 1. What federal standard mandated the use of personal protective equipment when handling blood and/or other potentially infectious materials?
 - a. Safety Standard Act
 - b. Bloodborne Pathogens Standards
 - c. FDA Standard
 - d. MSDS Standard
- _____ 2. Under CLIA '88, who would be eligible to perform moderate complexity testing?
 - a. Medical assistant
 - b. Administrative assistant
 - c. Medical laboratory technician or technologist
 - d. Emergency responder
- _____ 3. Which of the following would constitute proper care of a microscope?
 - a. Cleaning oil immersion lenses at the end of each day
 - b. Lowering the stage to its lowest position at the end of each day
 - c. Covering the microscope with a dust cover at the end of each day
 - d. All of the above
- _____ 4. Which of the following is the correct solution for cleaning up blood and/or other potentially infectious material spills?
 - a. Hibiclens
 - b. Lysol
 - c. 10 percent bleach solution
 - d. Soap and water
- _____ 5. Which of the following is not a requirement of the 1991 Bloodborne Pathogens Standards?
 - a. Annual training for employees on the employer's time
 - b. Giving workers a choice for wearing PPE
 - c. Implementation of the use of engineering controls
 - d. Mandate of work practice controls

ASSIGNMENT SHEET

CHAPTER 15: SPECIMEN COLLECTION AND LABORATORY PROCEDURES

Unit 2: Capillary Blood Collection

WORDS TO KNOW CHALLENGE

A. Word Scramble: Unscramble the following terms.

- | | |
|----------|---|
| 1. _____ | <u>U</u> <u>C</u> <u>U</u> <u>E</u> <u>P</u> <u>N</u> <u>T</u> <u>R</u> |
| 2. _____ | <u>A</u> <u>O</u> <u>A</u> <u>O</u> <u>Y</u> <u>L</u> <u>B</u> <u>R</u> <u>T</u> <u>R</u> |
| 3. _____ | <u>T</u> <u>R</u> <u>L</u> <u>S</u> <u>E</u> <u>I</u> <u>E</u> |
| 4. _____ | <u>E</u> <u>N</u> <u>T</u> <u>N</u> <u>O</u> <u>A</u> <u>E</u> |
| 5. _____ | <u>A</u> <u>C</u> <u>E</u> <u>L</u> <u>N</u> <u>T</u> |
| 6. _____ | <u>T</u> <u>T</u> <u>A</u> <u>S</u> |

B. Matching: Match the term in column I with its description in column II.

- | COLUMN I | COLUMN II |
|---------------------|--|
| _____ 1. Laboratory | a. Without any organisms |
| _____ 2. Sterile | b. Immediately |
| _____ 3. Lancet | c. A newborn infant |
| _____ 4. Stat | d. Used for skin puncture |
| _____ 5. Puncture | e. Place where diagnostic testing is performed |
| _____ 6. Neonate | f. A hole made by something pointed |

UNIT REVIEW

A. True or False: Place a "T" for true or "F" for false in the space provided. For false statements, explain why they are false.

- _____ 1. Capillary punctures should be performed with the lancet tip penetrating parallel to the fingerprints.

- _____ 2. Excessive squeezing of the capillary puncture site may dilute the specimen with tissue fluid.

- _____ 3. It is unnecessary to wear gloves while performing capillary punctures.

- _____ 4. Lancets should be disposed of into a sharps container.

- _____ 5. Cold hands will provide good blood flow from the puncture site.

- _____ 6. Earlobe capillary punctures for blood collection are not recommended.

- _____ 7. When collecting blood from the puncture site, the first drop of blood is collected.

- _____ 8. The use of an alcohol wipe disinfects the capillary site prior to the puncture.
- _____ 9. Patients never bleed excessively from a capillary puncture site.
- _____ 10. Capillary punctures for specimen collection are popular because they are painless.

B. Place the following steps of the capillary puncture procedure in their proper order.

- _____ 1. Collect the specimen.
- _____ 2. Introduce yourself and identify the patient.
- _____ 3. Assemble the necessary supplies.
- _____ 4. Wipe away the first drop of blood.
- _____ 5. Provide the patient a clean gauze or cotton ball to apply pressure to the site.
- _____ 6. Perform the puncture with the lancet, penetrating across the fingerprints.
- _____ 7. Allow the selected site to dry.
- _____ 8. Disinfect the site with alcohol.
- _____ 9. Don gloves.
- _____ 10. Dispose of lancet and contaminated materials in the appropriate biohazard containers.

C. Short Answer

- 1. Why is it important that the lancet be positioned to cut across the fingerprints rather than parallel to them?

- 2. Identify various sites for capillary punctures for blood collection. _____

- 3. Why is excessive squeezing of the capillary puncture site discouraged? _____

- 4. Why should the lateral sides of the infant's heel be used for capillary punctures? _____

- 5. Why is the first drop of blood wiped away from the capillary puncture site? _____

CASE STUDY

Scenario

Mrs. Johnson has a laboratory order for you to collect a capillary specimen for a random blood glucose level. You assemble your supplies in preparation of collecting and testing the specimen; when you grasp her hand, you notice that her hand is exceptionally cold.

Critical Thinking Questions

1. What does Mrs. Johnson's cold hands indicate? _____

2. What instructions should you give to Mrs. Johnson? _____

UNIT APPLICATION

Performance Objective Practice

- A. Research various medical supply companies and report on how many different types of lancets and autolet devices are currently available for purchase. Differentiate between the types of lancets as well as the autolets, including those that are now being used to collect specimens from the forearm for diabetic testing at home.
- B. With a partner, perform capillary punctures on each other.

Performance Competency

Following completion of performance objective practice, use the Performance Evaluation Checklist 15-2 in the workbook to perform the procedure for evaluation.

CERTIFICATION AND REGISTRATION PREPARATION

- _____ 1. Which of the following is the most accurate statement regarding capillaries?
 - a. Capillaries are the microscopic structures responsible for the cellular exchange of oxygen and nutrients and transporting waste to the venules.
 - b. Capillaries are structures that may be accessed with a venous collection device.
 - c. Capillaries are the structures that transport lymphatic fluid through the lymph system.
 - d. Capillaries are no different than arterioles or venules.
- _____ 2. Lancets are devices that:
 - a. are sterile and sharp, used for obtaining capillary specimens
 - b. vary in style and depth of puncture
 - c. must be disposed of by depositing in sharps containers
 - d. all of the above
- _____ 3. Which of the following is an unacceptable site for capillary blood collection?
 - a. Middle finger
 - b. Thumb
 - c. Ring finger
 - d. Lateral heel in infants

- _____ 4. Which of the following is unnecessary for obtaining a capillary blood specimen?
- a. Alcohol wipe
 - b. Hypodermic needle
 - c. Clean gauze or cotton ball
 - d. Lancet
- _____ 5. All of the following are reasons for performing a capillary puncture except:
- a. the procedure is painless
 - b. a small amount of blood is needed for testing
 - c. test results are available quickly
 - d. blood cannot be obtained through venous access

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CHAPTER 15: SPECIMEN COLLECTION AND LABORATORY PROCEDURES

Unit 3: Venous Blood Collection

WORDS TO KNOW CHALLENGE

A. Spelling: Underline the correct spelling of each word.

1. hemotoma	hematoma	hemitoma	hemetoma
2. tourniquet	tournequet	tournequette	turniquit
3. venapuncture	veinipuncture	venipuncture	venopuncture
4. phelbotomy	phlibotomy	phlebotimy	phlebotomy
5. serim	serum	seram	searum
6. elasticity	elastizity	ilasticity	elasticitie
7. hemaconcentration	hemoconcentration	hemiconcentration	hameconcentration
8. siringe	syringe	syring	siryng
9. vacum	vacuum	vacuumm	vacuum
10. plazma	palasma	plasma	plasma

UNIT REVIEW

A. Matching: Match the term in column I with its description in column II.

COLUMN I	COLUMN II
_____ 1. EDTA	a. Sodium heparin
_____ 2. Gray-stopper	b. Hematology testing, purple stopper
_____ 3. Syringe	c. Blood cultures
_____ 4. Butterfly	d. Serum separator tube (SST)
_____ 5. Yellow stopper	e. Evacuated tube holder
_____ 6. Red stopper	f. Prevents clotting
_____ 7. Mustard or speckled stopper	g. Multi-sample needle for small veins
_____ 8. Green stopper	h. Sodium fluoride, blood glucose
_____ 9. Multi-sample capability	i. No additive
_____ 10. Anticoagulant	j. Single-use venous collection device
_____ 11. Blue stopper	k. Anticoagulant tubes
_____ 12. Plasma	l. Sodium citrate, coagulation studies

B. Multiple Choice: Place the correct letter on the blank line for each question.

- _____ 1. The medical term for abnormal collection of blood immediately below the surface of the skin is:

a. angioma	c. syncope
b. hematoma	d. hemolysis
- _____ 2. During the venipuncture procedure, the tourniquet should not remain on the patient's arm for more than:

a. 15 seconds	c. 2 minutes
b. 15 minutes	d. 1 minute

- _____ 3. The surgical puncture (incision) of a vein is known as:
- | | |
|---------------|---------------|
| a. phlebotomy | c. immunology |
| b. hematology | d. vagotomy |
- _____ 4. The destruction of red blood cells is known as:
- | | |
|----------------------|---------------|
| a. hematopoiesis | c. hemolysis |
| b. hemoconcentration | d. hematology |
- _____ 5. Which of the following would be recommended for obtaining venous blood specimens from patients with small and/or fragile veins?
- | | |
|-----------------------|--------------------------------------|
| a. Butterfly assembly | c. Smaller gauge multi-sample needle |
| b. Syringe | d. All of the above |

C. True or False: Place a "T" for true or "F" for false in the space provided. For false statements, explain why they are false.

- _____ 1. The same pair of gloves may be worn all day while working as a phlebotomist, as long as you wash your hands at the end of the day.
- _____ 2. When using a syringe to collect a specimen, after filling the appropriate tubes with the venous specimen, the complete syringe and needle assembly must be disposed of in one piece in the sharps container.
- _____ 3. The bevel of the needle should be turned down for venipuncture procedures.
- _____ 4. The angle of insertion of the needle for venous blood collection is at about 15 to 20 degrees.
- _____ 5. When palpating for a vein, the phlebotomist should be checking for a pulsing vessel.
- _____ 6. The recommended order of draw when using the evacuated tube method is: yellow, blue, red, purple, speckled, and green.
- _____ 7. Serum is obtained from an anticoagulated whole blood specimen.
- _____ 8. The most common veins used for venipunctures are located in the antecubital fossa.
- _____ 9. Patients may have phlebotomy anxiety manifested by nausea and/or syncope during the procedure.
- _____ 10. Syncope is the medical term that means fainting or momentary loss of consciousness.

CASE STUDY**Scenario**

Ben has arrived for a venous blood test to check his electrolytes and CBC. In the process of collecting the specimen, you notice that a hematoma is forming, although you have not completed filling all of the necessary tubes.

Critical Thinking Questions

1. Why would a hematoma develop as a result of a phlebotomy? _____

2. What should you do? _____

UNIT APPLICATION**Performance Objective Practice**

With a partner, practice palpating each other's veins — without looking.

Performance Competency

Following completion of performance objective practice, use the Performance Evaluation Checklists 15-3, 15-4, and 15-5 in the workbook to perform the procedures for evaluation.

CERTIFICATION AND REGISTRATION PREPARATION

- _____ 1. For most hematology testing, which tube is most often selected?
- | | |
|-------------------|-------------------|
| a. EDTA | c. Sodium oxalate |
| b. Sodium citrate | d. Sodium heparin |
- _____ 2. Which of the following tubes would be selected for collecting a blood culture?
- | | |
|------------------|-------------------|
| a. Blue stopper | c. Yellow stopper |
| b. Green stopper | d. Purple stopper |
- _____ 3. For tests requiring serum, how long should the tube be allowed to clot before centrifugation?
- | | |
|---------------------|---|
| a. 1 minute | c. 1 hour |
| b. 15 to 30 minutes | d. tube should be immediately centrifuged |
- _____ 4. Which of the following anticoagulants is most commonly used for coagulation studies?
- | | |
|-------------------|----------------------|
| a. EDTA | c. Potassium oxalate |
| b. Sodium heparin | d. Sodium citrate |
- _____ 5. Which tube is most commonly used for blood glucose testing?
- | | |
|------------------|-------------------|
| a. Gray stopper | c. Purple stopper |
| b. Green stopper | d. Yellow stopper |



ASSIGNMENT SHEET

CHAPTER 15: SPECIMEN COLLECTION AND LABORATORY PROCEDURES

Unit 4: Common Physician's Office Lab Diagnostic Tests

WORDS TO KNOW CHALLENGE

A. Spelling: Underline the correct spelling of each word.

- | | | | |
|------------------|-----------------|-----------------|-----------------|
| 1. polycythemia | polycithemia | policythemia | polycythemea |
| 2. guaic | gaiauc | guaiac | gauiac |
| 3. catherization | cathetirization | catheterisation | catheterization |
| 4. alosteric | allosteric | allostiric | allosterick |
| 5. billirubin | billyrubin | bilirubin | biliribun |
| 6. urineanalysis | urinalisys | urinoanalysis | urinalysis |
| 7. hemoturia | hematuria | hematurea | hemituria |
| 8. urobilinogen | uribilinogen | urobilinogin | urobelinogen |

UNIT REVIEW

A. Short Answer

1. Explain why quality assurance (QA) and quality control (QC) are of the utmost importance in any laboratory setting. _____

2. Identify the three categories of testing within the laboratory setting. _____

3. Identify the three elements of a complete urinalysis. _____

4. What two tests are commonly used in screening for anemia? _____

5. Identify the proper units of measurement for reporting hemoglobin and hematocrit results. _____

6. What is the chief function of leukocytes? _____

7. What test is used for diagnosis of diabetes mellitus? _____

8. Name two diseases associated with hypercholesterolemia. _____

9. Name three tests that may be performed in the POL for immunology testing. _____

10. Discuss the differences random, first morning, clean-catch midstream, and 24-hour urine specimens.

- _____
- _____
- _____
11. Identify types of pathogens that may be checked in fecal specimens. _____
- _____
12. Which conditions might be diagnosed in a sputum specimen? _____
- _____

B. Matching: Match the term in column I with its description in column II.

COLUMN I	COLUMN II
_____ 1. Normal male hemoglobin	a. 4.0 to 5.5 million/cubic mm
_____ 2. Normal WBC	b. Confirmatory test for urinary ketones
_____ 3. Normal female ESR	c. Allergy testing
_____ 4. PKU	d. Blood in the urine
_____ 5. Normal glucose	e. Virus that causes infectious mononucleosis
_____ 6. Normal cholesterol	f. 14–18 g/dL
_____ 7. Normal fecal occult blood	g. ESR
_____ 8. Normal female hemoglobin	h. Normal urine, slightly acidic
_____ 9. Normal male ESR	i. 4.5 to 6.0 million/cubic mm
_____ 10. Normal female Hct	j. 12–16 g/dL
_____ 11. Normal male RBC	k. Positive in starvation
_____ 12. Normal male Hct	l. Confirmatory test for urinary protein
_____ 13. Normal female RBC	m. Measures glycosated hemoglobin
_____ 14. Polycythemia	n. Confirmatory test for urinary bilirubin
_____ 15. Test for non-specific tissue damage	o. Phenylketonuria
_____ 16. Screen for diabetes	p. 0–10 mm/hr
_____ 17. Equals hbg × 3 + 3	q. Below 200 mg/dL fasting
_____ 18. Specific gravity	r. Pregnancy
_____ 19. pH	s. Physician's office laboratory
_____ 20. bilirubin	t. 40%–54%
_____ 21. ketones	u. Glucose
_____ 22. SSA	v. Abnormal increase in all blood cells
_____ 23. Acetest	w. Negative
_____ 24. Ictotest	x. Below 126 mg/dL fasting
_____ 25. Hematuria	y. May indicate liver disease when detected
_____ 26. Epstein Barr virus	z. Concentration/dilution of urine specimen
_____ 27. Human chorionic gonadotropin	aa. Hematocrit
_____ 28. RAST	bb. 37%–47%
_____ 29. Hemoglobin A1C	cc. 3500–11,000
_____ 30. POL	dd. 0–20 mm/hr

C. True or False: Place a "T" for true or "F" for false in the space provided. For false statements, explain why they are false.

- _____ 1. Physician office laboratories have no regulatory control.

- _____ 2. Waived tests are performed only by those individuals specifically trained in laboratory science.

- _____ 3. A panic value requires immediate intervention by a health care provider.

- _____ 4. The buffy coat is found at the bottom of the microhematocrit tube following centrifugation.

- _____ 5. Hematocrit values are always expressed in percentages.

- _____ 6. The WBC differential is a microscopic count of 100 cells, counting the white blood cells according to their cell type.

- _____ 7. The sed rate will be increased in sickle cell anemia.

- _____ 8. The normal rate of fall for red blood cells when performing the sed rate is 1 mm every 5 minutes.

- _____ 9. If a patient vomits during a glucose tolerance test (GTT), the most important thing to be done is to continue the test.

- _____ 10. The glycohemoglobin test is a useful tool for a health care provider to determine the degree of compliance and blood glucose control in diabetic patients.

- _____ 11. An angioplasty is a procedure performed to repair arteries that have significant atherosclerosis.

- _____ 12. Infectious mononucleosis is sometimes referred to as the "hugging" disease.

- _____ 13. Human chorionic gonadotropin (HCG) is produced by the embryo.

- _____ 14. PKU infant screening is required in all 50 U.S. states, as well as Canada.

- _____ 15. The physical testing of urine includes assessment of the color, clarity, odor, and specific gravity.

- _____ 16. The majority of urine specimens will have a pH of 7.0–9.0.
- _____ 17. A small amount of urobilinogen in the urine is poor prognosis for a patient.
- _____ 18. When bacteria are present in sufficient numbers in the urine, nitrate will be reduced to nitrite by the bacterial metabolism.
- _____ 19. Leukocyte esterase will be positive in pyuria.
- _____ 20. Glucose is normally found in urine specimens.
- _____ 21. The specific gravity of most urine specimens falls in the range of 1.010–1.025.
- _____ 22. Special collection procedures must be used when collecting urine drug screening specimens.
- _____ 23. If the fecal occult blood is positive, the specimen on the slide will have a green color.
- _____ 24. The lower respiratory tract is considered sterile.
- _____ 25. Sputum specimens may be screened for cancer using the same staining technique as routine gynecologic screening.

CASE STUDY

Scenario 1

Connie has come to the laboratory requesting that you check her hemoglobin level because she is feeling tired, is short of breath, and is sleeping more than usual. After checking with the health care provider in your office, you perform a hemoglobin test on Connie and find that her hemoglobin result is 6.0 g/dL.

Critical Thinking Questions

- 1. What does this result indicate? _____
- 2. What action should you take? _____

UNIT APPLICATION**Performance Objective Practice**

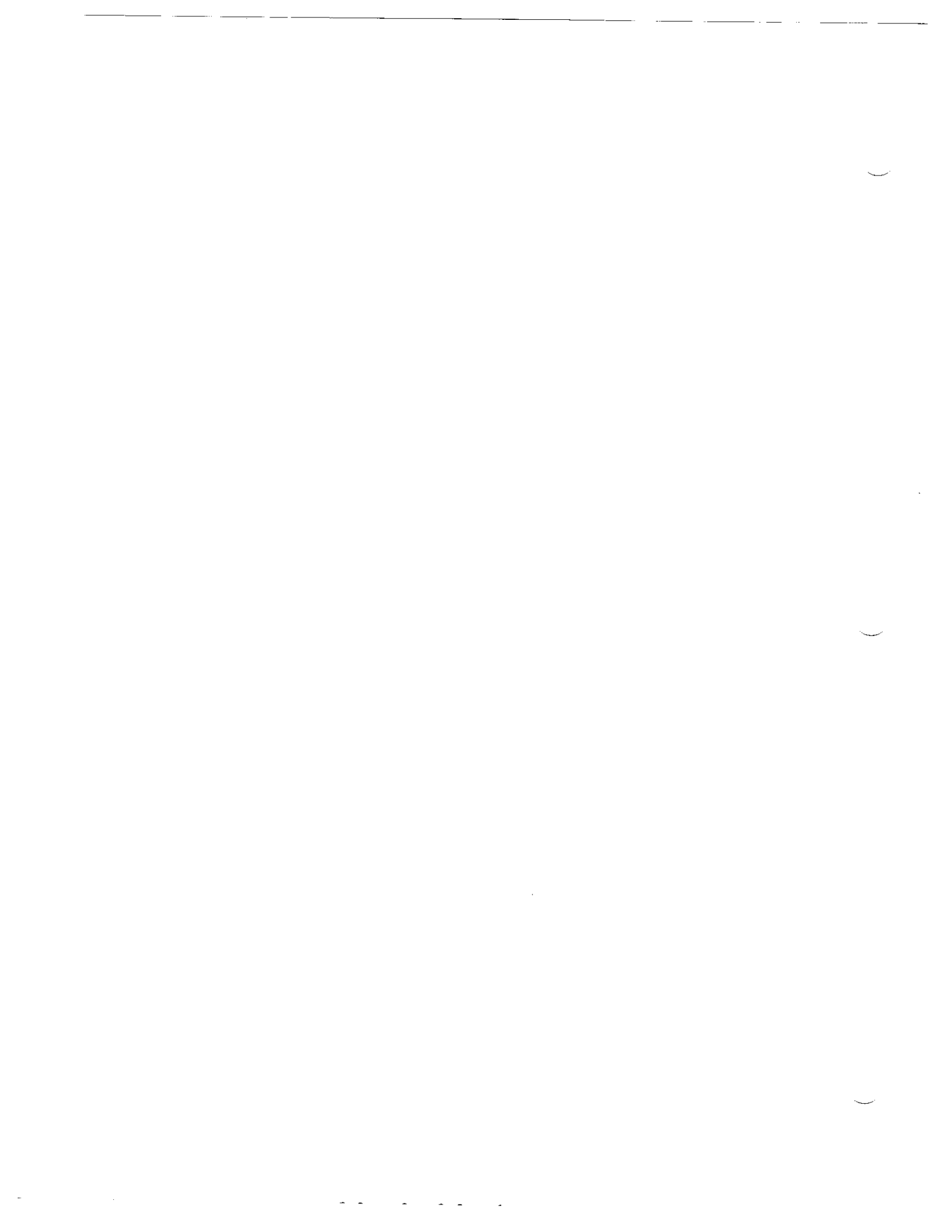
1. Interview a health care provider about the various types of glucometers he or she prefers for diabetic patients. Find out why he or she prefers the discussed methods. Following the interview, write a brief narrative of the results of your discussion.
2. With a partner, role play as medical assistant and patient and take turns explaining the various types of urine collection.

Performance Competency

Following completion of performance objective practice, use the Performance Evaluation Checklists 15-6, 15-7, 15-8, 15-9, 15-10, 15-11, 15-12, 15-13, 15-14, 15-15, 15-16, 15-17, 15-18, 15-19, 15-20, and 15-21 in the workbook to perform the procedures for evaluation.

CERTIFICATION AND REGISTRATION PREPARATION

1. Which hormone is secreted by the placenta during pregnancy?
 - a. Cholesterol
 - b. Human chorionic gonadotropin
 - c. Thyroid stimulating hormone
 - d. Glucose
2. The Epstein Barr virus (EBV) causes which illness?
 - a. Influenza
 - b. Diabetes
 - c. Atherosclerosis
 - d. Infectious mononucleosis
3. Which of the following cells are responsible for transporting oxygen through the body?
 - a. Erythrocytes
 - b. Thrombocytes
 - c. Leukocytes
 - d. Monocytes
4. The form required to be signed by the patient in substance abuse screening is the:
 - a. Laboratory requisition
 - b. Chain of custody
 - c. Laboratory report form
 - d. Patient chart
5. Which of the following is not normally found in urine specimens?
 - a. Specific gravity
 - b. Urobilinogen
 - c. Bilirubin
 - d. pH
6. A patient's hemoglobin is 13.0 g/dL. Calculate the range of the hematocrit.
 - a. 36–42%
 - b. 36–42 g/dL
 - c. 42–48%
 - d. 42–48 g/dL
7. The function of which of the following cells is to protect the body against antigens?
 - a. Erythrocytes
 - b. Platelets
 - c. Leukocytes
 - d. Hemoglobin
8. Sputum specimens may be screened for all of the following except:
 - a. cancer
 - b. tuberculosis
 - c. infections
 - d. specific gravity
9. The confirmatory test for urinary bilirubin is which of the following?
 - a. Ictotest
 - b. Acetest
 - c. Sulfosalicylic acid
 - d. None of the above
10. The name of the reagent in fecal occult blood tests is which of the following?
 - a. Safranin
 - b. Wright's reagent
 - c. Guaiac
 - d. Crystal violet



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CHAPTER 15: SPECIMEN COLLECTION AND LABORATORY PROCEDURES

Unit 5: Bacterial Specimen Collection, Cultures, and Diagnostic Tests

WORDS TO KNOW CHALLENGE

A. Word Scramble: Unscramble the following terms and match them with their definitions below.

- | | |
|----------|---|
| 1. _____ | <u>D</u> <u>A</u> <u>U</u> <u>X</u> <u>E</u> <u>T</u> <u>E</u> |
| 2. _____ | <u>M</u> <u>G</u> <u>R</u> <u>A</u> <u>V</u> <u>P</u> <u>O</u> <u>S</u> <u>I</u> <u>I</u> <u>T</u> <u>E</u> |
| 3. _____ | <u>S</u> <u>I</u> <u>C</u> <u>U</u> <u>U</u> <u>T</u> <u>B</u> <u>R</u> <u>E</u> <u>L</u> <u>O</u> <u>S</u> |
| 4. _____ | <u>I</u> <u>I</u> <u>I</u> <u>S</u> <u>S</u> <u>E</u> <u>T</u> <u>T</u> <u>Y</u> <u>N</u> <u>V</u> |
| 5. _____ | <u>R</u> <u>E</u> <u>C</u> <u>L</u> <u>U</u> <u>T</u> <u>U</u> |
| 6. _____ | <u>Y</u> <u>S</u> <u>O</u> <u>M</u> <u>E</u> <u>H</u> <u>L</u> <u>S</u> <u>I</u> |
| 7. _____ | <u>R</u> <u>M</u> <u>A</u> <u>G</u> <u>A</u> <u>G</u> <u>E</u> <u>E</u> <u>T</u> <u>V</u> <u>N</u> <u>I</u> |
| 8. _____ | <u>A</u> <u>A</u> <u>R</u> <u>G</u> |

- _____ Substance used to encourage bacterial growth; also known as media
- _____ Bacterial staining characteristic that yields a bluish-purple color
- _____ The destruction of red blood cells present in culture media
- _____ The first step in the process to isolate and identify bacterial infections
- _____ Slow-growing bacteria commonly inoculated to an L-J slant
- _____ Drainage from a wound or affected area
- _____ Bacterial staining characteristic that yields a pinkish-red color
- _____ The final step in the culture during which various antibiotics are tested for bacterial inhibition

UNIT REVIEW

A. Short answer

1. What is a culturette? _____

2. When obtaining a throat swab for Group A strep screening, what is the proper procedure for performing the swab? _____

3. List gram positive and gram negative organisms, differentiating between them and their characteristics when observed microscopically.
 - a. _____
 - b. _____
 - c. _____
 - d. _____

4. Describe the difference between primary media and selective media. Give at least one example of each.

5. Name the three morphologic shapes and provide a description of each.

a. _____

b. _____

c. _____

B. True or False: Place a "T" for true or "F" for false in the space provided. For false statements, explain why they are false.

- _____ 1. The only way to test for Group A strep is a routine culture.

- _____ 2. The four components of the Gram stain include the primary stain, mordant, decolorizer, and counterstain.

- _____ 3. It takes a minimum of four days before a culture and sensitivity report is completed.

- _____ 4. The acid fast stain identifies *Mycobacterium tuberculosis*.

- _____ 5. Tuberculosis is cultivated through inoculation onto a Lowenstein-Jensen slant.

- _____ 6. Gram's iodine is known as the mordant.

- _____ 7. Safranin is the primary stain of the Gram stain.

- _____ 8. Water is used between each step of the Gram stain procedure.

- _____ 9. Staining of bacterial specimen slides should take place before the slides have been heat-fixed.

- _____ 10. Use of MIC testing helps to reduce health care costs.

CASE STUDY

Scenario

You are working in a multi-practice clinic that houses an in-house laboratory including a microbiology lab. Part of your duties in the laboratory includes checking and recording temperatures for all refrigerators, freezers, and incubators used in the facility. You are checking the microbiology incubators and discover that one of them is registering a temperature of 10 degrees Celsius.

Critical Thinking Questions

- Should you report this to anyone and, if so, why? _____

- What is a possible result of this temperature decrease? _____

UNIT APPLICATION**Performance Objective Practice**

Research the health risks of untreated Streptococcal infections. Write a short narrative of your findings and why these types of infections should be treated.

Performance Competency

Following completion of performance objective practice, use the Performance Evaluation Checklists 15-22, 15-23, and 15-24 in the workbook to perform the procedures for evaluation.

CERTIFICATION AND REGISTRATION PREPARATION

- A description of "gram positive cocci" in clusters describes which bacteria?
 - Streptococci
 - Staphylococci
 - Pseudomonas
 - Escherichia coli
- Which of the following is the primary stain in the Gram stain?
 - Safranin
 - Acetone
 - Gentian violet
 - Iodine
- Which of the following is an example of a primary media?
 - 5% sheep blood (TSA)
 - Eosin methylene blue (EMB)
 - Modified Thayer Martin
 - MacConkey
- Which stain is used to identify *Mycobacterium tuberculosis*?
 - Gram stain
 - Wright stain
 - Gentian violet
 - Acid fast stain
- When an organism is described as gram negative, what color is the organism on the slide?
 - Pinkish-red
 - Blue
 - Green
 - No color
- The name of the device used to procure specimens for cultures is the:
 - tongue depressor
 - culturette
 - microscope slide
 - ampule
- The mordant in the Gram stain is the:
 - Acetone
 - Water
 - Gram's iodine
 - Safranin
- Rapid strep screening kits check for the presence of which organism?
 - Group A strep
 - Group B strep
 - Group G strep
 - None of the above

- _____ 9. Which of the following represents the correct order of steps for performing a Gram stain?
- a. Apply gentian violet, safranin, Gram's iodine, and decolorizer.
 - b. Apply gentian violet, Gram's iodine, decolorizer, and safranin.
 - c. Apply safranin, decolorizer, Gram's iodine, and gentian violet.
 - d. Apply Gram's iodine, safranin, gentian violet, and decolorizer.
- _____ 10. Gram negative diplococci describes which organism?
- a. *Staphylococcus*
 - b. *Streptococcus*
 - c. *Neisseria gonorrhoeae*
 - d. *Escherichia coli*

Name _____

Date _____ Score _____

ASSIGNMENT SHEET

CHAPTER 15: SPECIMEN COLLECTION AND LABORATORY PROCEDURES

Unit 6: Other Frequently Ordered Laboratory Tests and Normal Values

WORDS TO KNOW CHALLENGE

A. Matching: Match the term in column I with its description in column II.

COLUMN I	COLUMN II
_____ 1. Bad cholesterol	a. K
_____ 2. Gout	b. International ratio
_____ 3. BUN	c. Lipids
_____ 4. Sodium	d. Elevated in myocardial infarction
_____ 5. Prothrombin time	e. LDL
_____ 6. Cholesterol	f. Uric acid
_____ 7. Triglycerides	g. Atherosclerosis
_____ 8. INR	h. Blood urea nitrogen
_____ 9. CK	i. Na
_____ 10. Potassium	j. PT

UNIT REVIEW

A. Short Answer

1. The name of the instrument used to process specimens to be forwarded to reference labs is what? _____

2. With regard to questions 1, what special considerations need to be heeded when using this instrument? _____

3. Identify the difference between serum and plasma. _____

4. What is a panel or a profile of tests? _____

B. True or False: Place a "T" for true or "F" for false in the space provided. For false statements, explain why they are false.

- _____ 1. BUN and creatinine are indicators of renal function.

- _____ 2. Gouty arthritis is a result of too much calcium.

- _____ 3. LDL cholesterol should be maintained at less than 100 mg/dL.

- _____ 4. Hypokalemia and hyperkalemia mimic one another in their symptoms.
- _____ 5. The reference range in prothrombin times for assessing therapeutic doses of warfarin anticoagulant therapy is the IRN.

CASE STUDY

Scenario

Jewell has been a patient at your office for six months, regularly following up with the health care provider for high LDL cholesterol levels. Although Jewell has been exercising and watching her diet, she is unable to bring her LDL cholesterol down to acceptable ranges. The health care provider decides to place Jewell on a cholesterol-reducing agent, but when you return to Jewell's room, she confides that she does not want to start a medication to control this condition.

Critical Thinking Question

- 1. What should you do or say? _____

UNIT APPLICATION

Research Activity

Go to the library or use the Internet to research the complications associated with hyperkalemia and hypokalemia. Discuss the differences between the two and the various treatment options used to control both of these conditions. Discuss how patients can maintain a healthy potassium level and how this will prevent disease and maintain good health.

CERTIFICATION AND REGISTRATION PREPARATION

- _____ 1. The normal range for serum sodium levels is:
 - a. 125–150 mEq/L
 - b. 132–145 mEq/L
 - c. 130–160 mEq/L
 - d. 132–145 mg/dL
- _____ 2. Which of the following is referred to as the “healthy” cholesterol component?
 - a. LDL
 - b. VLDL
 - c. HDL
 - d. Triglycerides
- _____ 3. The normal value for BUN is:
 - a. 8–20 mg/dL
 - b. 0.7–1.4 mg/dL
 - c. less than 200 mg/dL
 - d. none of the above
- _____ 4. Which of the following, along with the BUN, helps to assess renal function?
 - a. Cholesterol
 - b. Triglycerides
 - c. Sodium
 - d. Creatinine
- _____ 5. Which of the following, when elevated, may result in gouty arthritis or hyperuricemia?
 - a. Uric acid
 - b. Potassium
 - c. Sodium
 - d. Creatine kinase