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NAME _____ LAB TIME/DATE _____

REVIEW SHEET
exercise
41A

Urinalysis

Characteristics of Urine

1. What is the normal volume of urine excreted in a 24-hour period? *c*

a. 0.1–0.5 liters b. 0.5–1.2 liters c. 1.0–1.8 liters

2. Assuming normal conditions, note whether each of the following substances would be (a) in greater relative concentration in the urine than in the glomerular filtrate, (b) in lesser concentration in the urine than in the glomerular filtrate, or (c) absent in both the urine and the glomerular filtrate.

b	1.	water	*b*	6.	amino acids	*a*	11.	uric acid
a	2.	phosphate ions	*b*	7.	glucose	*a*	12.	creatinine
a	3.	sulfate ions	*c*	8.	albumin	*c*	13.	pus (WBC)
a	4.	potassium ions	*c*	9.	red blood cells	*c*	14.	nitrites
b	5.	sodium ions	*a*	10.	urea			

3. Explain why urinalysis is a routine part of any good physical examination. *Finding "abnormal" constituents in the urine may indicate pathology.*

4. What substance is responsible for the normal yellow color of urine? *Urochrome*

5. Which has a greater specific gravity: 1 ml of urine or 1 ml of distilled water? *1 ml of urine*

Explain. *Urine contains dissolved solutes, which are not found in distilled water and add to the density of the sample.*

6. Explain the relationship between the color, specific gravity, and volume of urine. *Generally, the smaller the volume, the greater the specific gravity (more solutes/volume) and the deeper the color.*

Abnormal Urinary Constituents

7. A microscopic examination of urine may reveal the presence of certain abnormal urinary constituents.

Name three constituents that might be present if a urinary tract infection exists. *WBCs (pus)*, *RBCs*, and *casts*

8. How does a urinary tract infection influence urine pH? *Becomes alkaline*

How does starvation influence urine pH? *Becomes acidic*

9. Several specific terms have been used to indicate the presence of abnormal urine constituents. Identify each of the abnormalities described below by inserting a term from the list at the right that names the condition.

c; hematuria 1. presence of erythrocytes in the urine

d; hemoglobinuria 2. presence of hemoglobin in the urine

b; glycosuria 3. presence of glucose in the urine

a; albuminuria 4. presence of albumin in the urine

e; ketonuria 5. presence of ketone bodies (acetone and others) in the urine

f; pyuria 6. presence of pus (white blood cells) in the urine

Key:

a. albuminuria
b. glycosuria
c. hematuria
d. hemoglobinuria
e. ketonuria
f. pyuria

10. What are renal calculi and what conditions favor their formation? *Kidney stones; urinary retention, urinary tract infection, alkaline urine.*

11. All urine specimens become alkaline and cloudy on standing at room temperature. Explain why. *This is a result of bacterial metabolism or urinary components.*

12. Glucose and albumin are both normally absent in the urine, but the reason for their exclusion differs. Explain the reason for the absence of glucose. *It is completely reabsorbed (unless present in the blood in excessive levels).*

Explain the reason for the absence of albumin. *It is too large to pass through the filtration membrane.*

13. Several conditions (both pathological and nonpathological) are named below. Using the key provided, characterize the probable abnormal constituents or conditions of the urinary product of each. More than one choice is necessary to fully characterize the condition in most cases.

a, d 1. glomerulonephritis

e, g, h 2. diabetes mellitus

a 3. pregnancy, exertion

b 4. hepatitis, cirrhosis of the liver

d, g, j 5. pyelonephritis

g, j 6. gonorrhea

h 7. starvation

i 8. diabetes insipidus

c 9. kidney stones

e 10. eating a 5-lb box of candy at one sitting

f 11. hemolytic anemias

h, j 12. cystitis (inflammation of the bladder)

Key:

a. albumin
b. bilirubin
c. blood cells
d. casts
e. glucose
f. hemoglobin
g. high specific gravity
h. ketone bodies
i. low specific gravity
j. pus

14. Name the three major nitrogenous wastes found in the urine. *Urea*, *uric acid*, and *creatinine*

15. Explain the difference between organized and unorganized sediments. *Organized sediments (such as certain salts and uric acid) crystallize or precipitate out of solution, whereas unorganized sediments contain cellular elements (WBCs, epithelial cells, etc.).*