**Fluid, Electrolyte, and Acid-Base Balance**

### 26.1 Matching Questions

*Match the following:*

A) Nonelectrolytes  
B) Extracellular  
C) Interstitial  
D) Intracellular  
E) Electrolytes

1) Dissociate in water.

2) Do not dissociate.

3) The fluid compartments outside the cell.

4) Fluid compartments located within the cell.

5) Spaces between cells.

*Match the following:*

A) Respiratory acidosis  
B) Metabolic acidosis  
C) Respiratory alkalosis  
D) Metabolic alkalosis

21) Possibly caused by severe diarrhea or untreated diabetes mellitus

22) Possibly occurring with emphysema, extreme obesity, or narcotic overdose

23) Possibly caused by asthma, pneumonia, or a severe panic attack

24) Possibly caused by vomiting, use of diuretics, or use of antacids

### 26.2 True/False Questions

4) Solutes, regardless of size, are able to move freely between compartments because water carries them along the osmotic gradients.

6) Dehydration can be caused by endocrine disturbances such as diabetes mellitus or diabetes insipidus.

14) Aldosterone stimulates the reabsorption of sodium while enhancing potassium secretion.

21) Heavy consumption of salt substitutes high in potassium can present a serious clinical problem when aldosterone release is not normal.
27) Weak acids are able to act as chemical buffering systems for the body because they partially dissociate.

33) Respiratory acidosis results when lungs are obstructed and gas exchange is inefficient.

**26.3 Multiple-Choice Questions**

2) The term *hypotonic hydration* refers to _______.
   A) the feeling one might have after profuse sweating with exertion
   B) the unpleasant feeling people have after drinking too much liquor
   C) a condition that may result from renal insufficiency or drinking extraordinary amounts of water
   D) a condition that is caused by high levels of sodium in the extracellular fluid compartment

5) Atrial natriuretic peptide is a hormone that is made in the atria of the heart. The influence of this hormone is to _______.
   A) enhance atrial contractions
   B) activate the renin-angiotensin mechanism
   C) prevent pH changes caused by organic acids
   D) reduce blood pressure and blood volume by inhibiting sodium and water retention

9) Which of the choices below exerts primary control over sodium levels in the body?
   A) ADH
   B) aldosterone
   C) water levels
   D) glucocorticoids

13) Which of the following describes the distribution of sodium and potassium between cells and body fluids?
   A) K+ mainly in the cells, Na+ in the body fluids
   B) Na+ mainly in the cells, K+ in the body fluids
   C) equal amounts of each ion in the cells and body fluids
   D) little of either in the cells, but large amounts of each in the body fluids

14) Problems with fluid, electrolyte, and acid-base balance are particularly common in infants because of their _______.
   A) inefficient kidneys
   B) comparatively low metabolic rates
   C) low rate of insensible water loss
   D) low daily rate of fluid exchange

17) A falling blood pH and a rising partial pressure of carbon dioxide due to pneumonia or emphysema indicates _______.
   A) respiratory acidosis
   B) respiratory alkalosis
   C) metabolic acidosis
   D) metabolic alkalosis
19) What hormone reduces blood pressure and blood volume by inhibiting nearly all events that promote vasoconstriction and sodium ion and water retention?
A) ADH  
B) aldosterone  
C) atrial natriuretic peptide  
D) thyroxine

22) Which of the following is not a trigger for juxtaglomerular granular cells to release renin?
A) sympathetic stimulation  
B) decreased filtrate NaCl concentration  
C) decreased stretch due to decreased blood pressure  
D) increased extracellular fluid water levels

24) Which of the following hormones is important in stimulating water conservation in the kidneys?
A) aldosterone  
B) progesterone  
C) antidiuretic hormone  
D) atrial natriuretic peptide

26) Which of the following is not a disorder of water balance?
A) excessive hydration due to excess ANP secretion  
B) hypotonic hydration, in which sodium content is normal but water content is high  
C) edema or tissue swelling, which is usually due to an increased capillary hydrostatic pressure  
D) excess water in interstitial spaces due to a low level of plasma proteins

26.4 Fill-in-the-Blank/Short Answer Questions

2) The female hormone ________ seems to decrease sodium reabsorption, thus promoting sodium and water loss by the kidney.

5) Parathyroid hormone regulates ________ ions in the body.

10) What is the effect of acidosis on the body? Of alkalosis?

12) Describe the influence of rising PTH levels on bone, the small intestine, and the kidneys.

15) How does the respiratory system influence the buffer systems of the body?