Quiz
Urinary System

1. The kidneys

- help regulate blood volume.
- help control blood pressure.
- help control pH.
- All of the above are correct.

2. The location of the kidneys in relationship to the peritoneal lining of the abdominal cavity is referre to as

- retroperitoneal.
- retroabdominal.
- posterior.
- dorsal.

3. All of the following belong to the urinary system EXCEPT the

- urethra.
- ureter.
- bladder.
- prostate.

4. The functional unit of the kidney is called a

- glomerulus.
- nephron.
- corpuscle.
- calyx.

5. Most glucose molecules are reabsorbed in the

- proximal convoluted tubules.
- distal convoluted tubules.
- collecting ducts.
- loop of Henle.

6. Which of the following substances can be eliminated from the blood by tubular secretions?

- potassium ions
- hydrogen ions
- ammonium ions
- All of the above.

7. The structure that connects a kidney to the urinary bladder is the

- ureter.
- urethra.
- renal pelvis.
- collecting duct.

8. Urine is expelled from the urinary bladder by

- excretion.
- defecation.
- micturition.
- filtration.

9. All the following are principle solutes of urine EXCEPT

- urea.
- creatinine.
- glycogen.
- uric acid.

10. Which of the following hormones increase reabsorption of water in the collecting ducts?

- renin.
- ADH.
- aldosterone.
- insulin.

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1. All of the above are correct
2. retroperitoneal
3. prostate
4. nephron
5. proximal convoluted tubules
6. All of the above

7. ureter
8. micturition
9. glycogen
10. ADH

Cerebrospinal fluid, fluid within the eyes, joints, and body cavities, and fluid secretions of exocrine glands are all classified specifically as _____ fluid.
A) intracellular
B) extracellular
C) transcellular
D) None of the above

2 What are the two major factors that regulate the movement of water and electrolytes from one fluid compartment to the next?
A) hydrostatic pressure and osmotic pressure
B) sodium concentration and osmotic pressure
C) hydrostatic pressure and potassium concentration
D) concentration of all electrolytes combined and water pressure

3 / What trigger signals the brain to increase the output of ADH for water conservation?
A) thickened saliva signals the sympathetic nervous system
B) osmoreceptors in the hypothalamus detect the increase in osmotic pressure of body fluids and signal the posterior pituitary to release ADH
C) chemoreceptors in the renal tubule sense the increased viscosity of renal filtrate and signal the hypothalamus which, in turn, signals the posterior pituitary
D) the juxtaglomerular apparatus senses the greater osmotic pressure in the blood and triggers the release of ADH

4How does alcohol function as a diuretic?
A) Alcohol dilutes the blood and thus enables increased urine output.
B) Alcohol receptors in the liver sense its presence and trigger a biochemical pathway that increases urine output to rid the body of alcohol.
C) Alcohol inhibits the release of ADH and thus urine output is increased.
D) Alcohol prevents the distal convoluted tubule from reabsorbing water from the filtrate.

A so-called "salt craving" is primarily the result of _____.
A) a learned behavior
B) a genetic disease
C) dehydration
D) a severe electrolyte deficiency

6 _____ ions account for nearly 90% of the positively charged ions found in extracellular fluid.
A) Potassium
B) Calcium
C) Sodium
D) Sulfate

7 The hormone aldosterone regulates the concentrations of _____ and _____ in the body.

A) potassium ions; sodium ions
B) calcium ions; phosphate ions
C) calcium ions; chloride ions
D) phosphate ions; sulfate ions

8Edema can be caused by all of these factors except _____.
A) an increase in the plasma protein concentration
B) obstruction of lymphatic vessels
C) increased capillary permeability because of inflammation
D) increased venous pressure

9The imbalance known as _____ can be caused by certain diuretic medications.
A) hyponatremia
B) hypernatremia
C) hypokalemia
D) hyperkalemia

10 Which of the following does not occur as a result of a shift in the acid- base balance of the body?
A) an alteration in the rate of enzyme-controlled metabolic reactions
B) an increase in metabolic efficiency within the cells
C) a shift in the distribution of other ions
D) a modification in hormone actions

11Choose the factor that is not a major metabolic source of hydrogen ions in the body.
A) aerobic and anaerobic respiration of glucose
B) oxidation of amino acids that contain sulfur
C) hydrolysis of phosphoproteins
D) dehydration synthesis of nucleic acids

12The three most important buffer systems in body fluids include the bicarbonate buffer system, the _____ buffer system, and the protein buffer system.
A) calcium
B) sodium
C) phosphate
D) hemoglobin

13How is it possible for the rate and depth of breathing to affect hydrogen ion concentrations in body fluids?
A) During increased air exchange, more oxygen is exchanged with body cells, binding hydrogen ions.
B) During increased air exchange, more carbon dioxide is given off, returning hydrogen ion concentrations to normal.
C) During increased respiration over the long term, more hemoglobin is produced, thus increasing the buffering of the blood
D) The rate and depth of breathing does not alter hydrogen ion concentration in body fluids.

14Which of these is considered a secondary defense against changes in pH?
A) renal excretion of hydrogen ions
B) the bicarbonate buffer system
C) the phosphate buffer system
D) the protein buffer system

15The accumulation of nitrogenous wastes in the blood is a condition known as _____.
A) ketonuria
B) proteinuria
C) azotemia
D) acetonuria

16Which body compartment contains the greatest relative amount of water?
A) extracellular
B) intracellular
C) plasma
D) transcellular
Feedback: Fluid inside or intracellular, represents the greatest amount of water; extracellular fluid includes interstitial, plasma, lymphatic and transcellular.

17_____is the most common extracellular cation, while _____ is the most abundant intracellular cation.
A) Sodium; Ca++
B) K+; Na+
C) Sodium; potassium
D) K+; Ca++

18Which of these values would be the smallest?
A) metabolic water
B) water output
C) water in food
D) water in beverages

19Which of these conditions leads to a severe, life- threatening water loss?
A) diabetes mellitus, type 1
B) diabetes mellitus, type 2
C) diabetes insipidus
D) hyponatremia

20An abnormal accumulation of interstitial fluid is termed _____.
A) inflammation
B) necrosis
C) hypoproteinemia
D) edema

21 The most serious consequence of potassium imbalances is _____.
A) seizure
B) nerve damage
C) renal failure
D) cardiac abnormalities

22What is the normal pH of the blood?
A) 7-8

B) 7.35-7.45
C) 7.10-7.50
D) 7.3-7.4

23 Under normal circumstances, _____ is probably the greatest source of H+.
A) carbon dioxide
B) lactic acid
C) oxidation of fatty acids
D) hydrolysis reactions

24 What is the most significant inorganic plasma buffer?
A) phosphate
B) albumin
C) hemoglobin
D) bicarbonate

25 What is the most effective intracellular inorganic buffer?
A) bicarbonate
B) phosphate
C) hemoglobin
D) lactate

26 Which of the following is the most toxic?
A) urea
B) NH3
C) NH4+
D) carbonic acid

27 Diabetic ketoacidosis is an example of which imbalance?
A) respiratory acidosis
B) respiratory alkalosis
C) metabolic alkalosis
D) metabolic acidosis

28 Which of the following is not likely to cause acidosis?
A) lung cancer
B) fever
C) renal failure
D) diarrhea

29 What is the term for a condition of widespread edema?
A) anasarca
B) anuria
C) uremia
D) ketonuria

30Which of these is not a consequence of vomiting?
A) dehydration
B) metabolic acidosis
C) respiratory alkalosis
D) metabolic alkalosis

Part 2

Where is most water found in the body?
A) blood plasma
B) whole blood
C) tissue spaces
D) in cells

2Which of these is a transcellular fluid?
A) plasma
B) lymph
C) interstitial
D) synovial

3Which of these is not a transcellular fluid?
A) interstitial fluid
B) vitreous humor
C) peritoneal fluid
D) mucus

4Which of these is relatively high in extracellular fluids?
A) potassium
B) calcium
C) phosphate
D) sodium

What is the main force that causes water to move among the various fluid compartments?
A) osmosis
B) filtration
C) hydrostatic pressure
D) dialysis

6 What is the main force that causes fluid to leave the plasma compartment?
A) osmosis
B) hydrostatic pressure
C) dialysis
D) filtration

7 How is the excess tissue fluid mainly returned to the blood?
A) hydrostatic forces
B) through the capillaries

C) lymphatic vessels
D) tissue osmosis

8About _____% of the total daily intake of water is derived from internal cell metabolism.
A) 33
B) 10
C) 80
D) 60

9What is the greatest regulator of water intake?
A) renal function
B) gastrointestinal system
C) adequate diet
D) hypothalamus

10As total body water decreases, the _____ of the extracellular fluid increases.
A) amount of sodium
B) osmotic pressure
C) hydrostatic pressure
D) protein level

11The greatest amount of body water is lost through _____.
A) sweating

B) defecation
C) urine
D) breathing**.**

12The main factor that causes the kidney to conserve water is _____.
A) ADH
B) osmosis
C) renin production
D) plasma filtration pressure

13ADH is secreted from the _____.
A) hypothalamus
B) posterior pituitary
C) anterior pituitary
D) kidney

14Which of the following would have a diuretic effect?
A) eating salty pretzels
B) drinking alcohol
C) sleeping
D) most drugs

15ADH has a direct effect on _____.
A) blood pressure

B) water reabsorption
C) blood concentration
D) all of these

16 Excessive vomiting usually results in the phenomenon of _____.
A) water intoxication
B) dehydration
C) edema
D) hypoproteinemia

17 The symptoms of dehydration result from loss of _____ water.
A) intracellular
B) extracellular
C) blood
D) transcellular

The effects of water intoxication are usually related to _____.
A) blood pressure
B) hypoproteinemia
C) low sodium
D) high potassium

19 Which of the following favor the development of edema?
A) hypoproteinemia
B) decreased venous pressure
C) decreased capillary permeability
D) lymphatic flow

20 Which of these is not a usual cause of hypoproteinemia?
A) glomerulonephritis
B) poor diet
C) diuresis
D) liver disease

21 What can be a direct cause of ascites?
A) hypertension
B) hepatic disease
C) glomerulonephritis
D) renal failure

22 What causes the edema seen in inflammations?
A) hyperproteinemia
B) histamine
C) hypertension
D) cell damage

23 Which of the following is not true in Addison's disease?
A) sodium decreases
B) potassium decreases
C) adrenal cortex failure

D) low aldosterone

24 Where are most electrolytes normally lost?
A) feces
B) sweating
C) urine
D) respiration

25 What is the most abundant extracellular cation?
A) potassium
B) Mg^{2+}
C) chloride
D) sodium

26 Which factor accounts for the ability of the body to conserve high levels of sodium?
A) blood pressure
B) aldosterone
C) kidney function
D) adequate diet

27 Which ion is usually exchanged for sodium absorption?
A) Cl^-
B) bicarbonate
C) K^+
D) H^+

28 Which cells are most sensitive to electrolyte changes?
A) osteoblasts
B) epithelial
C) leukocytes
D) neurons

29 Which of these is not an effect of parathyroid hormone?
A) osteoclast stimulation
B) increase in blood Ca^{2+}
C) increase in renal elimination
D) increase in intestinal absorption

30 Which ion is directly related to calcium homeostasis?
A) Mg^{2+}
B) sodium
C) phosphate
D) chloride

31 Hyperparathyroidism usually causes an increase in _____.
A) potassium
B) calcium
C) phosphate

D) sodium

32 Which of the following does not become involved with maintaining blood calcium balance?
A) skeletal muscle
B) bone
C) kidneys
D) intestine
.

33 Which of the following is not related to hypocalcemia?
A) vitamin D deficiency
B) muscle weakness
C) tetany
D) cardiac arrhythmia

34 Which is the most abundant extracellular ion?
A) phosphate
B) bicarbonate
C) chloride
D) potassium

35 What is the most important ion, which affects all of the functions of the others?
A) H+
B) Na+
C) K+
D) phosphate

36 Which of the following will not produce H+ ions?
A) respiration of glucose
B) oxidation of fatty acids
C) synthesis of phosphoproteins
D) oxidation of sulfur amino acids

37 Which of these is not associated with acidity?
A) H_3PO_4
B) lactic
C) ketone
D) glucose

38 What is a likely cause of hypernatremia?
A) high salt in the diet
B) kidney failure
C) diabetes insipidus
D) vomiting

39 Hypokalemia could result from all of these except which one?

A) vomiting
B) Addison's disease
C) Cushing's disease
D) renal failure

40 Which of the following acts as a base in body fluids?
A) H+
B) HCl
C) H_2CO_3
D) HCO_3^-

41 Which of the following does not play a significant role in maintaining acid-base balance?
A) blood buffers
B) stomach
C) kidney
D) respiration

42 Which of the following could act as a buffer?
A) bicarbonate ion
B) H_2PO_4
C) albumin
D) carbonic acid

43 The purpose of a buffer system is to _____.
A) prevent pH changes
B) increase acidity
C) decrease pH
D) maintain a pH range

44 In the bicarbonate buffer system, _____ reacts with bases.
A) carbon dioxide
B) carbonic acid
C) bicarbonate ion
D) water

45 When a strong base reacts with the bicarbonate buffer system, _____ is formed from the base.
A) water
B) carbon dioxide
C) bicarbonate ion
D) carbonic acid

46 When an acid reacts with the bicarbonate buffer system, _____ is formed as an end product.
A) NaCl
B) water
C) carbonic acid
D) bicarbonate ion

47 What happens to HCl in the phosphate buffer reaction?
A) ionizes
B) forms water
C) forms H_2PO_4
D) forms a weak acid and salt

48 What reacts with excess acids in protein buffers?
A) carboxyl group
B) amino group
C) CO_2
D) NH_3^+

49 What reacts with the excess bases in protein buffers?
A) NH_2
B) carbon dioxide
C) NH_3^+
D) carboxyl group

50 What buffers the addition of hydrogen in blood cells following the uptake of carbon dioxide?
A) albumin
B) bicarbonate
C) hemoglobin
D) phosphate

51 Which factor greatly increases the reaction between carbon dioxide and water?
A) carbonic anhydrase
B) concentration of carbon dioxide
C) concentration of bicarbonate
D) pH of hemoglobin

52 Which of the following is an effect of acidosis?
A) increased diuresis
B) decreased diuresis
C) mental confusion
D) seizures

53 Which blood parameter is directly affected by breathing?
A) blood pH
B) carbon dioxide
C) bicarbonate levels
D) buffer chemicals

54 During periods of acidosis, the kidney will secrete _____ into the urine.
A) carbon dioxide
B) K^+
C) H_2PO_4

D) HPO4

55 In an attempt to remove acid from the blood, the kidneys will secrete _____ into the urine compartment.
A) ammonia
B) NH4+
C) chloride
D) monohydrogen phosphate

56Which mechanism requires the most time to regulate pH?
A) bicarbonate buffer
B) phosphate buffer
C) respiration
D) renal function

57Which condition is a generalized accumulation of body edematous tissues?
A) azotemia
B) anuria
C) acetonemia
D) anasarca

58What is the normal pH of the blood?
A) 7.40-7.50
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C) 6.8-7.9
D) 7.0-8.0

59What is the pH range compatible with life?
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60Hyperventilation from anxiety usually causes _____.
A) respiratory acidosis
B) metabolic acidosis
C) respiratory alkalosis
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61Lung cancer usually causes the tendency towards _____.
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Ans
Part 1
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B) anuria
C) uremia
D) ketonuria

30 Which of these is not a consequence of vomiting?
A) dehydration
B) metabolic acidosis
C) respiratory alkalosis

D) metabolic alkalosis

Ans2
Where is most water found in the body?
A) blood plasma
B) whole blood
C) tissue spaces
D) in cells
Feedback: Whole blood is only part of the extracellular fluid.

2Which of these is a transcellular fluid?
A) plasma
B) lymph
C) interstitial
D) synovial
Feedback: Transcellular fluid is fluid that is located within areas separated from others by epithelial or other membranes, such as synovial or the aqueous humor of the eye.

3Which of these is not a transcellular fluid?
A) interstitial fluid
B) vitreous humor
C) peritoneal fluid
D) mucus
Feedback: Any fluid outside of cells is considered extracellular, such as interstitial fluid between cells, but some of these such as serous fluid are transcellular.

4Which of these is relatively high in extracellular fluids?
A) potassium
B) calcium
C) phosphate
D) sodium

What is the main force that causes water to move among the various fluid compartments?
A) osmosis
B) filtration
C) hydrostatic pressure
D) dialysis
Feedback: The concentration differences between cells and extracellular compartments creates osmotic pressure differences.

6 What is the main force that causes fluid to leave the plasma compartment?
A) osmosis
B) hydrostatic pressure
C) dialysis
D) filtration
Feedback: Since the hydrostatic pressure component of blood pressure is always slightly higher than the plasma osmotic pressure, some water is constantly lost from the capillaries.
7 How is the excess tissue fluid mainly returned to the blood?
A) hydrostatic forces
B) through the capillaries
C) lymphatic vessels

D) tissue osmosis
Feedback:: The lymphatic system is a one-way network of vessels that captures the lost fluids around the cells and returns them to the subclavian veins.
8About _____% of the total daily intake of water is derived from internal cell metabolism.
A) 33
B) 10
C) 80
D) 60
Feedback: About 10% of daily water is an end product of cellular respiration as metabolic water; about 60% is obtained from drinking.
9What is the greatest regulator of water intake?
A) renal function
B) gastrointestinal system
C) adequate diet
D) hypothalamus
Feedback: The gastrointestinal system operates under passive laws.
10As total body water decreases, the _____ of the extracellular fluid increases.
A) amount of sodium
B) osmotic pressure
C) hydrostatic pressure
D) protein level
Feedback: As fluid is lost, the concentration of particles increases, raising the osmotic pressure.

11The greatest amount of body water is lost through _____.
A) sweating

B) defecation
C) urine
D) breathing
Feedback: Unless sweating is excessive, this represents a minor loss.

12The main factor that causes the kidney to conserve water is _____.
A) ADH
B) osmosis
C) renin production
D) plasma filtration pressure
Feedback: Antidiuretic hormone increases the permeability and absorption of water at the distal convoluted tubules of the nephrons.

13ADH is secreted from the _____.
A) hypothalamus
B) posterior pituitary
C) anterior pituitary
D) kidney
Feedback: The kidney is the target of ADH.

14Which of the following would have a diuretic effect?
A) eating salty pretzels
B) drinking alcohol
C) sleeping
D) most drugs

Feedback: Most drugs are not diuretic.

15 ADH has a direct effect on _____.
A) blood pressure
B) water reabsorption
C) blood concentration
D) all of these
Feedback All body mechanisms are inter-related and affect multiple parameters; it is impossible to alter water levels without having some effect on pressure or concentration.

16 Excessive vomiting usually results in the phenomenon of _____.
A) water intoxication
B) dehydration
C) edema
D) hypoproteinemia
Feedback: Although the fluid lost from the gastrointestinal system is extracellular, fluid will also be lost from the blood beca use this loss must be replaced.

17 The symptoms of dehydration result from loss of _____ water.
A) intracellular
B) extracellular
C) blood
D) transcellular
Feedback: Although the loss may be caused by extracellular changes, the alteration in CNS activity such as confusion and coma, result from direct changes in the intracellular compartment.

The effects of water intoxication are usually related to _____.
A) blood pressure
B) hypoproteinemia
C) low sodium
D) high potassium
Feedback: Proteins are only indirectly involved.

19 Which of the following favor the development of edema?
A) hypoproteinemia
B) decreased venous pressure
C) decreased capillary permeability
D) lymphatic flow
Feedback: Decreased capillary permeability favors water retention.

20 Which of these is not a usual cause of hypoproteinemia?
A) glomerulonephritis
B) poor diet
C) diuresis
D) liver disease
Feedback: Urine output does not normally affect blood protein because the kidneys are only permeable to protein in diseases such as glomerulo-nephritis; the liver synthesizes protein.

21 What can be a direct cause of ascites?
A) hypertension
B) hepatic disease
C) glomerulonephritis
D) renal failure
Feedback: Since ascites is excess fluid in the peritoneal cavity, it is usually caused by diseases that affect venous return to the h eart such as liver cirrhosis or heart failure.

22 What causes the edema seen in inflammations?
A) hyperproteinemia
B) histamine
C) hypertension
D) cell damage
Feedback: High blood pressure is not directly involved with inflammation.

23 Which of the following is not true in Addison's disease?
A) sodium decreases
B) potassium decreases
C) adrenal cortex failure
D) low aldosterone
Feedback: Addison's disease usually includes lower levels of aldosterone.

24 Where are most electrolytes normally lost?
A) feces
B) sweating
C) urine
D) respiration
Feedback: Although sweating during strenuous activity can cause a drastic loss of electrolytes, the normal control mechanism is the kidneys.

25 What is the most abundant extracellular cation?
A) potassium
B) $Mg2+$
C) chloride
D) sodium
Feedback: $Na+$ is actively pumped out of cells by the cell membranes.

26 Which factor accounts for the ability of the body to conserve high levels of sodium?
A) blood pressure
B) aldosterone
C) kidney function
D) adequate diet
Feedback: By itself, the kidneys could not conserve enough sodium.

27 Which ion is usually exchanged for sodium absorption?
A) $Cl-$
B) bicarbonate
C) $K+$

D) H+
Feedback: Chloride and bicarbonate exchange by the chloride shift mechanism.

28 Which cells are most sensitive to electrolyte changes?
A) osteoblasts
B) epithelial
C) leukocytes
D) neurons
Feedback: Nerve and muscle cells are most sensitive to ion changes and must be maintained at stable levels for normal conductivity or contraction.

29 Which of these is not an effect of parathyroid hormone?
A) osteoclast stimulation
B) increase in blood Ca2+
C) increase in renal elimination
D) increase in intestinal absorption
Feedback:PTH causes the kidneys to retain Ca2+; the net effect is to raise blood calcium levels.

30 Which ion is directly related to calcium homeostasis?
A) Mg2+
B) sodium
C) phosphate
D) chloride
Feedback: Magnesium is usually related to sodium movement.

31 Hyperparathyroidism usually causes an increase in _____.
A) potassium
B) calcium
C) phosphate
D) sodium
Feedback: The parathyroids do not control potassium.

32 Which of the following does not become involved with maintaining blood calcium balance?
A) skeletal muscle
B) bone
C) kidneys
D) intestine
Feedback:Although muscle tissue uses Ca2+ in its reactions, as other tissues, it lacks the ability to regulate blood levels.

33 Which of the following is not related to hypocalcemia?
A) vitamin D deficiency
B) muscle weakness
C) tetany
D) cardiac arrhythmia
Feedback:: Muscle weakness is usually associated with the cellular imbalance of calcium associated with hypercalcemia.

34 Which is the most abundant extracellular ion?

A) phosphate
B) bicarbonate
C) chloride
D) potassium
Feedback: Chloride is abundant outside of cells and usually follows sodium; potassium is an abundant intracellular cation (posit ive).

35 What is the most important ion, which affects all of the functions of the others?
A) H+
B) Na+
C) K+
D) phosphate
Feedback:
The H+ ion or acidity is the most important ion that has the capability of interacting with the other ions; pH balance is essential for proper enzyme functioning.

36 Which of the following will not produce H+ ions?
A) respiration of glucose
B) oxidation of fatty acids
C) synthesis of phosphoproteins
D) oxidation of sulfur amino acids
Feedback:
Catabolic reactions that involve oxidation usually result in acidic end products; the synthesis of proteins or other substances may not produce H+.

37 Which of these is not associated with acidity?
A) H3PO4
B) lactic
C) ketone
D) glucose
Feedback:
Glucose will not produce an acidic solution, but lactic acid, some ketones, and phosphoric acid will produce H+.

38 What is a likely cause of hypernatremia?
A) high salt in the diet
B) kidney failure
C) diabetes insipidus
D) vomiting
Feedback: Actually the amount of salt in the diet alone will not increase blood sodium levels.

39 Hypokalemia could result from all of these except which one?
A) vomiting
B) Addison's disease
C) Cushing's disease
D) renal failure

Feedback: Cushing's disease involves an excess of aldosterone while Addison's disease causes a deficiency; potassium is usually lost as sodium is conserved.

40 Which of the following acts as a base in body fluids?
A) H+
B) HCl
C) H_2CO_3
D) HCO_3^-

Feedback:
H+ is acidity.

41 Which of the following does not play a significant role in maintaining acid-base balance?
A) blood buffers
B) stomach
C) kidney
D) respiration
Feedback: Although the acidic pH of the stomach has a significant effect on blood pH, the stomach cannot maintain blood balance.

42 Which of the following could act as a buffer?
A) bicarbonate ion
B) H_2PO_4
C) albumin
D) carbonic acid
Feedback: Proteins such as albumin could act as buffers by themselves because they are amphoteric but electrolytes must be in pairs to function as buffers.

43 The purpose of a buffer system is to _____.
A) prevent pH changes
B) increase acidity
C) decrease pH
D) maintain a pH range
Feedback: Buffers contain components that stabilize pH under conditions of added bases or acids within ranges, but do not prevent changes.

44 In the bicarbonate buffer system, _____ reacts with bases.
A) carbon dioxide
B) carbonic acid
C) bicarbonate ion
D) water
Feedback: Carbon dioxide reacts with water.

45 When a strong base reacts with the bicarbonate buffer system, _____ is formed from the base.
A) water
B) carbon dioxide

C) bicarbonate ion
D) carbonic acid
Feedback:
If one were to trace the OH- base in NaOH, it would end up as HOH or water and therefore, now as water, cannot effect pH alteration.

46 When an acid reacts with the bicarbonate buffer system, _____ is formed as an end product.
A) NaCl
B) water
C) carbonic acid
D) bicarbonate ion
Feedback:
In this buffer reaction, the strong acid has been converted to carbonic acid which effectively lowers the potential to release H+, because it is weak (has a strong H+ bond).

47 What happens to HCl in the phosphate buffer reaction?
A) ionizes
B) forms water
C) forms H_2PO_4
D) forms a weak acid and salt
Feedback:
The HCl reacts to form NaCl and NaH_2PO_4.

48 What reacts with excess acids in protein buffers?
A) carboxyl group
B) amino group
C) CO_2
D) NH_3
+
Feedback:
The amino group, NH_2, reacts to form NH_3 + which stabilizes the acidity.

49 What reacts with the excess bases in protein buffers?
A) NH_2
B) carbon dioxide
C) NH_3 +
D) carboxyl group
Feedback:
NH_2 is the base.

50 What buffers the addition of hydrogen in blood cells following the uptake of carbon dioxide?
A) albumin
B) bicarbonate
C) hemoglobin
D) phosphate
Feedback: Albumin is a plasma protein buffer.

51Which factor greatly increases the reaction between carbon dioxide and water?
A) carbonic anhydrase
B) concentration of carbon dioxide
C) concentration of bicarbonate
D) pH of hemoglobin
Feedback: Concentration does have some effect.

52Which of the following is an effect of acidosis?
A) increased diuresis
B) decreased diuresis
C) mental confusion
D) seizures
Feedback: Correct Answer: Alkalosis tends to make neurons more excitable tending towards seizures while acidosis causes CNS depression leading to coma.

53Which blood parameter is directly affected by breathing?
A) blood pH
B) carbon dioxide
C) bicarbonate levels
D) buffer chemicals
Feedback: Breathing directly alters blood levels of carbon dioxide which then leads to changes in pH.

54During periods of acidosis, the kidney will secrete _____ into the urine.
A) carbon dioxide
B) K+
C) H_2PO_4
D) HPO_4
Feedback:
Some CO_2 is eliminated..

55 In an attempt to remove acid from the blood, the kidneys will secrete _____ into the urine compartment.
A) ammonia
B) NH_4^+
C) chloride
D) monohydrogen phosphate
Feedback:
Ammonium cations (NH_4^+) were formed from a combination of ammonia and H+.

56Which mechanism requires the most time to regulate pH?
A) bicarbonate buffer
B) phosphate buffer
C) respiration
D) renal function
Feedback: The blood chemical buffers operate instantly while respiration may require several minutes to adjust pH; the kidneys requir e 12-24 hours to completely adjust pH.

57 Which condition is a generalized accumulation of body edematous tissues?
A) azotemia
B) anuria
C) acetonemia
D) anasarca
Feedback: Anuria means without urine.

58 What is the normal pH of the blood?
A) 7.40-7.50
B) 7.35-7.45
C) 6.8-7.9
D) 7.0-8.0
Feedback: The buffer systems maintain the pH range of the blood within narrow limits of 7.35-7.45.

59 What is the pH range compatible with life?
A) 7.35-7.45
B) 7.0-9.0
C) 6.8-8.0
D) 5-9
Feedback: Persons cannot survive long with pH values under 6.8 or over 8.0.

60 Hyperventilation from anxiety usually causes _____.
A) respiratory acidosis
B) metabolic acidosis
C) respiratory alkalosis
D) metabolic alkalosis
Feedback:
Breathing eliminates CO_2.

61 Lung cancer usually causes the tendency towards _____.
A) metabolic acidosis
B) metabolic alkalosis
C) respiratory acidosis
D) respiratory alkalosis
Feedback: The lungs do not cause metabolic conditions.