Biol-131 Exam 3 A

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) Which of the following is caused by the chemical reactions of gases of the respiratory system?
A) Regulation of pH B) Regulation of blood pressure
C) The synthesis of vasodilators D) Aids in defecation

2) The nose is divided into right and left halves by the _____.
A) nasal septa
B) nasal vestibules
C) nasal cavities
D) nasal fossae
E) nasal apertures

3) Each alveolus is surrounded by a web of blood capillaries supplied by the _____.
A) aorta
B) inferior vena cava
C) pulmonary vein
D) pulmonary artery
E) superior vena cava

4) The lungs contains a total of five _____.
A) laryngeal cartilages
B) choanae
C) lobes
D) tracheal cartilages
E) segmental bronchi

5) Crude sounds are formed into intelligible speech by all of the following *except* the _____.
A) oral cavity B) lips C) tongue D) pharynx E) epiglottis

6) The amount of air in excess of tidal volume that can be inhaled with maximum effort is the _____.
A) expiratory reserve volume
B) residual volume
C) inspiratory capacity
D) vital capacity
E) inspiratory reserve volume

7) How is the vital capacity calculated?
A) Inspiratory reserve volume + tidal volume
B) Respiratory volume + tidal volume
C) Expiratory reserve volume + tidal volume + inspiratory reserve volume
D) Inspiratory reserve volume + expiratory volume
E) Expiratory reserve volume + tidal volume

8) During exercise, which of the following directly increases respiratory rate?
A) Reduced oxyhemoglobin
B) Reduced blood pH
C) The Bohr effect
D) Increased amount of CO_2 in the blood
E) Increased H^+ level in the blood

9) Which of the following would slow down gas exchange between the blood and alveolar air?
A) A decrease in membrane thickness
B) A decrease in nitrogen solubility
C) An increase in membrane thickness
D) An increase in respiratory rate
E) An increase in alveolar surface area

10) In the air we breathe, which gas is found in the highest concentration?
A) Nitrogen
B) Carbon dioxide
C) Oxygen
D) Water vapor
E) Hydrogen

11) Each hemoglobin molecule can transport up to _____ oxygen molecules.
A) 3 B) 6 C) 4 D) 2 E) 5

12) Which of the following is the term for a deficiency of oxygen or the inability to utilize oxygen in a tissue?
A) Apoxia B) Anoxia C) Eupnea D) Cyanosis E) Hypoxia

13) Which of the following is a lung disease marked by abnormally few but large alveoli?
A) Pulmonary hemosiderosis
B) Cor pulmonale
C) Collapsed lung
D) Emphysema
E) Atelectasis

14) Nitrogen bubbles can form in the blood and other tissues when a scuba diver ascends too rapidly, producing a syndrome called _____.
A) pulmonary edema
B) pulmonary barotrauma
C) decompression sickness
D) hyperbaric disease
E) cerebral embolism

15) The vagus and glossopharyngeal nerves carry afferent signals from peripheral chemoreceptors to a chemosensitive area in the _____.
A) medulla oblongata
B) ventral respiratory group
C) pontine respiratory group
D) pons
E) dorsal respiratory group

16) Mucus plays an important role in cleansing inhaled air. It is produced by _____ of the respiratory tract.
A) great alveolar cells
B) goblet cells
C) squamous alveolar cells
D) ciliated cells
E) the pleurae

17) The blood transports more CO_2 in the form of _____ than in any other form.
A) bisphosphocarbonate
B) bicarbonate ions
C) dissolved CO_2 gas
D) carbaminohemoglobin
E) carboxyhemoglobin

18) Breathing is controlled solely by the medulla oblongata and pons.
A) True
B) False

19) The rate of oxygen diffusion is affected by the pressure gradient of carbon dioxide.
A) True
B) False

20) Gas transport is the process of carrying gases from the alveoli to the systemic tissues and vice versa.
A) True
B) False

21) If one inspires through their nose, which of the following answers has the correct order of structures the air would move through?

A) Nares → Vestibule → Nasal Cavity → Nasopharynx → Oropharynx → Laryngopharynx → Larynx → Trachea → Bronchiole → Respiratory Bronchiole → Terminal Bronchiole → Primary Bronchus → Secondary Bronchus → Tertiary Bronchus → Alveolar Duct → Alveolar Sac → Alveolus

B) Nares → Nasal Cavity → Vestibule → Nasopharynx → Oropharynx → Laryngopharynx → Larynx → Trachea → Primary Bronchus → Secondary Bronchus → Tertiary Bronchus → Bronchiole → Respiratory Bronchiole → Terminal Bronchiole → Alveolar Duct → Alveolar Sac → Alveolus

C) Nares → Vestibule → Nasal Cavity → Nasopharynx → Oropharynx → Laryngopharynx → Larynx → Trachea → Primary Bronchus → Secondary Bronchus → Tertiary Bronchus → Bronchiole → Terminal Bronchiole → Respiratory Bronchiole → Alveolar Duct → Alveolar Sac → Alveolus

D) Nares → Nasal Cavity → Vestibule → Nasopharynx → Oropharynx → Laryngopharynx → Larynx → Trachea → Primary Bronchus → Secondary Bronchus → Tertiary Bronchus → Bronchiole → Terminal Bronchiole → Respiratory Bronchiole → Alveolar Duct → Alveolar Sac → Alveolus

22) Upon inspiration, what is the name of the air in the conducting zone that is not available for gas exchange?

A) Tracheal dead space
B) Alveolar dead space
C) Conducting dead space
D) Anatomical dead space

23) How is alveolar air different than inspired air?

A) Alveolar air has a higher PO_2 than inspired air.
B) Alveolar air has a higher PH_2O than inspired air.
C) Alveolar air has a lower PCO_2 than inspired air.
D) Alveolar air has a higher PN_2 than inspired air.

24) Hypocapnia will lead to which of the following conditions?

A) Hyperventilation due to alkalosis
B) Hypoventilation due to alkalosis
C) Hyperventilation due to acidosis
D) Hypoventilation due to acidosis

25) The expansion of the lungs during inspiration generates a pressure gradient causing air to flow into the lungs. This is an example of Boyle's law.

A) True
B) False

26) A byproduct of protein catabolism, _____ constitutes approximately one-half of all nitrogenous waste.

A) azotemia B) ammonia C) uric acid D) urea E) creatinine

27) Which organ system excretes nitrogenous wastes?
A) The respiratory system
B) The urinary system
C) The cardiovascular system
D) The digestive system
E) The integumentary system

28) The _____ is *not* an organ of the urinary system.
A) ureter
B) urinary bladder
C) kidney
D) liver
E) urethra

29) The medial concavity of the kidney is called the _____, which admits the renal nerves, blood vessels, lymphatic vessels, and ureter.
A) cortex B) corpuscle C) medulla D) capsule E) hilum

30) The _____ innervation of the kidneys reduces urine production, while the function of its _____ innervation is unknown.
A) parasympathetic; sympathetic
B) enteric; somatic
C) central; peripheral
D) peripheral; central
E) sympathetic; parasympathetic

31) A single lobe of a kidney is comprised of _____.
A) one collecting duct and all nephrons that drain into it
B) one pyramid and the overlying cortex
C) a renal medulla and two renal columns
D) two calyces and a renal pelvis
E) one major calyx and all of its minor calyces

32) A renal pyramid voids urine into the _____.
A) renal medulla
B) ureter
C) major calyx
D) renal papilla
E) minor calyx

33) Which of the following correctly traces blood flow from the renal artery into the renal cortex?
A) Segmental a. → interlobar a. → arcuate a. → interlobular a.
B) Segmental a. → arcuate a. → interlobar a. → interlobular a.
C) Interlobar a. → interlobular a. → segmental a. → arcuate a.
D) Arcuate a. → interlobar a. → afferent arteriole → interlobular a.
E) Afferent arteriole → interlobular a. → arcuate a. → interlobar a.

34) The transition from an afferent arteriole to an efferent arteriole occurs in the _____.
A) glomerulus
B) peritubular capillaries
C) medulla
D) cortical radiate veins
E) vasa recta

35) Blood plasma is filtered in the _____.
A) renal column
B) renal tubule
C) renal corpuscle
D) renal capsule
E) renal calyx

36) Which of the following form the inner layer of the glomerular capsule and wrap around the capillaries of the glomerulus?
A) Mesangial cells
B) Nephrocytes
C) Macula densa cells
D) Podocytes
E) Monocytes

37) Glucose and amino acids are reabsorbed from the glomerular filtrate by the _____.
A) collecting duct
B) glomerular capillaries
C) distal convoluted tubule
D) proximal convoluted tubule
E) renal corpuscle

38) Which of the following would reduce the glomerular filtration rate?
A) A drop in oncotic pressure
B) Vasoconstriction of the afferent arteriole
C) Vasodilation of the afferent arteriole
D) Vasoconstriction of the efferent arteriole
E) An increase in osmotic pressure in the glomerular capsule

39) In response to a drop in overall blood pressure, _____ stimulates constriction of the glomerular inlet and even greater constriction of the outlet.
A) angiotensin II
B) aldosterone
C) parathyroid hormone
D) azotemia
E) sodium chloride

40) Renin hydrolyzes angiotensinogen, which is released from the _____, to form angiotensin I.
A) liver B) spleen C) kidneys D) lungs E) heart

41) Which of the following is *not* reabsorbed by the proximal convoluted tubule?
A) Sodium chloride
B) Urea
C) Hydrogen ions
D) Water
E) Potassium

42) Which of the following is a direct result of antidiuretic hormone?
A) Decreased urine volume
B) Increased urine volume
C) Decreased urine molarity
D) Increased urine acidity
E) Increased urine salinity

43) Aldosterone acts on the _____.
A) descending limb of the nephron loop
B) proximal convoluted tubule
C) medullary portion of the collecting duct
D) distal convoluted tubule
E) glomerulus

44) In the thick segment of the ascending limb of the nephron loop, K^+ reenters the cell from the interstitial fluid via the _____. K^+ is then secreted into the tubular fluid.
A) countercurrent exchange
B) countercurrent multiplier
C) vasa recta
D) juxtaglomerular apparatus
E) Na^+-K^+ pump

45) Hypocalcemia stimulates _____.
A) secretion of renin
B) a decrease in aldosterone production
C) vasoconstriction of the afferent arterioles
D) secretion of parathyroid hormone
E) an increase in blood urea nitrogen

46) In a state of fluid balance, average daily fluid gains and losses are equal.
A) True
B) False

47) Hypovolemia refers to a reduction in total body water while maintaining normal osmolarity.
A) True
B) False

48) Hyponatremia is usually a result of hypotonic hydration.
A) True
B) False

49) Where is the greatest volume of water in the body found?
A) Transcellular fluid
B) Extracellular fluid (ECF)
C) Tissue (interstitial) fluid
D) Intracellular fluid (ICF)
E) Blood plasma and lymph

50) In which compartment would fluid accumulate in edema?
A) Transcellular fluid
B) Blood plasma
C) Intracellular fluid
D) Lymph
E) Tissue (interstitial) fluid

51) What is the function of antidiuretic hormone?
A) It stimulates angiotensin II secretion.
B) It inhibits salivation and thirst.
C) It promotes water conservation.
D) It stimulates hypothalamic osmoreceptors.
E) It targets the cerebral cortex.

52) What is the principal cation of the ECF?
A) K^+ B) Na^+ C) P_i D) Ca^{2+} E) Cl^-

53) What is the function of aldosterone?

A) It increases both Na^+ and K^+ secretion.

B) It increases both Na^+ and K^+ reabsorption.

C) It causes the urine to be more diluted.

D) It reduces Na^+ reabsorption and K^+ secretion.

E) It increases Na^+ reabsorption and K^+ secretion.

54) Hypernatremia is a plasma _____ concentration above normal.

A) Cl^- B) P_i C) Ca^{2+} D) K^+ E) Na^+

55) How is calcium concentration in the body regulated?

A) By hormones

B) By the parasympathetic nervous system

C) By chloride and phosphate concentrations in the plasma

D) By sodium and calcium concentrations in the plasma

E) By the sympathetic nervous system

Answer Key
Testname: BIOL-131 EXAM 3 A

1) A
2) A
3) D
4) C
5) E
6) E
7) C
8) D
9) C
10) A
11) C
12) E
13) D
14) C
15) A
16) B
17) B
18) B
19) B
20) A
21) C
22) D
23) B
24) B
25) A
26) D
27) B
28) D
29) E
30) E
31) B
32) E
33) A
34) A
35) C
36) D
37) D
38) B
39) A
40) A
41) C
42) A

43) D
44) E
45) D
46) A
47) A
48) A
49) D
50) E
51) C
52) B
53) E
54) E
55) A