Biology 142 - General Biology Name_____
Spring 2008 - Dr. Carey - Exam 3

Part I - Multiple choice - 1 pt each.

1. Portal vessels carry blood: A) through the brain B) from arteriole to venule C) from venule to arteriole D) from lungs to heart E) from one capillary bed to another

2. In mammals, lymph returns to the blood circulation system via: A) lymph hearts B) pressure from skeletal muscles C) diffusion D) respiratory movements E) more than one of the above

3. Which of the following is true of all respiratory systems? A) exchange surfaces are moist B) they are enclosed in a chamber C) they are maintained at a constant temperature D) they are found only in vertebrates E) more than one of the above

4. Of the choices below, the correct sequence for blood flow in the human heart is: A) right atrium - right ventricle - pulmonary artery B) posterior vena cava - left atrium - left ventricle C) left atrium - right atrium - aorta D) left atrium - left ventricle - pulmonary artery E) pulmonary artery - left atrium - left ventricle

5. Which of the following would you <u>least</u> expect to find in intracellular fluid compared to interstitial fluid? A) sodium B) potassium C) water D) protein E) no right answer, all of the above are equally common

6. Which of the following would you <u>least</u> expect to find in lymphatic fluid as compared to plasma? A) sodium B) water C) chloride D) potassium E) no right answer, all of the above are equally common

7. Neurotransmitters are classed as ____ hormones. A) endocrine B) paracrine C) exocrine D) pheromones E) none of the above

8. Amine hormones are produced by the: A) posterior pituitary B) adrenal cortex C) adrenal medulla D) parathyroids E) pancreas F) more than one of the above

9. Steroid hormones are produced by the: A) posterior pituitary B) adrenal cortex C) adrenal medulla D) parathyroids E) pancreas F) more than one of the above

10. Which of the following hormones probably does <u>not</u> use a second messenger? A) ACTH B) parathyroid hormone C) aldosterone D) glucagon E) oxytocin

11. In a few words, explain why you chose the answer you did in question 10.
_____

12. Labeled blood leaves the left ventricle of a human heart and travels into the kidney. Some seconds later this blood is found in a vein in the lungs. What is the minimum number of capillary beds this blood has gone through? A) 0 B) 1 C) 2 D) 3 E) 4

13. Using the choices in question 12, what is the minimum number of heart chambers the blood has passed through? _____

14. A cellular (formed) element in the blood that plays a role in gas transport is: A) leucocytes B) lymphocytes C) erythrocytes D) fibrinocytes E) platelets

Part II - True-false - 1 pt each.

1. If body pH is elevated, respiratory rate will tend to speed up.

2. Fish living in freshwater tend toward a higher than normal water concentration in the blood unless their various excretory systems can compensate.

3. cAMP has different effects in different cells because each cell has its own type of protein kinase enzyme.

4. Pheromones usually target cells in close proximity to the gland.

5. In kidney filtration, fluid is moving from peritubular capillaries to the nephron.

6. At the end of the proximal convoluted tubule, tubular fluids are typically equal to blood plasma in osmotic pressure.

7. Oxygen concentration in the blood is the primary regulator of respiratory under relatively normal conditions.

8. In insects, gas exchange occurs across virtually all cell membranes in the body.

9. In mammals, exchange of materials between blood plasma and body tissues occurs only in the alveoli.

10. Exchange capabilities of the proximal tubule can be readily altered by various hormones.

Part III - Fill-in - 1 pt each blank.

1. Osmotic pressure of the urine is determined by the effects of the hormone _____. This hormone affects _____ permeability in the walls of the _____ and the _____.

2. In a typical systemic capillary _____ tends to occur near the _____ end because the osmotic pressure difference is greater than the hydrostatic (blood) pressure difference. At the other end _____ occurs because the hydrostatic (blood) pressure difference is greater here. The primary reason for the difference in osmotic pressure across a capillary wall is the high concentration of _____ in plasma.

3. A _____ is used to maintain stability in any system. In such a mechanism, a(n)_____, initially detects environmental changes. At the end a(n) _____ creates the opposite environmental change.

4. Mucus in the respiratory system serves two main functions:
   1)_____ 2)_____

5. In a _____ circulatory system there can be no real distinction between plasma and interstitial fluids.

6. The prime controller of respiratory rate is _____. Sensory receptors for this substance are called _____.

7. Fill in the blanks in this hormone table (There are 12)

HORMONE	GLAND	TARGET	FUNCTION
calcitonin			
	heart atrium	kidney	
		liver	glycogen to glucose
epinephrine		all cells	fight or flight
		adrenal cortex	produce its hormones
prolactin inhibiting hormone	hypothalamus		

Part IV - Short answer - pts as indicated.

1. Define: (3 pts each)
   A. negative pressure respiration

   B. larynx

   C. paracrine hormone

   D. exocrine hormone

   E. carbamino compound

2. Distinguish between open and closed circulation systems. (5 pts)

3. What is the function of the Loop of Henle (thin loop)? How does it perform this function? (10 pts)

4. Describe how the nervous system can to a large degree oversee the functioning of your endocrine system. (8 pts)

5. Describe the methods through which carbon dioxide is transported in the blood. (10 pts)