D-277 Dental Physiology Quiz 4
Wednesday, June 4, 2008

Name _____ Student Number ☐☐☐☐☐☐☐☐☐

***NOTE: 2 PAGES, 6 QUESTIONS !!!

1. A patient has an overall $\dot{V}/\dot{Q}$ ratio of 1.3. This would be consistent with:
   a. Normality
   b. A block in ventilation.
   c. *A block in perfusion.
   d. That pulmonary bloodflow is abnormally increased compared to normal.

2. There is a normal difference between the P_AO_2 and P_aO_2 in the radial artery compared to end pulmonary capillaries. Why ?
   a. Because large amounts of oxygen are utilized for metabolism by the tissues comprising the systemic arteries.
   b. Because the partial pressure of O_2 in the end-pulmonary capillaries is normally not in equilibrium with the partial pressure of O_2 jn alveolar gas
   c. Because large amounts of oxygen diffuses out of the large arteries
   d. *Because of the presence of normal anatomic shunts such as the thebesian veins.

3. Choose the one element that is responsible for optimizing the efficiency of the respiratory system ? That is setting the respiratory rate and depth for the least amount of work ?
   a. *DRG (dorsal respiratory group).
   b. Rapidly adapting irritant receptors.
   c. Unmyelinated C fibers.
   d. Nasal mucosal receptors.

4. Which of these would lead to a net movement of water out of the ICF?
   a. drinking 6 liters of pure water
   b. *sweating without replacing either water or NaCl
   c. sweating and replacing the water but not the salt
   d. receiving 2 liters of isotonic NaCl intravenously

5. Which statement is a correct summary of how normal human kidneys work?

   a. About 600 ml of plasma enter the afferent arterioles every minute, about 40% of the water is filtered into the tubules, the remaining 60% of the plasma passes through the efferent arterioles, and only half of the glomerular filtrate is reabsorbed.

   b. About 300 ml of plasma enter the afferent arterioles every minute, about 20% of the water is filtered into the tubules, the remaining 80% of the plasma passes through the efferent arterioles, and most of the glomerular filtrate is reabsorbed.

   c. *About 600 ml of plasma enter the afferent arterioles every minute, about 20% of the water is filtered into the tubules, the remaining 80% of the plasma passes through the efferent arterioles, and most of the glomerular filtrate is reabsorbed.

   d. About 300 ml of plasma enter the afferent arterioles every minute, about 10% of the water is filtered into the tubules, the remaining 90% of the plasma passes through the efferent arterioles, and only half of the glomerular filtrate is reabsorbed.

6. Cl^-/formate$^-$ exchange and Na^+/H^+ exchange are believed to play a role in a transcellular mechanism of Na^+ reabsorption in the:

   a. *proximal tubule.

   b. thick ascending limb of the loop of Henle.

   c. distal convoluted tubule.

   d. collecting duct.