Questions Related to Cardiovascular Histology

1. What kind of cellular junction(s) is/are found at intercalated disks?
   
   Gap junctions and desmosomes

2. Differentiate between the histology of the endocardium and both layers of the pericardium.

   Endocardium = simple squamous epithelium + elastic & collagen fibers
   Visceral pericardium = simple squamous epithelium + b.v. & nerves (serous membrane)
   Parietal pericardium = outer layer: dense fibrous connective tissue
                           inner layer: serous membrane

3. Arteries and veins are both lined with endothelium, and are fortified with connective tissue beneath the inner epithelium. Describe the tissue(s) which make up the endothelium?
   
   Simple squamous epithelium + elastic fibers

4. Veins contain valves (specialization of the inner layer) which prevent the back flow of blood and help blood flow only in the direction toward the heart. Why is this specialization necessary?
   
   Veins have a relatively large lumenal diameter to reduce the resistance of blood flow back to the heart. In addition, the pressure produced by heart pumping does not extend beyond the capillary beds into the veins. Intermittent respiratory movements and skeletal muscle contraction are largely responsible for blood flow in veins, and so the valves help prevent back flow when these actions temporarily stop.

5. Which division of the nervous system innervates the smooth muscle in the walls of arteries and veins and how does it normally function?
   
   Sympathetic nerves innervate most blood vessels, causing either vasoconstriction (as in digestive organs) or vasodilation (as in skeletal muscles), depending on the type of receptor for nor-epinephrine on the smooth muscle cells.

6. Which vessel has a larger lumen, the corresponding artery or vein? Briefly explain why.
   
   Veins; in order to reduce the resistance of blood flow by passive means back toward the heart.

7. Compare and contrast the histology of a capillary in the dermis, a glomerulus of the kidney, and a capillary within the brain.

   Most porous: glomerulus of the kidney, for filtration of blood
   Moderate porosity: dermal capillaries, for nutrient and waste exchange
   Non-porous: most capillaries in the brain (blood brain barrier)