**Blood Vessels**

**A. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **1. Definition: vessel that transports blood \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from heart at high**

**pressure**

** 2. Types**

 **a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ arteries**

 **1) largest**

 **2) include aorta and some of its branches**

 **3) can stretch to accommodate surge of blood as heart**

 **contracts**

 **b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ arteries**

 **1) carry blood to specific organs**

 **2) smaller in diameter, muscular layer is proportionately**

 **thicker**

 **3) examples: brachial, femoral, gastric**

 **c. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **1) critically important in regulating blood flow**

 **2) function by variable contraction of smooth muscle in**

 **walls which increases resistance to blood flow and helps**

 **to regulate BP**

 **d. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **1) short connecting vessels that connect true arterioles to**

**capillaries**

 **2) have regulatory valves (smooth muscle =**

 **precapillary sphincters)**

**B. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **1. Structure**

 **a. microscopic**

 **b. more than one billion in body**

 **c. distributed non-uniformily**

 **d. activity \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with tissue rate of**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **2. Function**

**a. carry blood \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (small veins)**

**b. exchange of nutrients and other vital substances**

**C. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **1. Definition: vessel transporting blood from capillaries \_\_\_\_\_\_\_\_\_\_\_\_\_\_ heart**

**2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **a. small-diameter, narrow lumens, and porous, this walls**

 **b. walls are endothelial cells and a few muscle cells**

 **3. Structure of Veins**

 **a. larger venous channels**

 **b. capacitance: stretch and increase capacity with no pressure change**

 **c. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: one way to keep blood moving toward the heart**

**D. Overall Structure**

 **1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **a. provide smooth surface \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **b. and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **c. have intercellular clefts which vary in size & number influencing**

**the diffusion of substances**

 **2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **1) woven together in wall to strengthen**

 **b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **1) secreted into extracellular matrix**

 **2) organized into circular patterns to allow recoil**

 **c. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **1) not found in capillaries**

 **2) exerts active tension**

 **3. Layers**

** a. Tunica \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, external layer**

 **2) composed of strong, flexible, fibrous connective tissue**

 **3) prevents tearing and anchors**

 **b. Tunica \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ layer**

 **2) smooth muscle and elastic connective tissue**

 **3) permits changes in vessel diameter**

 **4) innervated by autonomic nerves**

 **c. Tunica \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ layer**

 **2) endothelium continuous with that which lines the**

 **heart**