

## **Cardiovascular System—Vessels/Circulation**

### **Required:**

1. Compare and contrast arteries, veins, and capillaries both functionally and structurally.
2. Explain how blood flows via a pressure gradient.
3. Define blood pressure and differentiate between systolic and diastolic pressure.
4. Discuss blood pressure as it relates to CO and Resistance.
5. Discuss factors which affect blood pressure. Include examples.
6. Define total peripheral resistance and indicate how resistance is affected by the length of vessels, by the viscosity of the blood and by the radius of the vessels.
7. Explain how vascular resistance is regulated by the autonomic nervous system.
8. Explain methods by which blood pressure is controlled and regulated in the body either via regulation of CO or blood vessel radius.
9. Describe the relationship between blood volume and blood pressure.
10. Explain the relationship between vascular resistance and flow.
11. Describe the roles of the vasomotor center, baroreceptors, and chemoreceptors in blood pressure regulation.
12. Discuss the role of the capillary network.
13. Define  $P_{eff}$
14. Explain Starling's Law of the Capillaries.
15. Explain how blood flow through capillaries in skeletal muscle and the brain is regulated.
16. Briefly describe the structure and function (role) of each of the following circulatory routes: systemic, pulmonary, coronary, cerebral, hepatic portal, and fetal. Include and unique features where appropriate.
17. Be able to calculate pulse pressure and mean arterial pressure given the

systolic and diastolic pressures.

18. Explain the importance of mean arterial pressure to the overall functioning of the cardiovascular system.

19. Describe how cardiac output, resistance, MAP and blood flow change during exercise.