

Biology 12

Human Biology

Study Guide

Circulatory System

Vocabulary

10.1 The Blood Vessels

- arteries
- arterioles
- capillaries
- venules
- veins
- endothelium
- precapillary sphincter muscles
- valves

10.2 Blood

- formed elements
- plasma
- red blood cells (erythrocytes)
- hemoglobin
- anemia
- white blood cells (leukocytes)
- lymphocytes
- antibody
- antigen
- platelets (thrombocytes)
- coagulation
- fibrinogen
- hemophilia
- capillary-tissue fluid exchange
- tissue fluid
- lymphatic capillaries

10.3 The Human Heart

- myocardium
- pericardium
- left atrium
- right atrium

- left ventricle
- right ventricle
- septum
- atrioventricular valves
 - bicuspid
 - tricuspid
- chordae tendineae
- semilunar valves
 - aortic
 - pulmonary
- pulmonary trunk
- pulmonary arteries
- pulmonary veins
- pulse
- cardiac cycle
- heart rate
- systole
- diastole
- stethoscope
- sinoatrial (SA) node
- atrioventricular (AV) node
- atrioventricular bundle
- Purkinje fibres
- autonomic nervous system
- electrocardiogram (ECG)

10.4 The Vascular Pathways

- pulmonary circuit
- systemic circuit
- aorta
- superior vena cava
- inferior vena cava
- coronary arteries
- coronary veins

- subclavian arteries & veins
- jugular vein
- carotid artery
- mesenteric artery
- renal artery & vein
- iliac artery & vein
- hepatic portal vein
- hepatic vein
- systolic pressure
- diastolic pressure
- blood pressure
- sphygmomanometer
- varicose veins

10.5 Fetal Circulation

- fetal circulation
- arterial duct
- oval opening
- umbilical artery
- umbilical vein
- venous duct

10.6 Lymphatic System

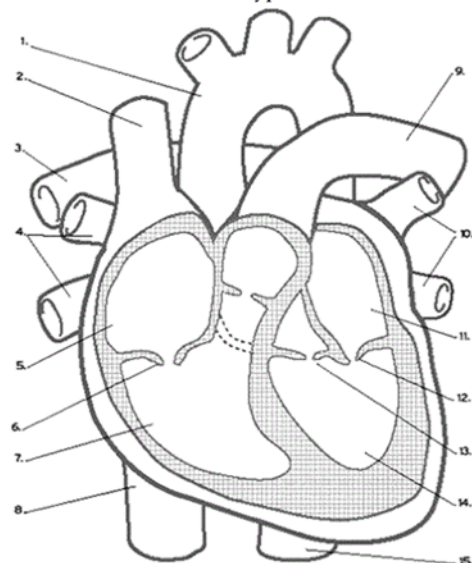
- lymph node
- lymphatic vessels
- tonsils
- thymus gland
- spleen

10.8 Cardiovascular Disorders

- hypertension
- hypotension

Diagrams

- Distinguishing visual characteristics of types of blood vessels
- Appearance of 3 types of blood cells
- Heart and ECG
- Major blood vessels
- Fetal circulatory system



Key Points (hint: go through PLOs and check off everything you know, then study the rest!)

PLO C3 Describe the interrelationships of the structures the heart

PLO C4 Analyse the relationship between heart rate and blood pressure

PLO C5 Analyse the functional interrelationship of the vessels of the circulatory system

PLO C6 Describe the components of blood

PLO C7 Describe the interrelationship of the structures of the lymphatic system

Possible Written Section Questions

1. Explain why the following statement “arteries always carry oxygenated blood and veins always carry deoxygenated blood” is false using specific examples.
2. Describe how blood flow is controlled in each of the three major types of blood vessels.
3. Why is there no pulse in veins?
4. What forces blood in veins back to heart?
5. The veins have very low blood pressure and blood velocity. Then how is the blood successfully returned to the heart?
6. Where are the sphincter muscles located and what is their function?
7. List several specific substances that diffuse across the capillary walls.
8. How does the circulatory system aid in thermoregulation?
9. Name the three types of blood cells in the whole portion of blood (common and scientific). Give a basic function of each.
10. Give one way that the body ensures that oxygen transport is as efficient as possible.
11. What organelle is a mature human red blood cell missing? What cellular process can a red blood cell not carry out?
12. Describe one relationship between fibrinogen and blood clotting. Or leukocytes and agglutination.
13. Define capillary exchange and describe the two major forces involved.
14. Why does water and other substances move out of plasma and into tissue spaces at the arteriole end of a capillary bed, yet into plasma from the tissue spaces at the venule end?
15. Name the four valves in the heart. Give the specific role for each pair of valves.
16. Explain the function of the chordae tendineae in the heart.
17. What causes the “lub-dub” sound heard at the chest wall?
18. Describe the intrinsic and extrinsic control of the heartbeat.
19. Compare (similarities) and contrast (differences) the SA node and the AV node.
20. Why is the SA node called the pacemaker?
21. Contrast diastole and systole **using the cardiac cycle**. Describe the contraction and relaxation of specific parts of the heart during various phases.
22. Explain the cardiac cycle using the following terms: AV node, diastole, SA node, systole
23. Name three blood vessels that can easily be used to find a pulse. Identify the pulse location for each one.
24. Identify each of the “circuits” in a double-circuit system and what side of the heart they originate from.
25. Describe the pathway of blood from the fingers to the toes. Or from the brain to the liver.
26. Identify the oxygenated nature of blood and the direction of blood flow in the various blood vessels of an umbilical cord.
27. Explain the function of the placenta.
28. What two fetal heart specializations allow the blood to bypass the non-functional pulmonary circuit? Describe or illustrate their location.
29. Describe several roles of the lymphatic system.

Hands-on Laboratory Knowledge: from the Heart Dissection