

**ANATOMY AND PHYSIOLOGY CAPTAINS TRYOUT TEST ANSWER KEY-
WAUBONSIE VALLEY HIGH SCHOOL**

1. B
2. A
3. D
4. C
5. D
6. A
7. C
8. B
9. C
10. B
11. D
12. D
13. B
14. A
15. D
16. D
17. False
18. True
19. False
20. False
21. A
22. C
23. B
24. D
25. B
26. B
27. C
28. True
29. False
30. False

FOR SHORT RESPONSE: points awarded based on completeness of responses and how adequately/appropriately they answered the question

31. **2 points** awarded for TWO of the following symptoms of congestive heart failure given: exercise intolerance, shortness of breath, fluid retention and swelling, fatigue, weight gain, and urinating frequently. **1 point** awarded for ONE of the following treatments given: drugs such as Angiotensin-converting enzyme inhibitors (ACE inhibitors), which open up narrowed blood vessels to improve blood flow, or vasodilators are used. Diuretics are used

to reduce the body's fluid content. Angioplasty, a procedure to open up blocked arteries, can also be used.

32. **1.5 points** awarded for correct description of the structure of the thymus: The thymus is a two-lobed structure that is positioned in the upper chest cavity and partially extends into the neck region. It is situated above the pericardium of the heart, in front of the aorta, between the lungs, below the thyroid, and behind the breastbone. The thymus has a thin outer covering called a capsule and consists of three types of cells: epithelial cells, lymphocytes, and Kulchitsky cells (aka neuroendocrine cells). **1.5 points** awarded for the correct description of the function of the thymus: to generate and promote the development of T lymphocytes.
33. **1.5 points** awarded for each correct description of a function of the kidney (**3 points maximum**): the functions of the kidneys include passing waste as urine, filtering blood before sending it back to the heart, maintaining overall fluid balance and aiding in homeostasis, regulating blood volume, regulating blood pressure, regulating pH of the blood, production of red blood cells, regulation of the ionic composition of blood, synthesis of Vitamin D, and excretion of waste products and foreign substances.
34. **1 point** awarded for each correct explanation of the effect on the cardiovascular system (**3 points maximum**):
- Exercise: When done regularly, moderate- and vigorous-intensity physical activity strengthens your heart muscle. This improves your heart's ability to pump blood to your lungs and throughout your body. As a result, more blood flows to your muscles, and oxygen levels in your blood rise.
 - Smoking: causes an instant and long-term rise in blood pressure, causes an instant and long-term increase in heart rate, reduces blood flow from the heart, reduces the amount of oxygen that reaches the body's tissues, increases risk for blood clots, damages blood vessels, doubles the risk of stroke (via reduced blood flow to the brain), linked with depression and stress
 - Alcohol: association between drinking and cardiovascular diseases such as hypertension, coronary heart disease, stroke, peripheral arterial disease, and cardiomyopathy. Drinking too much alcohol can also raise the levels of some fats in the blood (triglycerides), lead to high blood pressure, heart failure, and increased calorie intake. Other serious problems include cardiomyopathy, cardiac arrhythmia, and sudden cardiac death.
 - Caffeine: caffeine raises blood pressure for many hours, and this increase may be large enough to affect heart attack and stroke risk. Additionally, caffeine can facilitate the release of natural hormones that act on the heart to release norepinephrine, which can produce a stimulated effect similar to that of adrenaline.
 - Drugs: Most illegal drugs can have adverse cardiovascular effects, ranging from abnormal heart rate to heart attacks. Injecting drugs can lead to collapsed veins and

bacterial infections of the blood vessels and heart valves. Many drugs cause changes in heart rate and blood pressure, heart attacks, seizures, and respiratory arrest. Some drugs, like cocaine, can stiffen the arteries and thicken heart muscle walls, increasing susceptibility to a heart attack.

35. **1 point** awarded for the correct identification of a cause of renal failure: diabetes, autoimmune or genetic diseases, nephrotic syndrome, urinary tract problems, heart attack, illegal drug use and drug abuse, not enough blood flowing to the kidneys, urinary tract problems. **2 points** awarded for the correct identification of two of the following symptoms of renal failure: itching, muscle cramps, nausea and vomiting, not feeling hungry, swelling in your feet and ankles, too much urine or not enough urine, trouble catching your breath, trouble sleeping.
36. **1.5 points** awarded for the correct description of the structure of the nephron: Each nephron is composed of a renal corpuscle, the initial filtering component, and a renal tubule that processes and carries away the filtered fluid. **1.5 points** awarded for the correct description of the function of the nephron: a nephron is responsible for removing waste products, stray ions, and excess water from the blood, produces urine.
37. To get the full **3 points**, description must include an explanation of BOTH systolic and diastolic pressure: Systolic vs. diastolic pressure: systolic blood pressure measures the pressure in your blood vessels when your heart beats, while diastolic blood pressure measures the pressure in your blood vessels when your heart rests between beats.
38. **1.5 points** awarded for the correct description of the structure of arteries: contain thick artery walls, composed of layers called the tunica externa (collagen fibers and elastic tissue), tunica media (smooth muscle), and tunica intima (elastic tissue). **1.5 points** awarded for the correct description of the function of arteries: carry blood that is oxygenated after it has been pumped from the heart away from the heart to the tissues. Coronary arteries also aid the heart in pumping blood.
39. **1 point** awarded for each correct treatment identified for atherosclerosis (**3 points maximum**): lifestyle changes, such as eating a healthy diet and exercising. Medications administered include cholesterol medications, anti-platelet medications, Beta blocker medications, Angiotensin-converting enzyme (ACE) inhibitors, calcium channel blockers, and water pills (diuretics). Surgical procedures including angioplasty and stent placement, endarterectomy, fibrinolytic therapy, and bypass surgery are sometimes used if necessary.
40. **3 points** awarded for a complete, detailed description of urine formation, including the key steps of glomerular filtration, reabsorption, and secretion. How urine is formed: the glomerulus filters water and other substances from the bloodstream by pushing water and solutes from the capillaries into the capsule through a filtration membrane. Then, the filtration membrane keeps blood cells and large proteins in the bloodstream. After that, reabsorption moves nutrients and water back into the bloodstream, and waste ions and hydrogen ions are secreted from the blood to complete the formation of urine.