

1	2	3	4	5	6	7

Please Do Not Write in These Spaces

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Score

Biology 2325 – Human Anatomy Exam 2

Name _____
Last
First (Please Print Clearly)

DIRECTIONS: Read each question carefully before answering. Understanding the question is a part of an examination. Answer all of the questions in the spaces provided on the examination. Print your name in the space provided on the first page of the exam and at the top of each subsequent page. This exam consists of 7 questions on 6 pages. It is your responsibility to see that the examination is complete. Please write in a legible manner or your answers will be marked wrong. **DO NOT WRITE IN RED INK AND DO NOT USE ABBREVIATIONS IN ANY OF YOUR ANSWERS.**

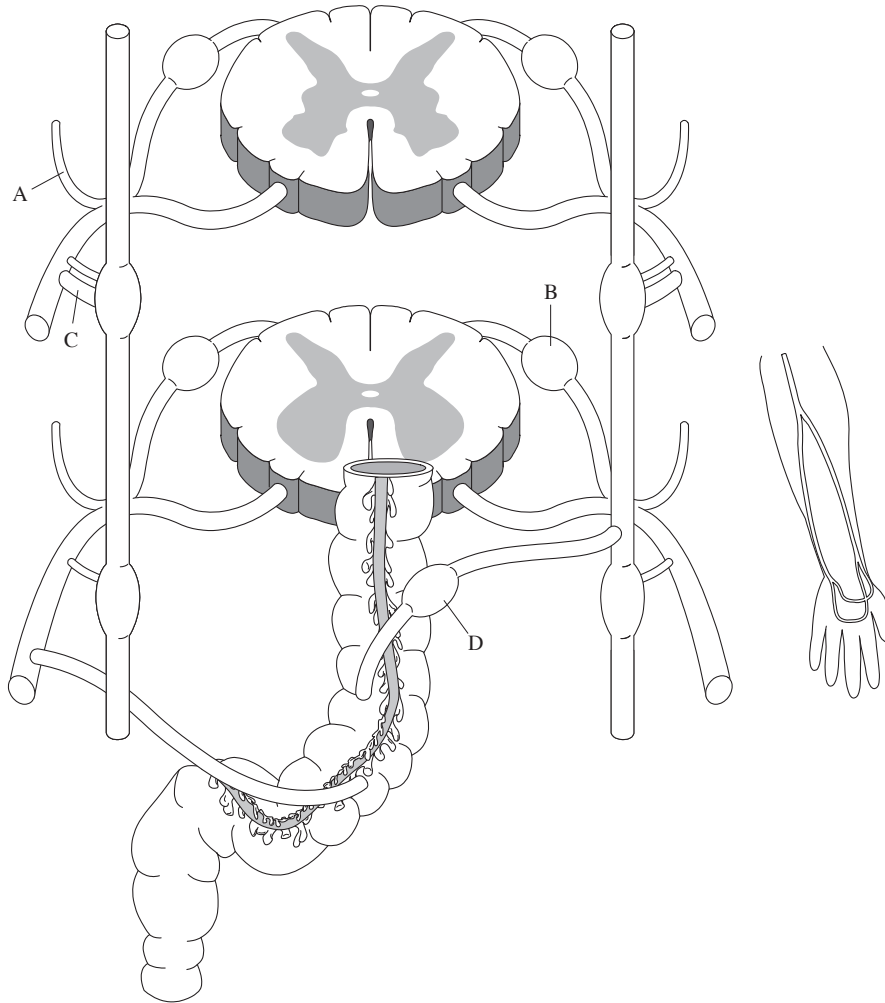
- (11 points)** In the right hand column trace a molecule of urea from the heart to the point where it is leaving the body as a component of the urine. Clearly indicate all diffusional barriers and the tissues associated with them. Your trace must consist of columnar list of structures traversed by the urea molecule.

Heart



Urine leaving the body

2. (22 points) Using a different color for each type of neuron, trace a autonomic reflex to an artery in the left antebrachium and an autonomic reflex to the muscular wall of the gut tube organ at the bottom of the illustration. Clearly label all neurons, neuron cell bodies, and axons/central and peripheral processes, on all the neurons you draw. Neuron cell bodies, and synapses must be drawn in their correct locations or they will be marked wrong. Finally, use the illustration to answer the questions at the bottom of the page. **Be as specific as possible when answering the questions below.** For example, “motor neurons” or “multipolar neurons” are not specific answers because these could describe many different neurons.



Structure A innervates the _____ muscles and the _____ which covers them.

Structure B is a _____ and contains _____ cell bodies.

Structure C is a _____ and only _____ neurons pass through it.

Structure D is a _____ and contains _____ cell bodies.

Which levels are represented by the top spinal cord section? What evidence in the illustration supports your answer?
 Note: the evidence you site must be visible in the illustration or it will be marked wrong.

3. (8 points) Excluding any arteries and veins that are completely enclosed within the pericardial cavity, list 8 arteries and 8 veins located within the mediastinum. **Note: Right and left vessels of the same name count as 1 vessel (e.g., right “thoracic” artery and left “thoracic” artery will count for 1 “thoracic artery”).**

Arteries

Veins

4. (6 points) Trace a red blood cell from the heart to upper aspect of the left rectus abdominis muscle using three distinctly different routes. Trace 1 must reflect the normal vascular pathway and traces 2 and 3 must each use a different collateral pathway.

Trace 1 (normal route)

Heart

Left rectus abdominis

Trace 2 (collateral route)

Heart

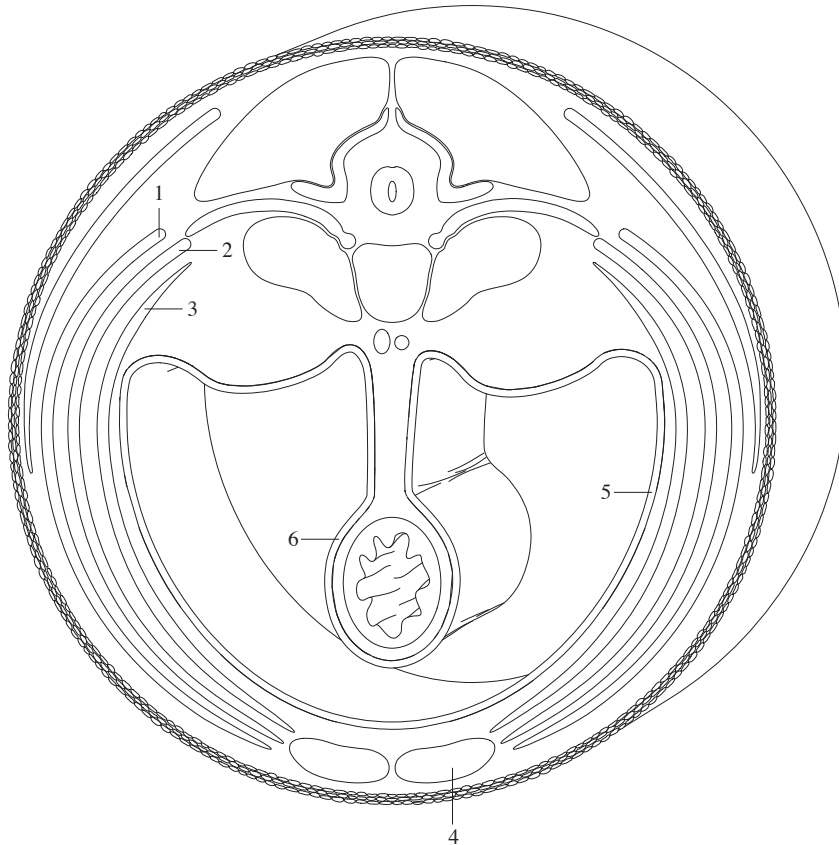
Left rectus abdominis

Trace 3 (collateral route)

Heart

Left rectus abdominis

5. (10 points) The illustration below depicts a transverse section through the embryonic trunk and therefore represents the basic design of both the thorax and abdomen. Use the illustration to answer the questions below.



Layer #1 in the thorax is called the _____ muscle.

In the abdomen, layer #3 gives rise to the _____ and _____ muscles.

The function of #4 in the abdomen is _____.

In the thorax, layer #6 is called _____.

Nerves and blood vessels in the lateral body wall are between which two numbered layers? _____

In the abdomen, layer #5 is called _____.

Which numbered layer is reduced or absent in the thorax? _____

In the abdomen, the aponeuroses #1, #2, and #3 blend together in the midline to form a dense connective tissue structure called the _____.

6. (11 points) Trace a molecule of oxygen in the air you are breathing through your nose to the anterior aspect of the right external intercostal muscle in the 4th intercostal space. **The anterior intercostal artery to this intercostal space is blocked so you must use a collateral pathway.** Your trace must consist of a columnar list of all respiratory and circulatory structures traversed by the oxygen molecule. You must also list the site of diffusion and the associated tissues through which the molecule diffuses. You must also list all heart structures you pass through as you trace the oxygen molecule.

Oxygen molecule in air

Anterior aspect of right external intercostal
muscle in 4th intercostal space

7. (7 points) Use the illustration to answer the questions below.

1. Which named digestive organs are visible in this illustration?

2. What word is used to describe the position of the digestive organs listed in question #1 relative to the coelomic cavity?

3. Which named digestive organs have been cut away?

