1. (6 points) The illustration below is a superior view of a cross section of the crus just below the tibial tuberosity. Label all the muscles visible in the section. To the left of the illustration list all crus muscles which are not visible because they lie below the level of this section.

Crus muscles below level of section
2. **(8.5 points)** Trace a marked molecule of blood from the heart, through the kidneys, and back to the heart. List all blood vessels traversed by the marked molecule. Your trace should be in the form of a columnar list in the space below.

<table>
<thead>
<tr>
<th>Heart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart</td>
</tr>
</tbody>
</table>

3. **(10 points)** In the table below list the attachments (i.e. origin and insertion), one action, and the nerve for each muscle as discussed in class. It does not matter which box you use for the origin or insertion. **Attachments that are incomplete or partially incorrect will be marked wrong.** All actions listed must clearly indicate the specific joint or bone at which the action occurs. For example, simply listing “flexion” as an action does not clearly indicate which joint or bone is moving whereas “flexion of the wrist” does. **Actions that are incorrect and/or do not clearly indicate the specific joint or bone at which the action occurs will be marked wrong.** Please list only one action for each muscle.

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Attachment</th>
<th>Attachment</th>
<th>Action</th>
<th>Nerve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infraspinatus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brachialis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teres major</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhomboideus minor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subscapularis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. **(10 points)** On the illustration below, label all of the structures that are associated with the hair follicle and fill in the table below. Make sure you either color or draw a line to each structure you list in the column to the right of the illustration. Finally, use the numbered structures to fill in the information on the table at the bottom of the page.

<table>
<thead>
<tr>
<th>Structure/layer</th>
<th>Tissue</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. **(10 points)** On the diagram below clearly draw and label both sympathetic and parasympathetic traces associated with the visceral organs in the illustration. All neurons, cell bodies, and synapses must be drawn in their correct locations or they will be marked wrong.

Which organs of the gut are represented in the illustration above? What evidence, visible in the illustration, supports your answer?
6. **(15 points)** In the space below draw and completely label the brachial plexus. You should label all named nerves, spinal levels, and the roots, trunks, divisions (anterior and posterior), and cords of the plexus. Below your drawing list all the muscles by name that would be completely paralyzed and any joint movements which would be weakened if the lateral cord were cut at its distal most point.

<table>
<thead>
<tr>
<th>Paralyzed muscles</th>
<th>Weak joint movements</th>
</tr>
</thead>
</table>
7. **(10 points)** The illustration below depicts a transverse section through the embryonic vertebrate trunk and therefore represents the basic design of both the thorax and abdomen. Not realizing that there was a developmental pattern to the vertebrate trunk, anatomists gave names to structures which reflect the region instead of the pattern. In the spaces below, write the abdominal and thoracic regional name for each numbered structure on the illustration below.

<table>
<thead>
<tr>
<th>Number</th>
<th>Thorax</th>
<th>Abdomen</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9. (18 points) Place the name of each numbered muscle in the blanks to the left of the illustration and answer the questions below. Using a GREEN pencil, draw the boundaries of the femoral triangle on the illustration to the left.

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 
11. 
12. 

Which numbered muscles attach medial to the tibial tuberosity (list numbers not muscle names)?

Which numbered muscles are innervated by the femoral nerve (list numbers not muscle names)?

Which numbered muscles do extension of the knee (list numbers not muscle names)?
10. (16 points) Matching. Use each letter only once.

______  Thyrohyoid muscle  
______  Orbicularis oris  
______  Extrinsic tongue muscle  
______  Abduction of the eye  
______  Fungiform papillae  
______  Trapezius muscle  
______  Longus coli  
______  Stylopharyngeus muscle  
______  Incus  
______  Laryngeal muscles  
______  Second branchial arch muscle  
______  Filiform papillae  
______  Anterior scalene  
______  Masseter muscle  
______  Medial rectus muscle  
______  Middle scalene  

A.  Third branchial arch muscle  
B.  Tympanic cavity  
C.  Middle layer muscle  
D.  Accessory nerve (CN XI)  
E.  Platysma  
F.  Puckers the mouth  
G.  Internal layer muscle  
H.  Genioglossus  
I.  Taste buds  
J.  Ventral layer muscle  
K.  Lateral rectus muscle  
L.  First branchial arch muscle  
M.  Subvertebral muscle  
N.  Extrinsic eye muscle  
O.  Gripping function  
P.  Vagus nerve (CN X)  

Name ________________________________
11. (10 points) Write the name of each labeled structure on the illustration in the corresponding blank to the left and answer the question below.

1. _______________________
2. _______________________
3. _______________________
4. _______________________
5. _______________________
6. _______________________
7. _______________________
8. _______________________

In the space below clearly describe how the ear ossicles and muscles when they work to detect a soft sound and a loud sound.
12. (4 points) Label all the arteries in the illustration below. Circle the number of the artery associated with the pelvic body wall pattern.

1. 
2. 
3. 
4. 
5. 
6. 
7. 

13. (7.5 points) Trace indigestible fiber (not absorbed) from food on your fork through the digestive passageways, and back out into the environment. Your trace should be a list of columnar structures in the space below.

Food on fork

Environment