Urinary Physiology
Human Urinary Physiology - Ex. 29

Urinalysis:

I. Terminology

<table>
<thead>
<tr>
<th>Urochrome</th>
<th>Hematuria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucosuria</td>
<td>Crystals</td>
</tr>
<tr>
<td>Ketonuria</td>
<td>Casts</td>
</tr>
<tr>
<td>Pyuria</td>
<td>Renal Calculi</td>
</tr>
</tbody>
</table>

II. Analysis of Unknowns ("fake" urine)

A. Appearance – check color and transparency

Normal color: ________________

Urochrome

Abnormal colors:
- Reddish amber – urobilinogen (produced by action of intestinal bacteria on bile pigment)
- Red to smokey brown: blood and blood pigments

Normal transparency: ________________

Abnormal transparency:
- Cloudy – bacterial infection, pus, fat

B. Specific Gravity – use urinometer [read at meniscus to 3 decimal places]

Normal range: 1.003 to 1.030

Abnormal: low – chronic nephritis, diabetes insipidus
          high – diabetes mellitus, acute nephritis

C. Multistix (urine test strips) – know what is considered normal for each test and know one abnormal situation for each urine component.

<table>
<thead>
<tr>
<th></th>
<th>Normal</th>
<th>Abnormal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucose:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ketones:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific Gravity:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D. Sediments - examine sediment slide. You are responsible for naming 2 sediments, not for identifying them on the slide.

See questions on p. 118 of this handout.
Urinary and Reproductive System Anatomy

Anatomy of the Urinary System - Ex. 28
Dissection of the Cat Urinary System - Ex. 9
Male / Female Reproductive System - Ex. 30, 31
Dissection of the Cat Reproductive System - Ex. 10

KIDNEY
Locate the following structures on the sheep kidney and human kidney models:

Sheep Kidney
renal capsule
cortex
medulla
pelvis
ureter

Kidney Models
renal artery and vein
adipose capsule
cortex
medulla
hilum
pyramids
minor calyces
major calyces

Nephrond Model
nephron
Bowman’s capsule
convoluted tubules
loop of Henle
collecting ducts

UROGENITAL SYSTEM
Locate the following structures on the cat and on models and charts of the human:

Kidneys
Adrenal glands
Renal arteries
Renal veins

Ureters
Urinary bladder
Urethra

Female
Ovaries
Uterine tube
Uterus
*Uterine horns
*Uterine body
Cervix
Vagina
Broad Ligament
*Urogenital sinus
Vulva

Male
Scrotum
Testes
Epididymis
Vas deferens
Spermatic cord
Inguinal canal
Urethra
Prostate gland
Penis

*Found in cat only, not in the human.

See additional questions on p. 118 of this handout.
RESPIRATORY SYSTEM
Anatomy of the Respiratory System - Ex. 24
Respiratory Physiology - Ex. 25

Locate these structures on the models and chart for the human:

*Diaphragm
Pleura
  Visceral
  Parietal
Pleural Cavity
*Lungs
  Lobes
Mediastinum
*Phrenic Nerves
*Larynx
*Vocal Cords
*Epiglottis
*Glottis
Thyroid Cartilage
Cricoid Cartilage
*Tracheal Cartilage
Primary Bronchi
Secondary Bronchi

*Locate these structures on the cat.

Respiratory Physiology:
Define these lung volumes and know the number of milliliters for each:
  Tidal Volume
  Inspiratory Reserve Volume
  Expiratory Reserve Volume
  Vital Capacity
  Residual Volume

Bell Jar Model:
What structures within the Bell Jar Model represent the –
  lungs –
  pleural cavity -
  diaphragm –

Respiratory Slides:
  Normal lungs
  Emphysema
  Pneumonia

See additional questions on p. 118 of this handout.
Urinalysis:
1. What is a typical volume of urine that would be excreted in a day?

2. What substance is responsible for the normal “yellow” color of urine?

3. Which has a greater specific gravity: 1 ml of dH₂O or 1 ml of urine? Why?

4. Glucosuria is indicative of what clinical situation?

Urogenital System:
1. Name the following structures:
   a. Cup-shaped structure that surrounds the glomerulus:
   b. Cone-shaped areas in the medulla of the kidney:
   c. Fibrous outer covering of kidney:
   d. Functional unit of kidney:
   e. Tubes that drain the kidneys:

2. Describe the function:
   a. Vas deferens:
   b. Prostate gland:
   c. Uterine tubes:
   d. Uterine horns:

Respiratory System:
1. How does the number of lung lobes in the human compare to the cat?
   Human: _______     Cat: _______

2. The trachea bifurcates in to two primary ________________.

3. The cartilaginous flap that deflects food and liquid into the esophagus and away from the respiratory tree is the _______________.

4. The phrenic nerve innervates the ________________.

5. How many pleural cavities are there? ________________.

6. What pressure change occurs in the Bell Jar when the “diaphragm” is pulled down ________________.

7. What pressure change occurs in the Bell Jar when the “diaphragm” is released ________________.