

**Review Sheet New Material Final Exam (chpts. 26, 27, 28, & 29)**  
**This material will make up 50% of your final exam. The other 50% is cumulative material.**

**Chpt. 26 : Urinary System**

what are the 5 functions of the urinary system?  
characteristics/functions of urethra, ureter, bladder  
what type of tissue lines each?  
where is the urinary bladder? What holds it in place? What is the trigone?  
what are the functions of the detrusor muscle?  
how does voiding occur? what are the 2 sphincters involved? which is voluntary?  
what are the 3 parts of the male urethra?  
how is urine moved from kidney to urethra?  
what is incontinence? what are some causes?  
what is urinary retention? what might cause it?  
Where are the kidneys located? What is the hilus?  
3 layers of connective tissue surrounding kidney: order and function of each  
what is ptosis?  
charact. of renal cortex, medulla, and pelvis, what is a renal lobe?  
order of arteries/veins in kidney (from renal artery ---> renal vein)  
What is the renal plexus? What does sympathetic stimulation do?  
parts/functions of a nephron, 2 types of nephrons: where each are located, which more numerous? Which has vasa recta?  
adaptations of each region, what is absorbed? what molecules can pass through each?  
2 capillary beds of a nephron: charact. of each how are capillaries of the urinary system different from those of the cardiovascular system?  
what is the juxtaglomerular apparatus?  
JG cells: located where, what do they respond to and do?  
macula densa: located where, what do they respond to and control?  
Filtration: what substances are filtered? why?  
what are the characteristics of the filtration membrane? what are the 3 layers?  
what is the NFP: how is it produced?  
what are the GHP, GOP and CsHP? Why isn't there an osmotic pressure in the filtrate? What types of factors change HP and OP? How does this effect NFP? How does NFP affect GFR?  
what is GFR? what factors affect it? know how BP affects the NFP  
know intrinsic renal autoregulation: myogenic and tubuloglomerular mechanisms  
-how does each mechanism function? what are the results?  
what is the renin-angiotensin mech. what 3 factors trigger the release of renin?  
extrinsic regulation: what does the sympathetic nervous system do? why?  
Tubular reabsorption: what subst. are reabsorbed?  
definitions and examples of substances that use: facilitated diffusion, osmosis, active transport, countertransport, cotransport  
where (which part of the nephron) are most substances reabsorbed? where is most water reabsorbed? why?  
where is most Na reabsorbed?  
what is solvent drag? what uses this?  
What substances are not reabsorbed? why not?  
functions of aldosterone, ADH, ANF  
why is tubular secretion important? what subst. are secreted?  
how does the countercurrent mech. work? which structures help maintain it?  
what is the importance of it?  
what is the osmolarity of plasma and body fluids? at the bottom of the loop of Henle?  
which limb of the loop of Henle is permeable to water? which actively transports Na & Cl? What is the importance of urea? where does the urea come from? what happens if low in urea?  
what is the purpose of the vasa recta?  
how is dilute urine formed? and concentrated urine?  
what is a diuretic? how do they work? why would they be prescribed?  
how does alcohol work as a diuretic? and caffeine?

what is renal clearance? what substance is used as a standard for determining GFR?  
what is the RC of urea? and glucose? Na? creatinine?  
what is pH of urine? urine is mostly?, what is found in urine?  
know abnormal substances in urine, name of condition, and possible causes  
what is the BUN? and blood creatinine? what are normal values? what do elevated values indicate?  
clinically: know causes, s/s, Tx for: pyelonephritis, pyelitis, UTI, bladder cancer, kidney stones, glomerulonephritis, acute renal failure, chronic renal failure

## **Chpt. 27: Fluid, Electrolyte, and Acid Base Balance**

the human body is made up from?  
what percentage water? which type of tissue contains the most water?  
what are the 2 major compartments for water? know examples of each  
why do electrolytes have a greater effect on osmolarity?  
what are the major anions and cations for ECF and ICF?  
how do we lose water? how do we gain it?  
what is edema? what causes it?  
which is the most important electrolyte? and how much does it contribute to the total 300 mosm. of body fluids?  
what causes dehydration? what type of water shifts happen?  
what is hypotonic hydration (water intoxication)? what causes it? why is it dangerous? how is it treated?  
how do we lose electrolytes? how do we gain them?  
what are methods (hormones) of regulating sodium balance? what is hyponatremia? and hypernatremia? what kinds of water shifts between the cell, IF and plasma occur with each?  
what is pressure diuresis?  
why is K<sup>+</sup> important? what are normal values for K<sup>+</sup>?  
what determines how much K is secreted in the kidney?  
what are causes of hyperkalemia? and hypokalemia? why are they serious?  
Why is Ca<sup>++</sup> important? What are normal values? what hormones control blood Ca<sup>++</sup> levels? How do they function? what are s/s of hypercalcemia? and hypocalcemia?  
What is the importance of Mg? Phosphate? and Cl<sup>-</sup>?

What is the pH of arterial blood? which values indicate acidosis? and alkalosis?  
what are the 3 ways for the body can buffer? which is the most rapid? and the slowest?  
Chemical buffers: what does the term alkaline reserve describe?  
-which chemical buffers are weak acids? and weak bases?  
-which are strong acids? and strong bases?  
-what happens when strong acids mixed w/ weak base? and when strong base mixed with weak acids?  
-know the bicarb. buffer equation (the resp. buffers)  
-how does the phosphate buffer system work? know the equation  
-how do amino acids buffer? what is the term for a subst. that can act as an acid or base?  
-how does Hb buffer?

Lungs: know the equation and how CO<sub>2</sub> levels either increase or decrease pH.

Kidneys:

-know all 3 methods that H<sup>+</sup> ions are buffered in the filtrate. (bicarbonate, phosphate, and ammonia-ammonium)

what is the normal BB:CA ratio?

what are the values (Ph, HCO<sub>3</sub>, PCO<sub>2</sub>) associated with respiratory acidosis? metabolic acidosis? metabolic alkalosis? resp. alkalosis? What are possible causes of each?

what does it mean when it is compensated? what values indicate this? What shows acute condition?

## **Chpt. 28: Reproductive System:**

male reprod. system: know the anatomy of the organs

charact. of the testes: why are they in the scrotum?

which population is testicular cancer more common in?

what is cryptorchidism? What is an inguinal hernia? Why are the more common in men?

what is the tunica vaginalis?

what is the function of the dartos and cremaster muscles?

seminiferous tubule function and structure  
where is testosterone made?  
what is found in semen? what are the 3 glands that produce it?  
what is the function of the prostaglandins? fructose? enzymes?  
what is the pH of semen? why?  
what does each gland contribute?  
what is spermatogenesis? what are the end product?  
what is the importance of the sustentacular cells?  
what is the pathway for sperm? where is it stored/matured?  
How is sperm moved through the male reproductive system?  
what are the 3 parts of a sperm and what is found in each?  
define capacitation? vasectomy?  
what is benign prostate hypertrophy? what causes it?  
what is prostate cancer? how is it tested for?  
what are the hormonal controls for men? Functions of GnRH, LH, FSH, Testosterone, inhibin  
what causes an erection? what is the name of the vascular tissue in the penis?  
what is DHT? and DHEA?  
Female reprod. system: know the anatomy: which are accessory organs?  
ovaries: what is found in an ovary? what is the primary follicle? secondary follicle? tertiary or Graafian follicle?  
what happens during ovulation?  
what is the corpus luteum? what does it do?  
what are the steps of oogenesis?  
uterine (fallopian) tubes: charact., function, what are the 3 parts?  
uterus: parts of the uterus and function, what are the 3 layers? which is shed during menses? which is thickest? which is smooth muscle?  
what structures support the uterus?  
characteristics of uterine, cervical cancer & breast cancer – s/s, tx, risk factors, diagnosing  
vagina: charact., location, function  
what is the clitoris? labia? mons pubis? perineum, hymen  
define: menarche, menopause, dysmenorrhea, amenorrhea  
structure of mammary glands, function of the glands?  
what are the hormone controls for females? Function of GnRh, FSH, LH – what is the “LH surge” or spike?  
what does estrogen do? and progesterone?  
know the 3 phases of the ovarian cycle and what occurs during each. Also what days of the cycle are each associated with? what are the phases of the uterine cycle? What happens during each phase?

## **Chapter 29: (pgs. 1075-1088)**

definitions of development, differentiation, gestation period  
time frames of an embryo, fetus  
fertilization: where does it occur? How does it happen? what enzymes are necessary?  
what are the two layers that surround the oocyte called?  
what do calcium ions do to the oocyte? why is this beneficial?  
what is a zygote? How many chromosomes are in the zygote?  
pre-embryonic develop.: cleavage, morula, blastocyst (what is the trophoblast? and the inner cell mass?)  
how does implantation occur?  
what is the importance of HCG? what are the functions of estrogen, progesterone and relaxin?  
embryonic development know the functions of the amnion, yolk sac, chorion, allantois  
gastrulation: ectoderm, mesoderm, endoderm: examples of organs formed from each