

## Study Guide

### Urinary System

#### Vocabulary

##### 13.1 The Urinary System

- excretion
- urine
- metabolic wastes
- nitrogenous wastes
  - urea
  - ammonia
  - ammonium
  - creatinine
  - uric acid
- erythropoietin (EPO)
- kidney
- renal capsule
- renal artery
- renal vein
- ureter
- urinary bladder
  - rugae
- urethra

##### 13.2 Anatomy of the Kidney & Excretion

- renal cortex
- renal medulla
- renal pyramids
- renal pelvis
- nephron
- afferent arteriole
- glomerulus
- efferent arteriole
- peritubular capillary network
- Bowman's capsule / glomerular capsule

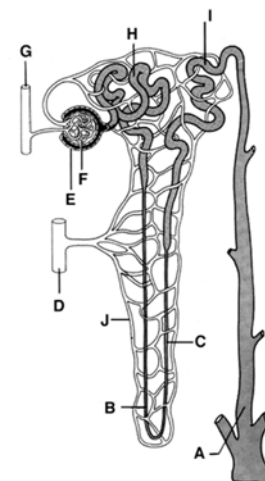
- proximal convoluted tubule (PCT)
- loop of Henle / loop of the nephron
- distal convoluted tubule (DCT)
- collecting duct
- pressure filtration
- glomerular filtrate
- selective reabsorption
- tubular excretion

##### 13.3 Regulatory Function of the Kidneys

- osmoregulation
- aquaporins
- aldosterone
- renin
- adrenal cortex
- atrial natriuretic hormone (ANH)
- antidiuretic hormone (ADH)
- posterior pituitary
- hypothalamus
- diuresis
- antidiuresis
- diuretics

##### 13.4 Disorders of the Urinary System

- gout (pg.412)
- incontinence (pg.413)
- kidney stones
- renal failure
- hemodialysis
- urinary tract infection



#### Key Points

PLO C13 Analyse the functional interrelationships of the structures of the urinary system

## Potential Test Questions

1. Label parts of urinary system (diagram)
2. Label parts of kidney (diagram)
3. Label parts of nephron (diagram)
4. Name the four major functions of the urinary system.
5. List the four MAIN waste products found in the urine.
6. Trace the path of urine from its formation to its exit.
7. Compare the male and female urethra.
8. Describe the structure of a kidney using the terms renal medulla, renal cortex, renal pyramid and renal pelvis.
9. What part of the nephron is found in the renal medulla?
10. Distinguish between pressure filtration, tubular reabsorption and tubular excretion.
11. What is meant by the term “filtrate”?
12. What is the purpose of the convolutions found at the proximal and distal tubule of the nephron?
13. Describe the three processes that are required for the excretion of a hypertonic urine. Include in your description:
  - a. the name of the processes
  - b. location on the nephron
  - c. direction of transfer
  - d. method of transfer
  - e. 2 examples of molecules or ions that move by this process
14. Explain the difference in microscopic structure which suggests that the PCT, but not the DCT, is specialized for reabsorption.
15. Identify path of specific substances (e.g. nicotine, red blood cells, amino acids, chloride ions...) through a nephron.
16. A patient’s urinalysis revealed a high level of glucose. What diagnosis would you consider?
17. Give the term that refers to the maintenance of the appropriate balance of water and salt in the blood.
18. How is salt reabsorption coupled to water reabsorption?
19. State the name of and location of the source gland for aldosterone. Describe where on the nephron aldosterone acts, what it does, and the overall effect.
20. What is the relationship between aldosterone, the juxtaglomerular apparatus, and renin?
21. What does the juxtaglomerular apparatus secrete?
22. What draws water out of the descending limb of the loop of Henle and the collecting duct?
  - a. Where does this water end up?
23. Where would ADH work on the nephron and what does it do?
24. Diagram a negative feedback loop explaining the role of ADH in regulating blood volume and osmolarity.
25. Describe some medical uses of diuretics. Why are they sometimes abused?
26. Some medications are used as a “diuretic”.
  - a. What effect does a diuretic have on the urinary system?
  - b. Name another substance that is a diuretic.
  - c. Why would a doctor prescribe a diuretic to a patient with high blood pressure?
27. How do the kidneys control ion levels to maintain blood pH and homeostasis?
28. Explain why only waste products in the blood and not blood nutrients move into the dialysate solution during the hemodialysis procedure.

