Review Questions for Urinary System:

1. *What are the organs of the urinary system?*
2. *What are the primary functions of the urinary system?*
3. *What are the additional functions of the urinary system?*
4. *What is the anatomical location of the kidneys?*
5. *What are the general structural characteristics of the kidneys?*
6. *What is the renal hilum?*
7. *What is the renal sinus?*
8. *What are the adrenal glands? What are their functions?*
9. *What is the fibrous capsule?*
10. *What is the perirenal fat capsule?*
11. *What is the renal fascia?*
12. *What are the 3 basic internal regions of the kidney? In which does urine formation occur?*
13. *What are the renal pyramids?*
14. *What are renal papillae?*
15. *What are collecting ducts?*
16. *What are renal columns?*
17. *What are major calyces? Minor calyces?*
18. *Trace a drop of urine from the collecting duct to the urethra.*
19. *What structures in the above pathway contain smooth muscle? Why?*
20. *Trace a drop of blood from the renal artery to the renal vein?*
21. *Where does filtration occur?*
22. *Where do reabsorption and secretion occur?*
23. *What is the nephron?*
24. *How does the combination of filtration, secretion, and reabsorption effectively allow for the regulation of blood's volume and chemical constituency?*
25. *How many nephrons per kidney?*
26. *How many collecting ducts per kidney?*
27. *Where are glomeruli located?*
28. *What is the Bowman's capsule?*
29. *What type of epithelium makes up the parietal layer of Bowman's capsule? What is the function of the parietal layer?*
30. *What type of cells comprises the visceral layer of Bowman's capsule? What is their function?*
31. *Where is the proximal convoluted tubule found? What type of epithelium is it composed of? What events occur there? What blood vessels is it associated with?*
32. *What are PCT epithelial cells heavily endowed with?*
33. *Where is the loop of Henle found? What type of epithelium is composed of? What events occur there? What blood vessels is it associated with?*
34. *Where is the distal convoluted tubule found? What type of epithelium is composed of? What events occur there? What blood vessels is it associated with?*
35. *Fluid drains from the DCT into what structure?*

36. *How do DCT epithelial cells differ from PCT epithelial cells?*
37. *How does the fluid exiting the DCT differ from the fluid entering the PCT?*
38. *What cortical nephrons? Where are they found? How abundant are they? What is their function?*
39. *What juxtamedullary nephrons? Where are they found? How abundant are they? What is their function*
40. *What causes glomerular BP to be high? Why is this advantageous?*
41. *What causes peritubular capillary BP low? Why is this advantageous?*
42. *What % of filtered fluid is typically reabsorbed?*
43. *What is the juxtaglomerular apparatus? Where is it? What does it do?*
44. *What special cells does the JGA contain? What do they do?*
45. *What is the macula densa? What does it do?*
46. *What is the filtration membrane composed of? What is its function?*
47. *What can pass thru the filtration membrane? What cannot?*
48. *Compare glomerular BP to the BP of other systemic capillaries? What makes glomerular BP so high? What is the functional advantage of this?*
49. *What is an equation for net filtration pressure?*
50. *What is GFR?*
51. *What are the 2 intrinsic mechanisms that regulate GFR?*
52. *Diagram the myogenic mechanism for regulation of GBP and GFR. Do the response for a rise in systemic BP and for a drop in systemic BP.*
53. *Diagram the tubuloglomerular feedback mechanism for regulation of GBP and GFR. Do the response for a high GFR and for a low GFR.*
54. *What are the 2 extrinsic mechanisms that impact GFR?*
55. *Diagram the sympathetic neural mechanism and its impact on GBP and GFR*
56. *Diagram the renin-angiotensin mechanism and its impact on systemic BP.*
57. *What is tubular reabsorption? Where does it primarily occur?*
58. *What types of substances are reabsorbed?*
59. *What roles does sodium play in the reabsorption of nutrients, water, and anions?*
60. *How does sodium's movement create an osmotic gradient? How does it create an electrical gradient?*
61. *What is meant by obligatory water reabsorption?*
62. *What is secondary active transport?*
63. *How does the content of filtrate change as it passes through the PCT?*
64. *How does the content of plasma change as it passes through the peritubular capillaries?*
65. *What is meant by transport maximum? How does this relate to the concept of saturation? What is an example that involves these 2 concepts?*
66. *What is tubular reabsorption? Where does it primarily occur?*
67. *What is osmolarity? What measures blood osmolarity?*
68. *As blood osmolarity rises, what hormone is released?*
69. *Where is ADH produced? Where is it stored?*
70. *What part of the nephron does ADH affect? How?*
71. *What part of the nephron creates the osmotic gradient btwn the fluid within the collecting duct and the surrounding ISF?*

72. *What is the function of the vasa recta?*
73. *What is meant by facultative water reabsorption?*
74. *What is aldosterone?*
75. *Where is aldosterone produced?*
76. *What part of the nephron does aldosterone affect? How?*
77. *What stimulates the release of aldosterone?*
78. *What is a diuretic?*
79. *How does an osmotic diuretic work?*
80. *How do alcohol and caffeine exert diuretic effects?*
81. *What are the normal contents of urine?*
82. *What is the normal pH range for urine? What is the normal specific gravity range for urine?*
83. *What is creatinine? What is uric acid? What is urea?*
84. *What are the structural and functional characteristics of the ureters?*
85. *What are the structural and functional characteristics of the urinary bladder?*
86. *What is the relationship btwn the bladder and the surrounding organs?*
87. *How many openings does the bladder contain? What are they? What do they do?*
88. *What kind of epithelium lines the bladder?*
89. *What is the trigone and what does it do?*
90. *What are rugae and what do they do?*
91. *What is the detrusor muscle and what does it do?*
92. *What is the capacity of the bladder?*
93. *What are the structural and functional characteristics of the urethra?*
94. *What and where is the internal urethral sphincter? What does it do?*
95. *What and where is the external urethral sphincter? What does it do?*
96. *What and where are the pelvic and urogenital diaphragms? What do they do?*
97. *What are the differences btwn the male and female urethrae?*
98. *What are the divisions of the male urethra? What are their structural characteristics?*
99. *What is micturition?*
100. *Diagram all the steps in the micturition reflex.*